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Annex to the Main Report

A Packaging Levy for Ireland?

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1. Introduction

The primary purpose of this paper is to consider the feasibility, desirability and merits of a packaging levy as a method to reduce, reuse and recycle packaging and packaging waste. At the present time there is no packaging levy in Ireland. There is, however, a levy on one form of packaging - plastic bags.² Instead, producers, either individually or collectively, are held responsible for dealing with packaging and packaging waste. Hence any consideration of a packaging levy needs to take into account current arrangements for dealing with packaging.

The paper is divided into eight sections, with Section 2 setting out the mandate identified by the Department of the Environment, Community, Local Government (DoECLG) for the paper on a packaging levy. In addressing the issues specified by the DoECLG we begin by identifying the rationale and objective of a packaging levy (Section 3). It is only after identifying the objective that attention can turn to the design of the structure of a packaging levy, considering alternatives and selecting the most appropriate option (Section 4).

There are frequently many alternative policy instruments that can be used to meet a particular policy objective of government (e.g. Trebilcock *et al*, 1982). The environment field is no exception (e.g. Helm, 2005; Watkins *et al*, 2012). However, in considering alternative policy instruments to a packaging levy as a method of reducing packaging and packaging waste, attention is confined in Section 5 largely to Extended Producer Responsibility (EPR), the mechanism currently used to manage packaging and packaging waste in Ireland and most other Member States (Watkins *et al*, 2012, Table 7, p. 104). EPR takes the form of specific producer compliance schemes to deal with particular waste streams that typically permit producers to act collectively through a Producer Responsibility Organisation (PRO), such as Repak Limited (Repak) for packaging in Ireland.

¹ I should like to thank Olivier Gaillot, Lorcan Lyons and Sean Lyons as well as Roger Harrington and his colleagues at the Department of the Environment, Community and Local Government for valuable comments and suggestions. The paper contains no confidential information. It was commissioned by the Department of the Environment, Community and Local Government as part of the Review of the Producer Responsibility Initiative Model in Ireland. The usual disclaimer applies. Contact email: paul.gorecki@esri.ie.

² The European Court of Justice found that “plastic carrier bags handed to customers in shops, whether free of charge or not, constitute packaging within the meaning of the [packaging] directive [94/62].” Paragraph 59 of *Plato Plastik Robert Frank GmbH v Caropack Handeleugesellschaft mbH*, Case C-34/101, 29 April 2004. See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62001CJ0341:EN:HTML>. Accessed 14 August 2012.

An economic analysis of a packaging levy cannot take place in a vacuum. Hypothetical introduction of a levy has to be compared to an alternative; in other words, what would happen in the absence of a packaging levy – the counterfactual. One typical counterfactual is business as usual. Hence in Section 6 we compare the introduction of a packaging levy with a business as usual situation, in which there is an EPR. This raises a number of issues, including to what extent a packaging levy and an EPR are complements, so that they can be used in tandem, and to what extent are they substitutes, so that a choice has to be made between EPR and a packaging levy.

While the focus of the paper is on the merits of a packaging levy, an important secondary purpose is to consider deposit and refund schemes such as reverse vending machines either as separate stand alone initiatives or jointly with a packaging levy (Section 7). The final section of the paper addresses each the issues raised by the DoECLG (2012a) in its mandate for consideration of a packaging levy.

2. Background: Mandate and Policy Context

The Programme for Government states, in its discussion of a ‘Sustainable Waste Policy,’ that the Government “will drive a waste reduction programme through an extension of producer responsibility initiatives and a levy on packaging after appropriate consultation” (Department of the Taoiseach, 2011, p. 61). A consultation exercise was launched by the Minister for the Environment, Community and Local Government (the Minister) on 27 May 2011, “to examine options regarding the introduction of a possible packaging levy” as part of a waste reduction strategy.³ Four issues were identified in the consultation:⁴

- The overall views by stakeholders on a packaging levy;
- How a packaging levy might be operated;
- International experiences of similar levies; and
- How a possible packaging levy might be structured in order to contribute to a reduction in packaging waste.

Sixty-eight submissions were received by the closing date of 5 August 2011.⁵

The Department of the Environment, Community and Local Government (DoECLG, 2012) subsequently commissioned an examination of the issue of a packaging levy that seeks:

- (i) an economic analysis of the possible effects of a packaging levy,
- (ii) options on how a possible packaging levy might operate,
- (iii) possible alternatives to a packaging levy which would yield corresponding reductions in packaging
- (iv) how might a packaging levy work in tandem and affect the operation of the compliance schemes and
- (v) an

³ <http://www.environ.ie/en/Environment/Waste/ProducerResponsibilityObligations/PackagingWaste/News/MailBody,26477,en.htm>. Accessed 5 July 2012.

⁴ <http://www.environ.ie/en/Environment/Waste/PublicConsultations/>. Accessed 5 July 2012. It should be noted that no consultation document setting out the parameters of the packaging levy and related issues was issued.

⁵ <http://www.environ.ie/en/Environment/Waste/PublicConsultations/SubmissionsReceived2011/>. Accessed 5 July 2012.

examination of initiatives such as deposit and refund and reverse vending both as stand alone options or in tandem with a packaging levy (pp. 16-7).

This was part of a larger project on the Producer Responsibility Initiative (PRI) that was announced by the Minister on 29 June 2012.⁶

3. A Packaging Levy: Rationale and Objective

The objective of a packing levy is to reduce the level of packaging, while at the same time increasing incentives for increased recycling, reuse and recovery.⁷ By placing a tax or levy on packaging less packaging will be used.⁸ The relative price of packaging-intensive goods will increase relative to the price of less intensive packaging goods causing a substitution of the latter for the former. In addition a packaging levy will create an incentive for goods to become less packaging intensive through, for example, improved technology. The nature of packaging may also shift more towards packaging that can be reused or recycled. For example, if glass containers can be used (say) 12 times whereas a PET container⁹ can only be used once, then the packaging levy for glass containers is spread over 12 uses compared to one in the case of a PET container.^{10,11}

While the object of the packaging levy might be clear, it nevertheless raises two further issues. First, why should packaging be reduced since it performs many valuable functions “such as preservation, sanitation, security (from theft and tampering), safety and consumer convenience” (Porter, 2002, p. 31), and second, by how much should packaging be reduced. It is necessary to set out the rationale for reducing packaging in order to be able to set the appropriate levy. This needs to be done with some precision or else too much or too little packaging will be used. Vague reference that there is too much packaging and it needs to be reduced is of little assistance as a guide to policy. It could, of course, be argued that setting a packaging levy is likely to be subject to considerable margin of error. However, that does not vitiate the case for carefully considering the rationale for a packaging levy, since at a minimum it will guide research in terms what information is required in order to set the appropriate levy.

Typically, it is assumed that markets work well and that governments only should intervene when there is a market failure. In the case of packaging if what the consumer pays reflects what the packaging cost then it might be thought that the market is working well and there is little or no reason for government to intervene. However, if there are costs that are not reflected in the price

⁶At the same time the Minister announced a public consultation which ran until 25 July 2012. For details see: <http://www.environ.ie/en/Environment/Waste/News/MainBody,30642,en.htm>. Accessed 5 July 2012.

⁷ This is consistent with, for example, the discussion in Section 1 concerning the Programme for Government and the Minister’s announcement concerning the consultation on the packaging levy.

⁸ Unless, of course, demand is completely inelastic. While this may be the case in the short run this is much less likely to be the case in the longer run as technology is able to offer a greater range of packaging solutions. For example, if the levy is weight-based then this might result in the greater use of lighter packaging material.

⁹ I.e. polyethylene terephthalate.

¹⁰ Furthermore, if the consumer has to pay for packaging separately that can be reused they are more likely to reuse the packaging. If the consumer, for example, has to pay for a plastic bag, they may reuse it rather than pay for a fresh plastic bag each time they go shopping. However, it is not clear that such reuse characterises other types of packaging.

¹¹ The way in which the packaging levy would vary with the degree of reuse is set out in equation (1) below.

then that may constitute a rationale for a packaging levy. These unaccounted for costs are referred to as externalities. These external costs are borne by third parties that are not involved in the transaction between the seller (e.g. the manufacturer/wholesaler/retailer) and the buyer (e.g. the consumer). But what can these costs be that merit government intervention?

There are several possible classes of externalities associated with packaging:

- *Excessive use of virgin resources*: virgin resources such as forests, water, fossil fuels,¹² and minerals may be underpriced through inappropriate subsidisation and a failure to take into account certain externalities in their extraction (e.g. damage to landscape, destruction of forests that serve as carbon sinks, adverse effects on human health and so on).¹³ The EU (2008, recital 8) states in its waste legislation that one of the objectives of recovery of waste and the use of such materials is to “conserve natural resources.” Although ideally the virgin resources should be priced appropriately by the country responsible for regulating and pricing its extraction, if that is not possible a packaging levy may be set by a country such as Ireland where the virgin resources are consumed to offset the damage from their extraction.
- *Greenhouse gas and other emissions*: the manufacture and disposal of packaging through landfill, incineration and other methods is likely give rise to greenhouse gases such as CO₂, and methane as well as other air pollutants, leading to adverse effects on human health and contributing global warming.¹⁴ There may be leakage from landfills into local soil and water sources contaminating drinking water and harming fish stocks. Minimising the adverse impacts of packaging on the environment and human health is the first objective of EU waste policy (*ibid*, recital 6).
- *Visual disamenity*: packaging may be discarded in the form of litter resulting in visual disamenity, which has, for example, a negative effect on tourism, health (e.g. cuts on broken bottles), and wildlife as well as leading to increased costs of waste collection and disposal.¹⁵ Rivers can become festooned in plastic bags when river levels subside, beauty spots dotted with drink and food containers from fast food outlets while park benches become surrounded by a sea of cider, alcopop, beer and lager bottles and cans. The frequent high winds in Ireland may exacerbate the problem of litter (Convery *et al*, 2007, p. 3).
- *Fly-tipping and other illegal disposal methods*: used packaging instead of being disposed of through collection services, may instead be fly-tipped on the roadside or on vacant ground or possibly disposed of in illegal dumps on a much larger scale.¹⁶ This leads to the problems identified above concerning visual disamenity, greenhouse gases, air pollutants and problems with water supplies as well as increased costs of collection.

¹² Both as energy and as feedstock for plastic.

¹³ Smith (2005, pp. 9-10) puts forward this argument.

¹⁴ These issues are discussed further in Gorecki *et al* (2010, Annex A, pp. 106 – 141).

¹⁵ Visual disamenities are discussed by Convery *et al* (2007) in the context of plastic bags in Ireland.

¹⁶ In 2010 uncollected household waste amounted to 265,681 tonnes in Ireland (EPA, 2012, p. 26). However, not all of this was fly-tipped as some could have been used for compost for example. There are reports of large scale illegal dumping of waste generated in Ireland during 2000-2004 in Northern Ireland. For details, see for example, Hogan (2012).

If these externalities, all of which are negative, are appropriately priced and included in a packaging levy then this will result in less packaging being used, more reuse, recycling and recovery. But more importantly it will result in the correct or optimal amount of packaging being used, an issue we return to below.

It is not clear, however, that all the externalities outlined above should be included in any packaging levy. While the existence of an externality is a necessary condition, it is not sufficient, for the inclusion in a packaging levy. This reflects the fact that some packaging externalities are already taken into account. For example, greenhouse gases associated with disposal of packaging waste is already priced through various levies (e.g. the landfill levy set at €65 per tonne from 1 July 2012 in Ireland)¹⁷ and the use of other EU-wide instruments which also effectively price an externality such as the EU-Emission Trading System (ETS) for CO₂. In other words, in considering a packaging levy what are of interest is *unpriced* externalities. A good example was the visual disamenity in Ireland associated with plastic bags which prior to the implementation of plastic bag levy of 2002 was unpriced.

Failure to take into account that an externality that may already been factored into the price of packaging will result in double regulation – reflecting the fact that an externality has already been priced and hence included in the price of packaging. This is not only likely to create additional administrative burdens on producers – which will be reflected in higher prices to consumers as well as putting Irish based business at a competitive disadvantage leading to job losses – but also result in suboptimal use of packaging. The levy should be set so that at the margin, the price of packaging is equal to the marginal private cost of production of packaging, plus the marginal external cost. If there is double regulation then, in effect, the marginal external cost is set too high and too little packaging is used relative to what is optimal.¹⁸ Since, as noted above, packaging serves useful purposes there is a real cost in setting the levy too high. There is, for example, “a highly *negative* correlation between the amount of packaging and the amount of food waste” (Porter, 2002, p. 31, emphasis in the original).¹⁹

Once the unpriced externalities have been identified attention then turns to estimating the costs of these externalities. Such information is vital for setting the levy at the correct level. However, estimating these costs is neither easy nor straightforward. In the case of the plastic bag levy, which was introduced because of the visual disamenity they caused, no attempt was made to estimate the magnitude of the disamenity according to Convery *et al* (2007) prior to its introduction in Ireland. However, variations in the levy were made as consumption of plastic bags increased subsequent to the initial levy being set. Nevertheless, there are well developed methodologies for measuring disamenity impacts, the cost of greenhouse gases and other pollutants.²⁰

A packaging levy is one method or instrument for dealing with the externalities generated by packaging. There are other instruments for addressing the problem, including EPR. Hence in

¹⁷ <http://www.environ.ie/en/Environment/Waste/LandfillLevy/>. Accessed 6 July 2012.

¹⁸ For further discussion see Pearce & Turner (1992).

¹⁹ This does not mean, of course, that the amount of packaging could not be reduced, in some instances, without leading to increased food waste.

²⁰ These are discussed in Gorecki *et al* (2010, Annex A, pp. 106-141).

considering whether or not to introduce a packaging levy attention needs to be paid to the relative merits of a levy vis a vis alternatives such as EPR. This need not be a zero one decision. In other words, the issue to be addressed is not necessarily whether to employ a levy or ERP, but rather given the merits of each instrument, when each should be employed. For example, visual disamenity might be dealt with through public awareness information campaigns and/or vigorous enforcement of anti-litter laws. Fly tipping and other illegal disposal methods might be prevented by making household waste collection mandatory – at present in Ireland 29 per cent of occupied households do not use a collection service (EPA, 2012, Table 12, p. 22) – and/or vigorously enforcing the law against fly-tipping. These are issues we return to in Sections 5 and 6 below.

In this paper we take the objective of a packaging levy to be addressing the issue of unpriced externalities. However, it should be noted that arguments have been made that a packaging levy should be used to raise revenue by Comhar (Convery, 2010).²¹ This is part of a larger argument that there should be a shift in the taxation system to environmental taxation and less on labour. The basis for increased environmental taxes proposed by Comhar is the polluter pays principle, which is fully consistent with setting a packaging levy that reflects unpriced externalities.²² In the case of packaging the Comhar proposal is to apply Denmark's rates for glass bottles and by weight for other packaging waste streams. This is projected to lead to increased revenues by €60-80 million in 2014 (Convery, 2010, Table 1, p. 1). As we shall see below in Section 6, the Denmark system is designed to set prices to reflect, on a lifecycle basis, externalities.

Before applying the Denmark levy structure to Ireland, however, three issues need to be considered.²³ First, to what extent are the externalities reflected in the Denmark levy already taken into account in Ireland through, for example, levies on landfill? If this is the case then this would imply that a lower levy rate would be more appropriate. Second, to what extent is the same externality valued differently in Ireland and Denmark? For example, citizens of Denmark may not litter or fly tip with the result that these externalities would be set at zero for Denmark, but would be positive for Ireland. Furthermore, the Denmark rates appear to relate to the situation in 2000, casting doubt on their suitability for application to Ireland in 2013. Third, to what extent are the externalities already dealt with by existing policy instruments, in particular Extended Producer Responsibility, an issue addressed in Section 5 below? If that is the case then a comparison needs to be made between the efficacy of a packaging levy with these alternative instruments. Hence as with most applications of experience elsewhere to Ireland, careful attention needs to be paid to inter-country differences before a simple read across of experience elsewhere is appropriate for Ireland.

4. Structuring a Packaging Levy

An examination of packaging levies suggests a number of different ways in which they can be structured:

²¹ DJEI (2011) states that the proposal for a packaging levy derives from Comhar, the National Sustainable Development Council. See also Dineen (2011).

²² "The polluter-pays principle is the principle according to which the polluter should bear the cost of measures to reduce pollution according to the extent of either the damage done to society or the exceeding of an acceptable level (standard) of pollution." This is taken from the OECD Glossary of Statistical Terms. See <http://stats.oecd.org/glossary/detail.asp?ID=2074>. Accessed 11 July 2012.

²³ These issues were not raised in Convery (2010).

- *Weight.* Denmark, for example, introduced, in 1999, a levy based on the weight of the packaging across a wide variety of products (ECOTEC, 2001, pp. 228-231). The levy was set to take into account the nature of the material used in the packaging so as “to reduce the environmental impact of packaging, by encouraging the adoption of more benign materials” (*ibid*, p. 232).
- *Volume.* Finland, for example, introduced, in 1994, a levy that was applied per litre for containers for soft and alcoholic drinks (ECOTEC, 2001, p. 222). Lower rates were charged if the container was part of an approved reuse or recycling scheme (*ibid*, p. 222).
- *A flat fee.* Ireland introduced, for example, in 2002 a per unit charge on plastic bags of 15c (Convery *et al*, 2007). The levy was adjusted upward as plastic bag usage increased after an initial steep decline in use.

The issue thus arises as to the optimal way to set the levy, given the objective of pricing externalities which reflect the environmental impact of packaging, so as to optimise the degree of reduction, reuse and recycling of packaging.

Pearce and Turner (1992, p. 9) argue that a packaging levy should be set as follows, where the example used is a beverage or drinks container:

$$(1) L_{vi} = W_i / (L_i \cdot k_i) \cdot [MDC + MLC].$$

Where

L_{vi} = the levy on the i th container in cents per 100 litres.

W_i = the weight of the container in kg/100 litres. It is assumed that the external costs are related to the weight not the volume.

L_i = litres per container, so that W/L is weight per litre of beverage.

$k_i = 1/(1-r)$ where k is the number of times a given container is reused as with refillable bottles and r is the recycling rate as a fraction.²⁴

MDC = marginal costs of waste disposal (cents per kg)

MLC = marginal costs of litter (cents per kg).

Equation (1) has the sensible properties that the levy varies directly with the weight of the container, drops as recycling increases and declines as the externality declines.

²⁴ Pearce and Turner (1992, p. 9) derive the definition of k from equation $r = 1 - 1/k$ (1a). In discussing the relationship between trippage or the number of times a given container is reused (k) and recycling (r), Pearce and Turner (*ibid*, p. 11) comment, “[T]wo forms of recycling can be accounted for in the formula: re-use rates, as with refillable bottles, and scrap collection rates independently of any re-use. Thus, a glass bottle might be credited with being both refillable and with the fact that much glass cullet is recycled and made into new bottles. Other containers are not refillable so the trippage rates ... are recycling rates converted to trips using equation” 1a.

Using this approach would rule out levies based on volume since there is no reason why the volume of a container should reflect the externalities it generates. PET, glass and aluminium or steel containers vary, for example, in the degree to which they can be recycled and reused as well as the greenhouse gases released when disposed of after use. Little or no incentive is provided to economise on packaging which yields lower externalities, since the levy is on the volume not weight. The weight based approach of equation (1) would also rule out Denmark setting of a packaging levy so as to prevent the promoting of one kind of packaging material over another (ECOTEC, 2001, p. 232). The point of a packaging levy is to capture the externalities of different packaging materials, not to suppress the differences, so that packaging materials generating high levels of externalities face a higher levy. In the case of the plastic bag levy, however, the levy is similar to a weight based levy since plastic bags are to a considerable degree homogenous and only one form of packaging included in the measure.²⁵

A separate issue concerns where to impose a levy in the chain of production, distribution, wholesaling, retailing and consumption. Recall that the purpose of the levy is to ensure that the externalities generated in the production, use and disposal of packaging are taken into account. It is however, more than just making sure that the price of packaging reflects these costs. It is also about ensuring that incentives are created to use packaging materials in a more effective and efficient manner. In other words, a levy should induce innovation and/or a change in behaviour. Hence the levy should, other things being equal, be imposed on that agent that is best able to internalise the externality and so ameliorate the externality.²⁶ This may mean that the levy in equation (1) is decomposed and imposed at different levels. For example, the litter disamenity associated with plastic bags might be best imposed on consumers at the point of use, while the externalities relating to environmental and health might be best imposed largely on the manufacturer since they are responsible for the design of the product. However, for own or private brand products where the retailer is likely to have some discretion in specifying the design it might be appropriate to assign a proportion of the packaging levy on the retailer.

Finally, the issue arises at what geographical or political level – Ireland, the EU or the UN – should the value of externalities be decided. To some degree this should be driven by the geographic scope of the externality. In the case of visual disamenity caused by litter or the problem of fly-tipping and illegal disposal these tend to be local in nature²⁷ and are best dealt with at the level of the Member State. In contrast, CO₂ and other greenhouse gases, lead to global warming and hence should be dealt with at a supranational level.

²⁵ Plastic bags are not entirely homogeneous. They have been getting lighter (i.e. thinner) over time, even in the absence of levies. Weight based levies are possible. Denmark applies a levy per kg of plastic bags supplied. While a flat levy does not encourage further lightweighting, it may be more appropriate where litter is the main environmental impact being targeted.

²⁶ Attention also needs to be paid the practical and administrative considerations regarding the level at which to apply the levy in the supply chain. In the case of the plastic bag level in Ireland, for example, the administrative costs are low because it is integrated into the existing value added tax system (Convery *et al*, 2007).

²⁷ Of course, there may be a cross-border element meaning that the EU could become involved. For example, as noted above packaging and other waste from Ireland was illegally dumped in Northern Ireland.

In the case of excessive resource use of virgin resources, arguably this should be dealt with at the EU level. Estimating the externality and imposing what is essentially a tariff on imports from certain countries is a competence of the EU, not the Member State. Furthermore, the European Commission, acting on behalf of the EU, is in a much better position to advise and encourage, through technical and financial assistance, these countries on how to take into account the externalities generated by the excessive use of virgin resources, a much better solution than trying to deal with the issue via a packaging levy at the level of the individual Member State. Indeed, if the latter approach were adopted, then there is a danger that it could distort trade among Member States. There are also sensitivities around rich countries imposing their views on less well off developing countries, which might be better dealt with at the EU level with its record in the use of soft power.

5. Alternative Instruments for Reducing Packaging Waste: Extended Producer Responsibility

A policy instrument that has gained a considerable currency as a method of reducing waste while at the taking into account the environment and other problems of packaging is to make the producer responsible for dealing with the packaging waste. This is referred to as Extended Producer Responsibility (EPR). It has been defined by the OECD as follows:

Extended Producer Responsibility is a concept where manufacturers and importers of products should bear a significant degree of responsibility for the environmental impacts of their products throughout the product life-cycle, including upstream impacts inherent in the selection of materials for the products, impacts from manufacturers' production process itself, and downstream impacts from the use and disposal of the products. Producers accept their responsibility when designing their products to minimise life-cycle environmental impacts, and when accepting legal, physical or socio-economic responsibility for environmental impacts that cannot be eliminated by design.²⁸

The concept of EPR is used extensively in Ireland and other Member States for dealing with packaging and other waste streams. Instead of local authorities, funded by taxpayers and user charges being responsible waste collection and disposal, for certain waste streams responsibility for these tasks is assumed by the producers.²⁹ Depending on how the EPR is structured there may be an incentive for producers to take into account the costs of collection and disposal and thus have an incentive to reduce packaging levels. It is an issue we will return to below. The EPR may also contain targets for recovery and recycling.

Smith (2005, p. 8) argues that the EPR differs in three ways from the conventional way in which waste is managed through local authorities:

- EPR shifts *direct financial responsibility* (fully or partially) for the costs of the waste management 'upstream' to the producer, and away from the municipality and taxpayer;

²⁸ http://www.oecd.org/document/19/0,3746,en_2649_34281_35158227_1_1_1_1,00.html. This OECD webpage contains a guide to the extensive work that the organisation has done in the area of EPR. Accessed 26 July 2012.

²⁹ The responsibility may be partial or complete.

- EPR often *involves the producer* in some physical aspects of waste management (such as waste collection or the management of collective waste management organisations), in addition to its financing;
- EPR is designed to confront the producer with the costs of end-of-life disposal of their products, and thereby to provide *incentives* for the producer to take account of these costs in designing and marketing their products (emphasis in original).

As a result, when the producer has responsibility for dealing with packaging waste it is much more likely to take into account the costs of disposal and to take action to increase reuse, recycling and prevention in order to reduce the volume of packaging.³⁰ In contrast, the municipality and householder is not in a position to take such action and even if the municipality charged the householder by weight for the collection service the incentive for the producer to reduce packaging and packaging is likely to be much weaker.

Typically, a municipality³¹ will be able to reap the economies of density and scale that are associated with one operator being responsible for collection of household waste in a given geographical area. This is as true in Ireland as elsewhere.³² Hence for a producer to provide a similar service is likely to be substantially more costly than the local authority (Porter, 2002, pp. 32-33). As a result producers usually band together, through a Producer Responsibility Organisation (PRO), to provide the collection service, in some cases providing funding for the local authority to collect packaging and other dry recyclables as a separate waste stream.³³ In this way producers are able to realise the available scale, scope and density economies.

The EPR has been characterised in EU (2008, Article 8(1)) legislation as follows:

In order to strengthen the re-use and the prevention, recycling and other recovery of waste, Member States may take legislative or non-legislative measures to ensure that any natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has extended producer responsibility.

Such measures may include an acceptance of returned products and of the waste that remains after those products have been used, as well as the subsequent management of

³⁰ The incentive to take these costs into account will be greater the higher the proportion of the costs that are borne by producers.

³¹ In the case of Ireland, of course, in many cases local authorities are not involved in household waste collection. See EPA (2012, Table 12, p. 22) for details by local authority.

³² On economies of scale and density in household waste collection see, for example, Competition Authority (2005) and DoECLG (2012c); Andrews and Gorecki (2011) cite evidence for Ireland concerning economies of density. In Ireland, ordinary market forces operate in the household waste collection sector, with most collection being the responsibility of private operators, often with little competition over a given geographic area. Hence instead of a municipality organising waste collection through self provision or competitive tendering, private firms, often monopolies in given geographical areas, provide the service. For details see DoECLG (2012b, pp. 29-32).

³³ Waste separation may also be mandated by government in order to facilitate better waste management.

the waste and financial responsibility for such activities. These measures may include the obligation to provide publicly available information as to the extent to which the product is re-usable and recyclable.

This characterisation of EPR thus links the producer of packaging and packaging waste with responsibility for packaging once the consumer has discarded the packaging with the objective of influencing the upstream decisions of the producer concerning prevention, reuse and recycling.

Smith (2005, p. 10) has identified three common elements of EPR schemes:

- Obligations on the producer concerning the collection ('take-back') of product packaging or end-of-life products (these can be physical and or financial);
- Responsibility for the costs of proper waste management of the collected products and materials;
- Rules or targets governing the methods of waste management of recovered products, for example specifying minimum required rates of re-use or recycling.

In the case of Ireland these targets are likely to reflect those set at the EU level.

These obligations and responsibilities can be discharged by producers acting individually or collectively. As noted above in relation to collection, there are certain advantages in producers acting together or collectively through a PRO rather than alone. There are other advantages of collective responsibility. Some of the activities of a PRO take on the characteristics of a public good, in that these activities are difficult for a PRO to exclude non-PRO members from benefits, so-called free riders. This reflects the fact that typically EPR schemes leave to the discretion of the producer as to whether or not they meet the requirements set out in an EPR collectively, via a PRO, or individually, via self-compliance. The activities that may be subject to free riding includes advertising and public information campaigns that alert the public to use waste segregation correctly, schemes and events to discourage littering as well as one-off campaigns surrounding times when there is likely to be much packaging waste generated, such as Christmas. There are also other advantages of acting collectively. If IT systems, for example, have to be developed to record activity for billing as well as meeting targets, then the fixed costs can be defrayed over a large number of producers, costs that may be prohibitive for an individual producer self-complying.

6. Alternative Instruments: Complements or Substitutes?

In this section we compare a packaging levy with business as usual. This requires specification of the packaging levy based on the discussion in the previous sections, together with the business as usual scenario. In discussing a packaging levy reference will be made to the Denmark experience. Having outlined a packaging levy and business as usual, the merits of each will be compared, in terms of meeting the binding EU targets for reuse, recycling and recovery of packaging and packaging waste.

Setting A Packaging Levy

A packaging levy is set to reflect unpriced externalities. In Section 3 four categories of externalities were identified: excessive resource use of virgin resources; greenhouse gas and other emissions;

visual disamenity; and fly-tipping and other illegal disposal methods. We consider each in turn. In each case we consider whether or not the externality is already priced, in which case a packaging levy is redundant and, if imposed, lead to double regulation and the problems outlined above. The suitability of a levy with respect to the particular externality is also considered. In some instances other instruments might be more appropriate.

For reasons set out in Section 4 we consider that pricing of *excessive resource use of virgin resources* externalities is somewhat problematic at best and, in any event, should be dealt with at the EU rather than the Member State level. At the present time, however, there is no externality price set at the EU level for excessive resource use of virgin resources. This is in some ways not altogether surprising. It is likely to be a difficult and contentious task.³⁴ It is difficult because for each virgin resource for each country data would be needed on the externality (e.g. noise near a mine, greenhouse gas emissions and so on), whether the country concerned priced the externality, and if it did not what would be the appropriate price – VR_{ijk} , the externality associated with virgin resource i in country j in location k . It is contentious because as noted above a rich country would effectively be imposing its view on poorer countries. However, even if these difficulties could be overcome further practical considerations would arise.

Suppose the State has estimated all the relevant VR_{ijk} . This information then needs to be used to derive a packaging levy. Assuming that the levy were placed on suppliers of packaging, then each supplier would need to be able to itemise from which country packaging inputs were sourced and, perhaps, the precise locations within the source countries. However, the packaging supplier may not be in possession of the information, since the input may be sourced from an intermediary. Furthermore, depending on input prices packaging suppliers may switch sources constantly, putting a considerable administrative burden on suppliers to identify their packaging sources. Finally, importers of finished products would also be required to provide such information. Needless to say this is likely to be an onerous administrative task that will not only raise business costs, but also public administration since the levy will constantly have to be adjusted to reflect both changing sources of packaging and changing policies towards charging for externalities in the exporting countries. Hence it would seem that setting a packaging levy to include the externalities concerning excessive resource of virgin resource is likely to be costly for an individual Member State as well as inappropriate. It would be much better to address the problem at the EU level.

The next class of externalities is *greenhouse gases and other emissions*. In this class of externalities many are already priced and hence it would be incorrect to include them in a packaging levy. CO₂ emitted from large single point emission sites such as electricity generation stations, cement plants and so on is priced through the EU-ETS. Hence packaging suppliers take into account the increase in the price of energy due to the pricing of carbon and, other things equal, select less energy intensive packaging materials.³⁵ The price of CO₂ traded in the EU-ETS market around €8 per tonne on 12 July 2012.³⁶ There is a separate carbon tax in Ireland, which was introduced in 2010, is currently set at

³⁴ For further discussion see Smith (2005, pp. 33-35).

³⁵ It is not clear that it makes sense, from an administrative or economic viewpoint, to price CO₂ use in packaging separately through a levy rather than as part of the broader economy as occurs at present.

³⁶ <http://www.eex.com/en/Market%20Data/Trading%20Data/Emission%20Rights/European%20Carbon%20Futures%20%7C%20Derivatives>. Accessed 13 July 2012.

€20 per tonne of CO₂, and covers non-ETS emissions – from petrol, auto-diesel, kerosene, marked oil gas, liquid petroleum gas, fuel oil and natural gas, and, from 1 May 2013, solid fuels such as coal and peat.^{37,38} The carbon levy is likely to put a premium on lightweight packaging material that requires less fuel when it is being distributed.

There are also levies placed on emissions when packaging is sent to landfill, which from the 1 July 2012 is €65 per tonne.³⁹ There is no levy on emissions from incinerators.⁴⁰ In terms of the impact of leakage from landfills into the soil and watercourses it is not clear that these are not already captured by the landfill levy which will also provide resources for inspection and prosecution. Hence it appears that most of the externalities generated from greenhouse gases and other emissions from landfill are priced and hence taken into account in the generation of packaging and its disposal. To the extent that these externalities are not priced correctly, it seems much easier to simply to vary the current carbon tax either in terms of price or coverage and similarly with the EU-ETS (e.g. a minimum price of carbon), than introducing a packaging levy.

Externalities in relation to *visual disamenity* are already captured with respect to plastic bags through the plastic bag levy, introduced in 2002 and as of 1 July 2007 is set at 22c per plastic bag.⁴¹ It has generally been considered a success (Convery *et al*, 2007; Rademaekers *et al*, 2011, pp. 167-176). It is levied when the consumer purchases goods at the till. It should also be noted that there are other instruments employed by the State such as public education/information campaigns as well as enforcement of the Litter Pollution Acts 1997 to 2009, to reduce the incidence of litter.⁴² The evidence suggests that if people observe others have littered they are more likely to litter (Keizer, *et al*, 2008). However, the fact that the plastic bag levy was introduced suggests that a levy on visual disamenity can be a useful supplement to existing methods of ensuring that the visual disamenity of packaging and packaging waste is dealt with successfully. The issue is, however, are there additional visual disamenities that a packaging levy could price? Possible examples might include packaging from fast food outlets. Other forms of packaging may be less likely to give rise to visual disamenity. However, more work would need to be done in order to ensure that they are suitable candidates. In any event such disamenity levies are likely to be relatively limited in scope targeting specific disamenities, not a wide ranging packaging levy.

The final class of externalities is *fly-tipping and other illegal disposal methods*. To some extent these fall under the category of visual disamenity and greenhouse gases and other emissions. They are instances of individuals and firms that choose not to use the existing legal methods of disposal –

³⁷ http://www.citizensinformation.ie/en/money_and_tax/tax/motor_carbon_other_taxes/carbon_tax.html. Accessed 13 February 2013. The carbon tax on solid fuels is being phased in: €10 per tonne applies from 1 May 2013; €20 per tonne from 1 May 2014.

³⁸ Since the externality created by a tonne of CO₂ is same irrespective of the source, ideally there should be one price of CO₂. Since the impact extends beyond the borders of individual Member States and the EU already is involved in negotiating climate change agreements there would appear to be strong arguments for price setting at the EU level as already occurs under the EU-ETS.

³⁹ <http://www.environ.ie/en/Environment/Waste/LandfillLevy/>. Accessed 13 July 2012.

⁴⁰ <http://www.enviro-solutions.com/dailynews/090711-no-incin-levy.htm>. Accessed 13 July 2012. It should be noted that any levy on incineration should be set at a much lower level than for landfill. See Gorecki *et al* (2010) for details.

⁴¹ <http://www.environ.ie/en/Environment/Waste/PlasticBags/>. Accessed 13 July 2012.

⁴² <http://www.environ.ie/en/Environment/Waste/LitterPollution/>. Accessed 13 July 2012.

household waste collection, landfill, and so on. Ideally the levy should be placed on those households and individuals responsible for the illegal disposal methods since they are best placed to address the problem by internalising the externality (i.e. using legal methods of disposal). However, identifying the appropriate set of individuals is neither easy nor straightforward. In any event it is a law enforcement problem, with the probability of detection and the penalty (e.g. fine and jail sentence) acting as quasi levy. The probability of detection can be increased in the case of fly-tipping, for example, by compelling all households either to purchase household waste collection or provide a narrative as to how they dispose of household waste.⁴³ Furthermore, packaging does not constitute all of the waste disposed of illegally and hence is part of a larger problem that cannot easily be addressed separately. A packaging levy does not appear to be the answer.

Before concluding the discussion on setting a packaging levy reference is made to the Denmark packaging tax, since there may be aspects of a packaging levy which the discussion above omits. The Denmark packaging tax, as shown in Table 1, covers a wide array of packaging and packaging material.⁴⁴ The tax is differentiated by material type, with eighteen commodity groups covered. Material types for weight based-rates include plastic, glass and ceramics, laminate; for volume-based glass, cardboard/laminates. Products include paper and plastic bags, disposable tableware, drinks containers, packaging for soap and detergents, lubricants, perfume and margarine. The tax is based on the life cycle approach "with regard to energy consumption, CO2 emission, environmental effects, consumption of fossil resources and waste, based on the most important impacts during the life cycle of the packaging materials."⁴⁵ The life cycle assessment according to the EU "is a process of compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle."⁴⁶

Several points can be made concerning the Denmark packaging tax. First, the evidence suggests that the packaging tax did lead to a reduction in the use of packaging. Cela and Kaneko (2011), for example, test for the impact of the tax on imports of paper and packaging into Denmark and find a negative relationship with the tax. Second, the packaging tax is based on pricing the externalities identified in the discussion of the packaging levy. Furthermore, the discussion of the pricing of the externalities above into four groups covers the lifecycle of packaging, from excessive use of virgin resources to disposal through landfill. Third, the Denmark packaging tax has led to a number of distortions some of which were pointed out above. Other anomalies have been identified.⁴⁷ While of

⁴³ Such proposals are contained in the recently announced government policy on waste management. See DoECLG (2012b, p.31).

⁴⁴ <http://www.economicinstruments.com/index.php/solid-waste/charges-and-taxes-/article/218->. This contains a brief description of the Denmark packaging tax and rates. Accessed 16 July 2012. See also Klok *et al* (2006).

⁴⁵ EurActiv (2000).

⁴⁶ http://lct.jrc.ec.europa.eu/glossary?search_letter=l. Accessed 17 July 2012.

⁴⁷ "One example of the problem is that the contents of the packaging determine whether or not taxes are imposed on the packaging. Jette Thygesen [of Aarhus School of Business] doesn't find this practice logical because the packaging has the same environmental impact regardless of its contents. - To give an example, taxes are imposed on the packaging of tomato purée but not on the packaging of tomato concentrate. But since there is no clear definition of purée as opposed to concentrate from a legal standpoint, it leads to difficulty of interpretation, and it doesn't make things a whole lot easier when the products are marketed under both names at the same time. You often see the words "tomato purée" and "tomato concentrate" on the same product, says Jette Thygesen.

course these distortions can be removed, the fact that they exist demonstrates the difficulty of getting the tax correctly specified and the unintended effects that it may have. Fourth, the packaging tax in Denmark was used instead of the EPR approach.^{48,49}

Table 1
Packaging Tax, by Tax Type, Packaging Type and Product, Denmark

Tax Type	Packaging Type	Product
Volume based tax	Bottles with a volume less than 20 litres	Liqueur, wine & beer, mineral water, carbonised lemonade and other products that contain acid (soft drinks).
Weight based tax	Paper, fibreboard, textiles, glass, ceramics, plastic types, laminate, aluminium, steel, wood.	Mineral water, lemonade and other non carbonised drinks, water, vinegar and sweet oil, methylated spirits, detergents, oil-products, pesticides, paint, perfume & cosmetics, anti-freeze & windscreen washers, chemicals, dairy products, food for pets, and sauces, mustard and tomato juice.

Source: ECOTEC (2001, Table 71, p. 229).

In sum, the evidence strongly suggests the scope for a potential packaging levy is, in view of the degree to which externalities are already priced, rather limited. A packaging levy, given the administrative and other costs, is thus a less attractive option than it might be if more of the relevant externalities were unpriced. This does not mean for specific externalities, such as local disamenities, that there might be a case for a levy. However, these are narrowly defined levies, not broad based like the Denmark packaging levy.

Business as Usual Scenario: Extended Producer Responsibility

The business as usual scenario for dealing with packaging and packaging waste is the status quo and changes that can be reasonably anticipated as likely to occur in the near future. There are two principal ways in which the issue of packaging and packaging waste is addressed: first, the pricing of externalities, as set out above; and, second, extended producer responsibility, under which those covered by the obligation can either self comply or join a producer responsibility organisation

In addition, the taxes imposed vary according to whether the packaging is a part of the product or a part of the service. To give an example, an ice cream cup is subject to packaging tax if the ice cream is not placed in the cup until it is sold, whereas the cup is not subject to any packaging tax if the frozen ice cream is placed in the cup during production. In the latter case, the packaging is considered to be a part of the product. - It doesn't make any sense because, in both cases, the cup is used as a container from which you eat the ice cream and is disposed of afterwards, says Jette Thygesen." http://www.asb.dk/en/outreach/press/pressreleases/latestpressreleases/pressrelease/artikel/researcher_gre_en_legislation_on_packaging_tax_should_be_changed-3/. Accessed 19 July 2012.

⁴⁸ ERP (2011, p. 6), IBEC (2011, p. 7), Repak (2011, p. 12) and Watkins *et al* (2012, pp. 101-112).

⁴⁹ In Denmark, according to Watkins *et al* (2012, p. 109), [P]ackaging waste management costs for households are included in the budgets of local authorities and are financed via households Enterprises are responsible for management of their recyclable packaging waste, and they pay the costs of handling it."

(PRO).⁵⁰ There is only one PRO for packaging, Repak Limited (Repak), which was established in 1997 and is a non-for-profit organisation.⁵¹

S. I. No. 798 of 2007, *Waste Management (Packaging) Regulations 2007*, sets out what is expected of producers of packaging. All producers of packaging are required to separate waste into different streams and have an obligation to ensure that recovery operators have the proper documentation. However, for major producers – those handling 10 (formerly 25) tonnes or more of packaging and with a turnover of more than €1 million – there are certain additional obligations. These include meeting certain recovery and recycling targets,⁵² the reporting of certain information, on a quarterly basis, relating to reuse and the source of packaging, the preparation of implementation plans and the requirement to place certain information in local newspapers. Major producers can either self-comply with the requirements of the S. I. No. 798 of 2007 or joint a PRO (i.e. approved body) “in a scheme for the recovery of packaging and packaging waste” (Article 17(1)). Providing the producer acts in a satisfactory manner in participating in the PRO it is exempt from certain provisions of the regulations, which the PRO undertakes on its behalf. To date as noted above there is only one PRO under the regulations, Repak.

Table 2
Progress in Meeting EU Packaging Recycling, Recovery and Diversion Targets,^a Ireland, 2010.

Targets ^b	Current Progress to Target (2010)
60% as a minimum by weight of packaging waste will be recovered or incinerated at waste incineration plants with energy recovery	74%
55% as a minimum by weight of packaging waste will be recycled.	66%
No later than the 31 December 2011 the following minimum recycling targets for materials contained in packaging waste will be attained:	
(i) 60% by weight for glass	78%
(ii) 60% by weight for paper & board	84%
(iii) 50% by weight for metals	63%
(iv) 22.5% by weight for plastic, counting exclusively material that is recycled back into plastics	39%
(v) 15% by weight for wood	83%

- a. As set out in Article 6(1) of European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, as amended.
b. Target date in all cases is 31 December 2011.

Source: EPA (2012, Table 1A, pp. x-xi).

⁵⁰ <http://www.environ.ie/en/Environment/Waste/ProducerResponsibilityObligations/PackagingWaste/>

Sets out the relevant EU legislation in the area of packaging, together with the accompanying Statutory Instruments which give effect to that legislation in Ireland. Accessed 18 July 2012.

⁵¹ However, ERP (2012, p. 4) applied in 2009 to become a PRO for packaging. The DoECLG has not made a decision to date.

⁵² These are set out in Table 2 below.

Sixty two per cent of packaging waste and 97 per cent of packaging recovered in Ireland is accounted for by firms belonging to Repak.⁵³ The advantage for a producer who belongs to Repak, and participates satisfactorily in the scheme, is that they are exempt from certain requirements as a major producer and that Repak contributes towards the management and recovery of waste placed on the market by its members in such a way that it is able to realise economies of scale and scope that are not open to a single producer.⁵⁴ Approximately 2,300 firms are members of Repak which “include the major chains ..., major food and drinks producers, importers and distributors, and assorted producers across a range of the major industrial sectors” (Repak, 2011, p. 10). Repak’s operations are funded by membership fees which are based on the weight of packaging generated by a producer, but which varies depending on their contribution to the final packaging product (*ibid*, p. 9). The membership fees are used by Repak to manage packaging on behalf of its members. The management involves paying entities that recover waste, with independent auditing to confirm the accuracy of the tonnage claimed for recovery (Repak, 2010, p. 8). It also partially funds the green bin collection of household dry recyclables which includes packaging (*ibid*, p.5). Public education, awareness and prevention campaigns and programmes, including anti-litter, are also supported by Repak (2010).

As a collective organisation Repak is required, like major producers that self comply, to meet certain recycling and other targets, which reflect targets set at the EU level. As can be observed from Table 2, Ireland has successfully met or exceeded all the targets well ahead of schedule. It should be noted that not all recovery and recycling targets by different waste streams are met (EPA, 2012, Table 1A, pp. x-xi), suggesting that these targets are not necessarily easy or straightforward to meet. Nevertheless, despite the success in meeting targets Repak (2010, p. 1; 2011, p. 10) argue that the compliance scheme can be improved by, for example, better enforcement against non-compliant operators.

A Comparison of the Packaging Levy and Business as Usual

A packaging levy and the EPR are two ways of achieving the objective of reducing, recycling and reusing packaging and packaging waste. Member States tend to employ one or the other of these instruments, but not both. Only three Member States of the EU-27 have a packaging tax, with the remaining 24 having a producer responsibility scheme, sometimes combined with deposit refund (Watkins *et al*, 2012, Table 7, p. 104). Other evidence suggests that a packaging levy and EPR are substitutes. Sweden abolished its packaging tax when it introduced producer responsibility obligations (ECOTEC, 2001, p. 216). Finland, as noted above, reduced the packaging tax on drinks

⁵³ In 2010 there were 106 registered self compliers placing 45,387 tonnes of packaging on the market of which 20,196 tonnes was recovered (EPA, 2012, Table 21, p. 39). The amount placed on the market and recovered by self compliers accounted for 5.2 and 3.1 per cent of the total in 2010 (*ibid*, Table 19, p. 36; Table 21, p. 39). Repak members generated 536,000 tonnes of waste in 2010 and recovered 617,000 tonnes of waste. In other words, Repak members recovered more waste they generated (*ibid*, Table 19, p. 36 and information supplied by Repak).

⁵⁴ Repak members still have to manage their own backdoor waste and comply with other elements of packaging legislation such as the essential requirements. These requirements are detailed by Repak. For details see: <http://www.repak.ie/files/PDFs/EssentialRequirementsOfPackaging.pdf>. Accessed 3 December 2012.

containers if the container was part of an approved reuse or recycling scheme (*ibid*, p. 222). Finally, Denmark has a packaging tax, but no producer responsibility scheme.

This is not to deny, however, that a packing levy in selected instances might complement an EPR. In the case of local disamenities a levy on a particular form of packaging such as a plastic bag could be usefully introduced to meet a particular externality that is not already priced or taken into account by the EPR. Furthermore, there have been suggestions that if a particular producer responsibility scheme is not meeting the targets specified, then a packaging levy might be introduced to incentivise reaching the target, an idea advanced in Commission on Taxation (2009, pp. 355-356)⁵⁵ and used in Belgium (ERP, 2011, p.5). However, these are narrowly specified levies, not a wide-ranging packing levy of the kind employed in Denmark.

If a packaging levy and EPR are *substitutes* then it is clearly inappropriate to introduce a packaging levy *on top* of the existing EPR. This is an example of double regulation and will result in the problems, additional costs and possible unintended consequences identified in Section 3 above. Hence the question with respect to the feasibility and desirability of a packaging levy is whether or not it should *replace* the existing system of regulating packaging waste, which is a combination of pricing externalities and EPR.

As already noted above given the extent that externalities are already priced and the existence of an EPR operated by Repak, in order for a packaging levy to be introduced in Ireland would require the abandonment of the status quo and its replacement with a wide-ranging packaging levy. A number of comments can be made concerning such a proposition. The burden of these comments is that there is large number of costs associated with the introduction of a packaging levy, with few if any tangible benefits.

First, it is not at all clear that it is feasible. Some externalities are priced at the EU level such as the ETS and hence would remain, irrespective of the packaging levy in Ireland. Imposing what is essentially a tariff via a packaging levy on the unpriced externalities generated in the excessive use of virgin resources arguably is a competence of the EU and not an individual Member State.⁵⁶ Second, abandoning the status quo would require extensive legislative change, in repealing existing legislation and introducing new legislation. Third, estimating the structure and scope of a packaging levy is likely to be a major undertaking. No doubt there will be considerable representation by affected industries and sectors to influence the structure/scope which might lead to anomalies and distortions, some of which were highlighted above in relation to the Denmark packaging tax.

Fourth, considerable uncertainty would be created in the transition from the status quo to the new system, which could harm business confidence. Fifth, there is a danger that the binding EU packaging recovery and recycling targets, although met at the present time, may not be met in the future. This could result in fines and other adverse consequences for Ireland. Hepburn (2006, p. 235) argues that in considering the use of price (i.e. a packaging levy) as opposed to quantitative targets (i.e. EPR) to meet an objective that the latter is likely to be preferable. This reflects the fact

⁵⁵ The Commission on Taxation (2009) adds some caveats concerning collection and administrative costs.

⁵⁶ This would also be a problem with targets as well.

that given the grave consequences of failure to comply with EU legislation setting a target means that compliance is more likely to be achieved.

Sixth, both the status quo and a packaging levy have mechanisms to ensure that externalities are priced and taken into account in making decisions concerning reduction, reuse, recovering and recycling of packaging and packaging waste. In the case of the status quo the externalities are on the inputs into packaging and packaging waste, such as the CO₂ emissions in energy production, while under the Repak EPR the membership charges relate to the weight of packaging with the fee being higher for those with more responsible for the packaging.⁵⁷ In contrast the packaging levy – at least judging by the Denmark example – is carefully calibrated by product and the nature of the packaging material. It is not at all clear that the packaging levy is superior. Indeed, it could be argued that an EPR is superior in that under a EPR approach the PRO is more liable to take into account aspects of packaging and packaging waste disposal that do not relate to the weight – the chosen dimension on which the packaging levy is based. For example, the PRO might identify product design changes that lower packaging disposal costs and membership fees of the PRO members. It is not clear that such incentive mechanisms exist within the packaging levy. Seventh, the existing EPR, Repak, meets the binding EU targets for packaging and packaging waste. Indeed, it comfortably exceeds them as shown above. If the targets had been missed on a consistent basis then there would be a more compelling argument for reform of the approach. This does not mean, of course, that improvements in the competitive landscape under which Repak operates could not improve the performance of the packaging EPR, but that is the subject of another paper.⁵⁸

7. Deposit and Return Schemes: What Role?

Deposit and return schemes can be used to address a subset of the externalities generated by packaging and packaging waste – visual disamenity and fly-tipping and other illegal disposal methods.⁵⁹ A deposit and return scheme has been defined as follows: “the surcharge on the price of potentially polluting products. When pollution is avoided by returning the products or their residuals, a refund of the surcharge is granted.”⁶⁰ Deposit and return schemes can be provided by the market with no intervention by the State such as for aluminium cans in Greece (Hogg, 2002, pp. 104-106). However, interest here centres on instances where intervention by the State is necessary to take into account externalities that the market does not price or take into account. Hence the State mandates a deposit be charged at the point of sale to the customer and a return scheme set up to refund the deposit when the product is disposed of in acceptable way.⁶¹ At present in Ireland there are no

⁵⁷ It should be noted that the fees charged by Repak reflect its costs of dealing with packaging and packaging waste and is not set to reflect environmental impacts.

⁵⁸ As part of DoECLG’s Review of the Producer Responsibility Initiative Model in Ireland.

⁵⁹ For a discussion of deposit and return schemes see, for example, Porter (2002, pp. 86-101), and Rademaekers *et al* (2011, pp. 137-165), which examines such scheme for drinks containers in Germany and Denmark,

⁶⁰ <http://stats.oecd.org/glossary/detail.asp?ID=594>. Accessed 15 August 2012.

⁶¹ The purchaser does not necessarily have to be the person that returns the product to collect the deposit. Third parties such as the poor and homeless often collect containers and return them for the deposit (Hogg, 2006, pp. 104-106; Porter, 2002, p. 94).

deposit and return schemes for packaging (or other waste streams) mandated by the State, although other Member States have employed this instrument.⁶²

There are large variety of deposit and return schemes, but they appear to be confined largely to drinks containers.⁶³ Consumers can return the product to the retailer from which it is purchased. Another alternative is reverse vending, which seems to be confined to drinks containers, consists of machines into which a container is inserted and a deposit returned to the customer.⁶⁴ The reverse vending machine (RVM) can accept different kinds of containers (e.g. empty returnable or refillable drinks containers, disposable or non-refillable containers). The RVM identifies the container by, for example, its shape and/or bar code. These machines can be located in retail outlets as well as canteens. However, irrespective of the nature of the deposit and return scheme, the fact that they have been confined to drinks containers suggests that wider application to other packaging waste such as plastic wrapping, cereal boxes and styrofoam may be problematic.

The deposit, according to Porter (2002, pp.91-92),

... should be set equal to the extra social cost of improper disposal over proper disposal. Then, if a person disposes of the product improperly, that person pays the external cost of improper disposal by foregoing the deposit. The threat of a forgone deposit thus becomes a Pigovian tax equal to the marginal external cost.

The external costs relevant to a deposit and return scheme are likely to be visual disamenity and fly-tipping and other illegal disposal methods.

At the present time the existing EPR packaging scheme operated through Repak provides services designed to ensure that packaging and packaging waste is collected and disposed of in an appropriate manner. Repak (2010, p. 5), for example, contributes towards the funding of household kerbside dry recycling and civic amenity centres. Thus to establish a deposit and return scheme would replicate, other things being equal, in part or in whole the existing systems of collection. A deposit and return scheme would therefore raise collection costs.⁶⁵ As Rademaekers *et al* (2011, p. 153) note such schemes can be “highly expensive to implement and administer.” Nevertheless, there are issues, as noted above, concerning visual disamenity (e.g. litter) as well as the large proportion of households that do not avail of household waste collection services which suggests at least some inappropriate disposal of packaging material which may be sufficient to merit consideration of a deposit and return scheme.

In the discussion above in Section 6 it was argued that a packaging levy was not an ideal solution for dealing with the externality generated by fly-tipping and other illegal disposal methods. The reason

⁶² See references in footnote 59 above.

⁶³ Rademaekers *et al* (2011, Table 34, p. 141).

⁶⁴ The discussion of RVM draws heavily on see EC (2006, paragraphs 12-15).

⁶⁵ Perchards (2008, 2010) in a report commissioned by Repak also make the same point. They also raise a number of other problems and difficulties with the establishment of a deposit and return scheme for Ireland. It could, of course, be argued that current collection methods in Ireland can be considered deposit and return but with a zero deposit. Societal norms develop such that individuals, for example, may voluntarily deposit containers in civic amenity centres without any need for the return of a deposit to incentivise such behaviour.

adduced for this conclusion was the difficulty identifying those individuals responsible for generating the externality through illegal disposal methods. The deposit and return scheme solves that problem: only those individuals that do not dispose of the packaging in appropriate manner forfeit the deposit and hence incur the social cost of this externality. However, this issue is being addressed through a different policy instrument: all householders will have to show that they are using a household waste collection service or otherwise disposing of their waste in an acceptable manner.⁶⁶ In their study on market-based instruments Rademaekers *et al* (2011, p. 204) conclude that “[M]ore cost-effective alternatives [to deposit and return schemes] may be available, such as household waste collection.”⁶⁷

In sum, to add a wide-ranging packaging deposit and return scheme to the current system is inappropriate in view of the operation of the existing EPR packaging scheme and proposed policies concerning household waste collection, combined with the high administrative costs of a deposit and return system and the limited experience with deposit and return schemes beyond drinks containers.

8. Conclusion

The conclusion of this paper on the introduction of a wide-ranging packaging levy, other things being equal, can be simply stated. It is likely to generate a large number of costs – to the legislative process, to public administration, to business – with few, if any, tangible benefits. It would be an example of double regulation, given the existence of the packaging EPR administered by Repak and the pricing of many externalities. This is not only likely to create additional administrative burdens on producers – which will be reflected in higher prices to consumers as well as putting Irish based business at a competitive disadvantage leading to job losses – but also result in suboptimal use of packaging, which performs many useful functions.

To avoid such problems, a packaging levy should only price existing unpriced externalities. In that way there would be no double regulation. However, the evidence suggests that there are few, if any, unpriced externalities and hence the potential for a packaging levy is limited. A packaging levy, given the administrative and other costs, is thus a less attractive option than it might be if more of the relevant externalities were unpriced. This does not mean that there may be narrow quite specific externalities where a levy could be introduced, such as the plastic bag levy.

Of course, it could always be argued that one option would be to replace one method of pricing these externalities with another (i.e. a packaging levy). However, in the face of no compelling set of reasons, this does not seem like sensible public policy. There are number of practical administrative problems with this approach. For example, the pricing of some externalities is a matter for the EU and not the Member State.

To add a wide-ranging packaging deposit and return scheme to the current system is inappropriate in view of the operation of the existing EPR packaging scheme and proposed policies concerning household waste collection, combined with the high administrative costs of a deposit and return

⁶⁶ DoECLG (2012b, p. 31).

⁶⁷ Rademaekers *et al* (2011, pp. 137-165) base this conclusion on detailed case studies of deposit and return schemes for drinks contained in Denmark and Germany.

system and the limited experience with deposit and return schemes beyond drinks containers. There may be specific types of packaging waste or specific externalities, such as some forms of littering, where introduction of an economic instrument might be appropriate. However, this would require careful examination through a cost-benefit analysis.

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