

The most popular tax in Europe? Lessons from the Irish plastic bags levy

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Received: 2 May 2006 / Accepted: 20 October 2006 / Published online: 13 January 2007
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Abstract There have been occasional ad hoc efforts to influence consumer behaviour by the imposition of product taxes that reflect external costs imposed by such products that are not initially included in their price. In the spirit of this idea, in 2002 Ireland introduced a 15 Euro cent tax on plastic shopping bags, previously provided free of charge to customers at points of sale. The effect of the tax on the use of plastic bags in retail outlets has been dramatic—a reduction in use in the order of 90%, and an associated gain in the form of reduced littering and negative landscape effects. Costs of administration have been very low, amounting to about 3% of revenues, because it was possible to integrate reporting and collection into existing Value Added Tax reporting systems. Response from the main stakeholders: the public and the retail industry, has been overwhelmingly positive. Central to this acceptance has been a policy of extensive consultation with these stakeholders. The fact that a product tax can influence consumer behaviour significantly will be of interest to many policymakers in this area. This paper analyses the plastic bag levy success story and provides insights and general guidelines for other jurisdictions planning similar proposals.

Keywords Environmental taxes · Product taxes · Plastic bag tax · Litter · Ireland

1 Introduction

Edmund Burke observed that “To tax and to please, no more than to love and be wise, is not given to men.” But there are exceptions, and exceptions are usually

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interesting; the Irish plastic bags¹ levy has proved so popular with the Irish public that it would be politically damaging to remove it. In this paper we tell this unusual story—how it came about, its design and performance characteristics as regards environmental effectiveness and economic efficiency, and the lessons yielded for others considering introducing environmental taxes.

This levy is a relatively new addition to the ever-changing mural that is European environmental taxation. In a hierarchy of analytical attention, the literature has focused on environmental taxes in air/energy; water and waste respectively (see for example www.economicinstruments.com, OECD 2001; Stavins 2001; or Sterner 2003). Product taxes *per se* are not a priority. This paper is a small contribution to correcting for this asymmetry in analytical focus, by showing that product taxes, in addition to influencing consumer behaviour, can also provide efficiency and environmental payoffs, and do so at negligible cost.

Pigou (1960) made the now familiar case for environmental taxation. External costs of pollution could be internalised by imposing a tax on the pollutant at the level which reduces emissions to the point where the marginal benefits of internalisation equal the marginal costs of abatement. There is now a very broad literature on the advantages of market-based instruments (such as environmental charges or tradable permits) over command and control approaches in terms of static and dynamic efficiency, see for example Baumol and Oates (1988) or Sterner (2003). Compared to other instruments, taxation may offer advantages on equity and competitiveness grounds (Barker and Kohler 1998; Ekins and Speck 1999; Jaffe et al. 1995), and may bring about a “double dividend” as revenues are recycled to reduce other distorting taxes, e.g. on labour, see Goulder (1995), Goulder et al. (1997) and Bovenbergh and Van der Ploeg (1998). In the waste area, the literature on applications of environmental taxation has focused primarily on producer-generated pollution. Typical policies aimed at consumers attempt to reduce the volume of materials in the waste stream through deposit–refund systems, or user charges for waste collection (see e.g. Bohm 1981; Fullerton and Kinnaman 1996; Callan and Thomas 1999; or Choe and Fraser 2001). In this paper we focus on an alternative instrument, more similar to that of Pearce and Turner (1992)², a product tax, of € 0.15 per plastic bag, which has been applied in Ireland since March 2002. This tax was designed to change consumers’ behaviour to reduce the presence of plastic bags in the rural landscape, and to increase public awareness of littering. Ireland is not the first or the only country in taking action to discourage the use of plastic bags—other countries such as Bangladesh or Rwanda have banned shopping plastic bags, and Denmark applies a tax on producers and retailers—but it is perceived as one of the most successful, both in terms of public acceptance and stakeholder ‘buy in’. It is not surprising, then, that jurisdictions planning similar proposals (California, the UK, China, and Kenya among others) look upon the Irish “PlasTax” as a key referent. Prior to this study, these perceptions of success were largely untested from an academic point of view. One of the aims of this paper is to fill this gap.

¹ The term ‘plastic bag’ used in this paper is the same as defined in the *Irish Waste Management (Amendment) Act 2001*, Section 9. This Act describes a plastic bag as a bag which is *inter alia*: (a) made wholly or in part of plastic, and (b) which is suitable for use by a customer at the point of sale in a supermarket, service station or other sales outlet. For more see: <http://www.irishstatutebook.ie/ZZA36Y2001S9.html>.

² Pearce and Turner (1992) assess a tax on packaging waste.

Table 1 Maximum willingness to pay for a plastic bag

Amount	% Willing to pay
Nothing—would not pay	40
1–2 pennies (€ 0.0127–0.0254)	27
3–5 pennies (€ 0.0381–0.0635)	25
6 pennies + (€ 0.0762+)	8

Source: Drury (2000, p. 17). The survey was commissioned by the Department of the Environment, Heritage and Local Government as part of a series of surveys to learn people attitudes on the environment. This survey was carried out between the 26th November and 8th December 1999 with a sample of 1,003 Irish adults aged 18 or over. See Drury (2000) for more details

The next two sections of the paper provide details on the nature and implementation of the Irish plastic bag levy. Section 4 evaluates the performance of the tax in terms of social acceptance and achievement of its environmental objectives. Section 5 provides policy implications and conclusions.

2 The nature of the plastic bag levy

In March 2002, the Irish government introduced a levy of € 0.15 per plastic bag provided to shoppers at point of sale in retail outlets³ While prior to the introduction of the levy plastic bags were not the most prevalent litter items (constituting some 5% of the national litter composition (Litter Monitoring Body 2003)), the Department of the Environment, Heritage and Local Government stated that that plastic bag litter was a visible and persistent component of litter pollution, throughout the countryside and along the coastline⁴ Two characteristics of Ireland are germane in this respect. Firstly, Ireland is a country of frequent high winds, and bags released in the open may travel long distances. Secondly, Ireland is a country of hedgerows, with relatively small fields enclosed by shrubs, hedges, clumps of trees and ditches found along every roadside, in which discarded plastic bags are trapped and accumulate. This accumulation becomes particularly evident in winter, when the masking effect of deciduous vegetation is absent.

The tax implemented in March 2002 is not Pigouvian; there was no attempt to identify the marginal external costs and determine the optimum level of tax. However, it was explicitly aimed at changing consumer's behaviour, and fixed at an amount sufficiently high to give most consumers pause for thought, and stimulate them to avoid paying by bringing their own 'permanent' reusable shopping bags with them.⁵ Estimates of consumer's maximum willingness to pay (WTP) for a plastic bag in Table 1, show that the tax, set at € 0.15, is more than six times higher than the

³ 'Levy' is the official term used in the Waste Management (Amendment) Act (2001). In this paper, we use the words tax and levy interchangeably.

⁴ Department of the Environment, Heritage and Local Government Press release 20/12/2001: www.environ.ie/DOEI/doepub.nsf.

⁵ Customers can purchase permanent bags at the point of sale in most retail outlets. The potential substitution from plastic to paper bags instead of permanent bags was not a concern when the tax was introduced since it was not in the interest of the retailers to provide this option; many retailers in the retail survey made the observation that the storage costs of paper bags are substantially higher than those of plastic bags.

average maximum WTP, around € 0.024, and that only 8% of the consumers surveyed felt it was worth paying for a plastic bag when its price exceeded half of the approved tax or € 0.076.

An imposition of a ban on littering is a more direct approach to reducing littering in general, and the number of plastic bags released into the environment in particular. With such a policy only litterers are targeted.⁶ The Litter Pollution Act of 1997, as amended by the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003, introduced strong penalties to help combat litter pollution in Ireland more effectively.⁷ In recent years, Local Authorities have also introduced more “litter wardens” to police the act. By implementing, in addition to the existing littering ban, a plastic bag levy to target the *consumption* of plastic bags, the regulator aimed at (i) addressing the differential impact (in terms of durability and visibility) of plastic bags on rural landscape when compared with other forms of littering, and (ii) send a strong signal to consumers in order to change behaviour towards more sustainable modes of consumption.

Some critics of the tax noted that a large portion of plastic bags were reused by homeowners to contain their domestic rubbish from where they would end up in landfill. In this inert form, critics point out; plastic bags are little threat to the environment. However, in a number of surveys, plastic bags were seen as one of the most visible components of litter, suggesting that even if a large portion of plastic bags were being used for domestic disposal reuse there was scope to influencing consumer behaviour through the use of a tax.

Another relevant characteristic of the levy is its design without consideration of “double-dividend” effects. Revenues are not explicitly recycled to reduce other taxes in the economy; they are ring fenced into an environment fund operated by the Department of the Environment, Heritage and Local Government, to be used for defraying the costs of administration of the levy and the support and promotion of a variety of environmental programs. It is, however, possible that, through the use of these funds, an implicit form of revenue recycling occurs through an avoidance in tax increases required to implement the environmental projects supported by this environment fund.⁸ Finally, as the tax is imposed at the retail level on Irish shoppers, it does not introduce competitiveness concerns. The Republic of Ireland shares a land border with Northern Ireland, where there is no levy, but the costs on the consumers are such a minor proportion of the total shopping bill, and the levy has proved in any event to be so popular with the public, that there is highly unlikely to be any leakage of shoppers across the border caused by the levy.⁹

Authors such as S. McDonnell (unpublished thesis), Nolan-ITU (2002) and, more recently, UNEP (2005) have all investigated responses by policymakers

⁶ It could be argued that people whose behaviour was modified by the levy were not littering in the first place!

⁷ In the act, there is provision for an on the spot fine of € 125 or a fine not exceeding € 3,000 if convicted in court (http://www.oasis.gov.ie/environment/litter_law.html).

⁸ In personal communication with the DOELG (December 2002), officials indicated that the projects undertaken using these funds to finance *inter alia* recycling facilities and infrastructure as well as educational programmes were above and beyond the pre-existing level or the levels in the absence of such a fund. The extent of this is, however, unclear.

⁹ There is, however, a large disparity in petrol and diesel prices between the two jurisdictions, because of much higher excise duties applied in the UK, and this does result in considerable leakage of consumption from Northern Ireland to the Republic of Ireland.

internationally. The latter report has recommended seven policy responses for reducing plastic bag consumption in the context of Kenyan waste management policies. These policies include a ban on plastic bags that are less than 30 microns in thickness (as has happened in South Africa), voluntary schemes (such as in Australia), and promotion of environmentally friendly or recyclable alternative bags. In addition, producer and weight-based taxes are identified (in Italy and Denmark, respectively). The authors note that the Danish weight-based tax is better applied when the policy aim is to reduce the amount of plastic used in the manufacture of bags and that a levy based on the Irish system is 'ideal' if the main policy aim is to reduce visual litter.¹⁰ The authors also note that a consumer-based levy yields bigger reductions in plastic bag consumption but at the expense of a larger administrative burden.

3 Implementation of the levy

The possibility of an Irish plastic bag levy was discussed initially in 1994, but it was not until 1999 that Mr. Noel Dempsey the then Minister for Environment and Local Government, commissioned a report to explore the different options. After looking at levies on domestic production and importation, and on point of sale, the report recommended the imposition of an upstream levy (on producers and importers) of approximately € 0.035 per bag, similar to a tax on carrier bags in Denmark. The Danish example did, however, consist of a differentiated weight-based rate for paper and plastic. The reason given for rejecting the downstream point-of-sale levy was that it could be administratively complex. But Mr. Dempsey wanted a strong signal to be given directly to consumers, including having the choice of paying the levy and getting a bag.

In March 2000, Mr. Dempsey's proposal of a downstream € 0.15 tax per bag was agreed by the Irish Government. Since the provisions of the Waste Management Act (1996) were not strong enough to support such a levy, an amendment to that Act was duly provided in the Waste Management (Amendment) Act, (2004).

3.1 Involvement of the main stakeholders

Securing support from the different stakeholders affected by the imposition of the levy (i.e. the retail industry, Ministry of finance, the local authorities, the revenue commissioners and, crucially, consumers), was seen as a key requirement for its successful implementation.

The retail industry initially proposed a voluntary take back scheme, but once it was clear that the government was determined to proceed, the lobbying focus turned to implementation. In the design and implementation of the scheme, there was extensive consultation with the main industry representative body and the leading retailers.

¹⁰ UNEP (2005) recommends a seven-pronged approach that includes a levy on suppliers rather than on consumers. The rationale is that in Kenya, being a developing economy, the administrative burden is far less for the former policy than for the latter and there also exists a considerable 'casual' market in which it would be difficult to monitor and collect revenues from a consumer-based levy. This is not such an important consideration in developed countries.

The main concern of the retailers was that they would be blamed for ‘profiteering’. The solution was a strong publicity campaign by the Department of the Environment, Heritage and Local Government, conveying the reasons for the introduction of the levy. Another concern was that the introduction of the levy would encourage shoplifting as a result of shoppers not having standard bags. Butchers were strongly opposed to a levy that would apply to all plastic bags, on the basis that various purchases, e.g. meat, would need to be wrapped separately for hygiene reasons. Their case was accepted, and exemption was given to plastic bags below a certain size when used for blocking (separating food stuffs and other products for hygiene and food safety purposes).

Support from the Minister for Finance, the Revenue Commissioners and the Local Authorities was necessary for the collection, administration and enforcement of the levy. The Minister’s personal commitment seems to have been the strongest factor in getting the principle of a plastic bag levy introduced in practice. The acceptance by the Revenue Commissioners of a hypothecated fund was also central to increasing consumer acceptance of the levy (advertising and information campaigns explicitly stated that all revenues would be used for explicitly environmental purposes).

Drury (2000) notes a double standard among Irish consumers in the area of litter. While consumers have consistently been in favour of improved environmental protection in the abstract they have shown an unwillingness to take responsibility when it comes to their own actions. One of the stated aims of the Government was to make a link between price and good environmental behaviour in the public mind, and a strong publicity campaign was aimed at reducing the public resistance.

3.2 Operation and enforcement

The costs of implementation have been modest. One-off set up costs were € 1.2 million (devoted to the purchase of new computer systems and additional resources needed to administer the levy). Annual administering costs were in the order of € 350,000.¹¹ Advertising costs arising from the publicity campaign to launch the levy amounted to € 358,000.¹²

The revenues from the programme are ring fenced in an Environment Fund, controlled by the Minister for the Environment, Heritage and Local Government, to be used for defraying the costs of administration and the support and promotion of a variety of environmental programs. Revenues from the programme are over 30 times the costs of collection; in the first year (March 2002 to February 2003) they amounted to €12 million; in the next year, there was a small increase, to € 13–14 million.¹³ While this could be evidence of slippage in the behaviour of consumers (as revenues are generated when consumers buy plastic bags), it most likely reflects delays in the implementation of the scheme by some stores.¹⁴

¹¹ Interdepartmental agreement between the Department of Environment and Local Government and the Revenue Commissioners.

¹² Personal communication with the Department of the Environment, Heritage and Local Government and the Revenue Commissioners (December 2002).

¹³ Personal Communication, Revenue Commissioners, Ireland (December 2004).

¹⁴ The major UK department stores were initially reluctant to implement, because their centrally controlled and defined accounting systems needed to be adapted. However, after some delay, they are now fully compliant.

For most retail firms, the revenue collection and reporting is readily and easily integrated with their Value Added Tax (VAT) collection systems, so net additional costs are modest, and more than counterbalanced by cost savings in terms of plastic bag purchase foregone and additional sales of bin liners.

Enforcement is a responsibility of the Local Authorities, who make sure that the levy is charged to the end customer, and the Revenue Commissioners. This has proved to be relatively easy, as the public have 'bought in' to the scheme, and report delinquent retail outlets.

4 Evaluation of the performance of the levy

Since the introduction of the levy, the number of bags entering the consumption stream has been reduced by approximately 94% according to S. McDonnell (unpublished thesis). Pre-levy consumption was calculated at roughly 1.2 billion bags per annum Fehily et al. (1999). Post-levy consumption can be easily computed from the payments of the retailers to the Revenue Commissioners.

Measuring the presence of plastic bags in the landscape is a more difficult task. A combined project by Irish Business Against Litter and An Taisce (National Trust of Ireland) produced a number of litter surveys.¹⁵ These have found that between January 2002 and April 2003 the number of "clear" areas (i.e. areas in which there is no evidence of plastic bag litter) has increased by 21%, while the number of areas without "traces"¹⁶ has increased by 56%. These numbers are remarkably high given the long lasting nature of plastic bags in the environment. A different source, the National Litter Pollution Monitoring System notes that plastic bag litter accounted for 5% of national litter composition before the introduction of the levy. In 2002, this number fell to 0.32%, in 2003 to 0.25% and to 0.22% in 2004 (Litter Monitoring Body 2004, 2005).

In order to evaluate the impact of the levy on the main stakeholders, we conducted interviews with households and leaders in the retail sector. We did face-to-face interviews with seven leaders in the retail sector, following their completion of detailed questionnaires. The cumulative market share of those retailers interviewed accounts for approximately 50% of Irish retail sales, and represent a cross section of outlets as regards nature and scale.

Table 2 summarizes the key findings. The heading of the table indicates the retail type. Rows 1–3 contain indicators of the retailer size, such as the number of outlets they operate and the annual sales turnover. The next four rows show that the costs saved in purchase and storage of plastic bags more than offset the additional administrative and shoplifting costs. For example, Retailer A experienced savings in the region of €1.93 million in the first year of operation (bag expenditure on plastic bags forgone minus the implementation and administration costs). The numbers in row 8, calculated by S. McDonnell (unpublished thesis), estimates the reduction in plastic bag consumption at around 94%. Row 9 shows that retailers find the effects of the tax on their well-being neutral or positive, closely related to the fact that the additional costs of implementation, were generally less than the savings resulting from not having to purchase plastic bags.

¹⁵ <http://www.antaisce.org/projects/ibal.html>.

¹⁶ Traces are defined as up to five items over a linear distance of 1 m.

Table 2 Survey of retailers. Key findings

Category	(A) Supermkt multiple	(B) Supermkt multiple	(C) Symbol group	(D) Symbol group	(E) Indept	(F) Dept/Clothes	(G) Dept/Clothes
No. of outlets	80	<20	200+	400	5	4	11
Market share (%)	20–30	0–10	0–10	0–10	n/a	n/a	n/a
Sales turnover (2002, million €)	1,400	–	–	750	36	206	–
Bag expenditure before levy (million €)	2.196	0.5+	1.27	0.9	0.082	0.154	–
Plastic bag storage costs (rent, etc) (€)	12,000	–	–	–	–	–	≅0
Annual implementation costs attributable to levy (€)	100,000 ^a	15,000 start up	0	–	–	60,000	≅0
Shoplifting and trolley theft annual increase attributable to levy (€)	65,000	Rose initially then fell ^b	–	–	Rose initially then fell	0	≅0
Bag use reduction	95	90–95	99	89	89	96	–
Overall impact ^c	0	+3	0	+2	(+2, +3)	–1	(–1, 0)
Demand increase for permanent bags (%)	75	Small	–	–	Very large	–	400

Notes: Key results from face to face interviews with seven leaders in the retail sector, following their completion of detailed questionnaires. Survey conducted in January–March 2003. Heading indicates the retail type: (i) *Supermarket Multiple*: large supermarket chains focusing on groceries and associated food stuffs. Some of these chains also have associated clothes departments. (ii) *Symbol Group Grocers*: ‘convenience store’ type franchises operated under the name of the symbol group, typically located in urban and suburban areas and catering to more ‘passing trade’. (iii) *Petrol Station Forecourts*: convenience stores located in many petrol stations. (iv) *Independent Stores*: stand alone or small chain stores independent from the main symbol and supermarket multiples chains. (v) *Other store types*: large department and clothes stores. The former are typically large city centre-based organisations focusing on clothes, homewares and associated goods

^a Only minor adjustments to already operating VAT system

^b 10,000 per quarter for shoplifting and 15,000 per quarter initially

^c Retailers were asked to rate the overall impact of the plastic bag levy on their operations on a scale of –3 to +3. The former figure represented a “very negative” impact and the latter figure represents a “very positive” impact, zero indicates a “neutral” impact

Table 3 Survey of householders. Key findings

	Impact at checkout	Convenience	Expense	Environmental Impact
Positive	27	31	14	90
Neutral	60	45	60	10
Negative	13	24	26	0

Notes: Key results from a telephone survey of 100 randomly selected householders in the Dublin 01 phone area. Survey was conducted in March 2003

Implementation costs were low because book-keeping was integrated with VAT returns.¹⁷

In order to evaluate the impacts on consumers, we took a randomly selected sample of householders, and conducted a telephone survey. One hundred interviews were completed corresponding to a 42.74% response rate. Due to time and financial constraints a larger survey was not possible, but some assessment of consumer sentiment was deemed valuable. There are a number of limitations to this survey which should be highlighted. Firstly, the survey size results in a margin of error of $\pm 9.8\%$ for respondent answers. In addition, the fact that the survey was restricted to the “01” Dublin landline telephone area excludes individuals that do not own a landline or are not resident within the greater Dublin area. Reported results should be read in this context. Overall, the respondents were very much in favour of the levy. Table 3 shows that the majority felt that the impact of the levy in terms of convenience at checkouts and generally was enhanced, but that the levy has added to their expense. This latter finding is an inevitable product of the fact that householders either have to pay the levy or buy long-life bags. Virtually all respondents indicated that the impact on the environment was positive, producing a noticeable reduction in plastic bags ‘in the environment’. There was no discernible variation in these responses related to socio-economic status or degree of environmental awareness.¹⁸

Finally, Fehily et al. (1999) analysed the impact of the tax on the plastic bag industry. They estimated that in 1999, 79% of the plastic bags consumed were imported. The remaining 11% was produced by four plastic manufacturing firms operating in the Republic. Since then, one has gone out of business causing the loss of 26 jobs, but it is uncertain whether this would have happened even in the absence of the levy.

5 Conclusions and lessons

In March 2002, the Irish government introduced a levy of € 0.15 per plastic bag. The effects of the tax on the use of plastic bags in retail outlets and in the landscape have been dramatic, with usage falling by more than 90%. Annual revenues are in the order of € 12–14 million. The collection and associated administration costs are about 3% of revenues. The primary lessons from this paper are two fold: firstly, the

¹⁷ Retailer B was so pleased with the take up of its long life bags (that reduced its costs of providing plastic bags) that it advertised in its stores it was absorbing the 1% VAT increase which was introduced in 2002 because of its significant savings on plastic bags.

¹⁸ The questionnaires of the surveys are available from the authors upon request.

introduction of a price signal through the use of a product tax can influence consumer behaviour significantly; secondly, ensuring stakeholder and consumer acceptance of the tax is central to the successful implementation of such a tax. Informational campaigns highlighting the environmental impacts and hypothecation of revenues into an environment fund are central in ensuring such acceptance. In the case of this tax, high-level support from both the supporting minister and the treasury was also required.

In addition, evidence from other jurisdictions indicates that, where policymakers are trying to reduce plastic bag consumption considerably and there is a well-developed and defined retail market (and that has been consulted widely), a consumer-based “downstream” levy is the appropriate policy measure.

In regard to the latter point, the response from the main stakeholders: the public and the retail industry, has been very positive in terms of implementation and acceptance. There is a strong perception amongst all householders surveyed that the effect on the environment has been positive. Many report feeling guilty when they forget to bring their own long life bag and have to pay the levy! We are not aware of another tax that induces such an enthusiasm and affection from those who are liable to pay it. Retailers find the effects on their well-being neutral or positive, with the additional costs of implementation, book-keeping integrated with VAT returns, being modest, and generally lower than the savings resulting from not having to purchase bags. Extensive consultation with stakeholders to identify key constraints (e.g. the use of smaller bags to separate fresh food for hygiene purposes) was critical for its wide acceptance.

The commitment of a Minister at Cabinet level was crucial in ensuring that the various arms of government collaborated, so that the proposal went from concept to successful execution. Without Mr. Dempsey’s enthusiastic and effective support, it would not have happened, and it is likely that the voluntary scheme initially preferred by industry would have been selected. In addition, a robust legislative and regulatory base that involved amending the Waste Management Act was necessary.

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