Beverage Container Regulation: Economic Implications and Suggestions For Model Legislation

Charles M. Gudger* and Kenneth D. Walters**

INTRODUCTION

It is a paradox of modern industrial societies that while they recently have been encountering shortages of many natural resources, more and more resources are thrown away every year. These societies face shortages of energy and at the same time experience an ever-increasing glut of solid waste residuals and litter. In the United States, production of solid waste reached the rate of 3.32 pounds per person per day in 1971.¹

A prime contributor to this trend has been the growing use of throw-away consumer product packaging. Packaging is the largest component of municipal solid waste in the United States, 34 percent by weight.² Annual U.S. consumption of packaging materials increased from 35 million tons in 1958 to 59.5 million tons in 1970, and will reach a projected 73.5 million tons in 1976, equivalent to 661 pounds of packaging per person per year.³

The use of nonreturnable beverage containers is a significant component of the solid waste problem. The growing use of nonreturnable beverage containers represents a classic success story in modern marketing in the United States. In 1958, only two percent of the soft drink packages and 42 percent of the beer containers were nonreturnable.⁴ By 1972, 59 percent of soft drink packages and 77 percent of beer containers were nonreturnable.⁵ In 1958, 12 billion beverage containers were

¹ EPA, SECOND REPORT TO CONGRESS—RESOURCE RECOVERY AND SOURCE REDUCTION, S.W. 122, at 4 (1974) [hereinafter cited as EPA REPORT].
² Id. at xiii, 76.
⁴ Id.
⁵ MODERN PACKAGING, Jan. 1973, at 30. These figures include both nonrefillable bottles and cans. Of soft drink containers sold in 1972, 22 percent were nonrefillable bottles and cans.
manufactured; by 1972, production had risen to 60 billion.6

The trend toward nonreturnables has been promoted vigorously by container manufacturers and retailers, for they are the primary economic beneficiaries of an increasing demand for nonreturnables. Sales and profits of container manufacturers are, of course, directly related to the success with which they induce the beverage industry and consumers to use and discard a new container for each packaged beverage. Retailers prefer nonreturnables since they minimize storage and handling costs. But the marketing trend to throw-aways has generated mounting environmental costs, costs borne by society at large, not by the beneficiaries of the throw-away system.

The purposes of this article are: (1) to focus on the one legislative approach, that of Oregon, which has successfully attacked the environmental problems of disposable beverage containers; (2) to present the evidence of its effectiveness; (3) to discuss the feasibility of extending this approach to other jurisdictions; and (4) to suggest changes in the legislation to make it even more effective.

I

LEGISLATIVE GOALS OF BEVERAGE CONTAINER LEGISLATION

A. Litter Reduction

The primary stimulus to interest in beverage container legislation has surely been the mounting litter. In 1969, an estimated 2.2 billion containers were dropped on U.S. roadsides.7 And while the major focus has been on roads, such other public areas as beaches, parks, and campgrounds, and such private areas as parking lots and residential sites, have also been increasingly cluttered.

B. Solid Waste Reduction

In 1958, 58.4 billion beverage containers were filled in the U.S., but only 15.4 billion containers were manufactured. By 1969, 85.8 billion containers were filled and 46.8 billion manufactured.8 The use of throw-away beverage containers was therefore increasing much more

bottles and 37 percent were cans. Of beer containers sold in 1972, 20 percent were nonrefillable bottles and 57 percent were cans.


7. EPA REPORT, supra note 1, at 83. It is estimated that 73.1 percent of the total were cans, 17.0 percent were nonrefillable bottles, and 9.9 percent were refillable bottles.

8. Id.
rapidly than beverage consumption, adding greatly to the solid waste stream.

C. **Energy and Resource Conservation**

Before autumn 1973, little attention was paid to the energy and resource consumption associated with the increased use of throwaway bottles and cans. Until recently, few have proposed beverage container legislation on this ground because the energy and resources consumed are such a small part of national totals. It is now becoming clear, however, that energy and resource problems will not be solved by locating a single massive source of savings. Significant conservation depends on the accumulation of many modest efforts at waste reduction.

D. **Safety**

Humans and other creatures can be injured by broken glass and the discarded "pull-tops" from cans. Such injuries were not the primary motivation for the Oregon legislation, but were sufficiently serious that the Oregon legislature resolved to reduce them.  

II

**POSSIBLE LEGISLATIVE APPROACHES**

The Environmental Protection Agency (EPA) has mentioned three possible legislative approaches to controlling beverage containers: (1) a tax on containers to finance litter collection; (2) a ban on the production of certain beverage containers; and (3) a mandatory deposit on beverage containers. These legislative strategies can be used in combination, but it is useful to spell out the operation of each and to assess the effectiveness of each in furthering the environmental goals specified above.

A. **A Container Tax**

The container manufacturing industry has opposed all approaches except a modest tax on containers to finance litter collection. The tax

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10. EPA REPORT, supra note 1, at 83.
11. "Industry spokesmen have opposed all measures other than a small litter tax on each container, claiming that increases in consumption of their products over the past years have resulted largely from the 'convenient and attractive' nonreturnable packaging." Congress Considers a National "Bottle Bill," 4 ELR 10085 (1974). Washington state's "Model Litter Control Act" provides for "an annual litter assessment equal to the value of products manufactured and sold within this state, including by-products, multiplied by one and one-half hundredths of one percent in the case of manufacturers,
approach recognizes the impossibility of identifying those who litter and assessing them at the cost of cleaning up after them. The proposed alternative charges the cost of litter collection to the identifiable class most likely to be responsible for the litter: the consumers of items most frequently littered.

Although this policy is preferable to financing collection from general tax revenues in that it seeks to internalize collection costs, the policy fails on broader grounds. Any approach which focuses exclusively on financing litter collection fails to address the basic environmental goals which beverage container legislation can achieve: litter reduction, solid waste reduction, resource and energy conservation, and greater safety. If only a modest tax is assessed per container, consumers feel only a slight disincentive to purchase. Consequently, energy and resource consumption, solid waste, and litter and its hazards are scarcely alleviated. A high enough tax could substantially alter consumer choices, but industry officials will only support a modest tax. Moreover, a heavy tax burdens all consumers of beverages, not just the litterers on whom the costs should rest. Note, too, that special constitutional issues attend a taxation statute whose primary purpose is not to raise revenue but to regulate other activity.

B. A Selective Container Ban

A second legislative tool is a ban on certain kinds of beverage containers. A mandatory deposit system for beverage containers itself amounts to a ban on all one-way no-deposit containers. But some have felt that legislation should go further, explicitly forbidding all nonrefillable containers. The argument is that the environment is served better by reusing containers than by recycling, since it uses fewer resources to transport and wash bottles than to transport, melt, and remold cans and glass bottles.

and equal to the gross proceeds of the sales of the business within this state multiplied by one and one-half hundredths of one percent in the case of sales [at] wholesale and/or retail." WASH. REV. CODE 70.93.120 (1971).


14. As of July 1, 1976, South Dakota will require that "every beverage container sold or offered for sale in [the] state be either a reusable container or a container which is biodegradable according to standards to be established . . ." 34 S.D. COMP. LAWS § 16C-9 (1974). Vermont will ban "pull top" cans and nonrefillable bottles as of January 1, 1977. VT. STAT. ANN., title 10, ch. 53 (1975).

15. Data on the energy efficiency of beverage container alternatives was recently compiled by EPA and published in a 178-page report, Resource and Environmental Profile Analysis of Nine Beverage Container Alternatives. The results of the study have been summarized as follows: "Reusable glass bottles have lower overall impacts on resources and the environment than other conventional containers, according to an
However, an outright ban on nonrefillable containers would deny consumers the option to buy canned beverages. The environmental advantages of refillable containers must therefore be weighed against this loss of consumer choice. In our view, since cans apparently are uniquely suited to some consumer uses and preferences, they should not be banned outright.16

Cans without detachable parts are lawful in Oregon, as long as they may be redeemed from consumers for at least five cents.17 The effect of the Oregon statute has been to increase greatly the market share of bottled beverages, at the expense of cans.18 Several factors contributed to this result. First, retailers prefer to handle returned bottles, since they stack and pack easily, while returned cans often have no uniform shape. Second, most consumers seem to prefer bottled beverages, especially if the “pull-top” feature of cans is not available.19 Third, beverages have always been more expensive in cans, and the added deposit makes the shelf price look even higher.

The swing to bottles has had serious consequences for those beverage makers unwilling to package their product in bottles, and for “contract canners” who can a variety of beverage brands for many different clients.20 The greater use of bottles, however, is consistent with the environmental goals of the legislation.

16. Banning nonrefillable containers also discourages new container technology which could perhaps produce a nonreusable container with fewer environmental drawbacks than present nonreusable containers.


19. Aside from the unavailability of pull top cans, the reasons for the demonstrated consumer preference for bottles are not clear. The greater sales of bottled soft drinks in Oregon cannot be explained by differences in shelf price, the price of the beverage plus the mandatory deposit, since the deposit has not increased shelf prices of soft drinks in cans more than those in bottles.

20. In the case of one contract canner of soft drinks in Oregon, volume fell so
C. A Mandatory Deposit System

A third legislative approach places a mandatory deposit on all beverage containers. The Oregon legislation includes this approach under these key provisions:

(a) All carbonated beverage containers (with the exception noted below) sold in the state must have a minimum refundable deposit of five cents.\textsuperscript{21}

(b) Refillable containers used by more than one beverage manufacturer may be certified by the Oregon Liquor Control Commission. A certified container has a minimum refundable deposit of two cents.\textsuperscript{22}

(c) The deposit on any carbonated beverage container must be refunded by any retailer or wholesaler who sells that kind, brand, and size of beverage.\textsuperscript{23}

The mandatory deposit system is more effective in reducing litter than the tax approach, as the litterer himself takes an immediate loss if he discards a container with a market value. And the deposit refund is an incentive for others to retrieve discarded containers.

In considering the potential efficacy of a mandatory deposit system, the amount of the proposed deposit is important. The deposit amount will affect the actions of both consumers and bottlers. There has been considerable discussion on the appropriate legal minimum deposit. Some have urged a relatively low deposit for two reasons. First, too high a deposit could discourage consumption. The purpose and effect of the law should be to alter consumer decisions as little as possible, consistent with environmental objectives. Second, a high deposit may make it cheaper for brewers and bottlers to buy new containers than to redeem returned ones. Under a mandatory deposit law, the manufacturer must redeem containers that are returned, but he is not required to make the return convenient. The Oregon experience suggests that returns are more closely related to convenience than to the amount of the deposit. Thus the deposit refund should be low enough to stimulate beverage manufacturers and bottlers to positive efforts to get the containers returned. Only when it has this incentive will the industry make returns most convenient for customers.

This point of consumer convenience merits some elaboration and explanation. If the bottler or brewer has an economic incentive to get

\textsuperscript{21} ORE. REV. STAT. § 459.820(1) (1974).

\textsuperscript{22} ORE. REV. STAT. § 459.860 (1974).

\textsuperscript{23} ORE. REV. STAT. § 459.830 (1974).
containers back, his agent not only will accept but will seek containers from retailers, whether or not the bottler has provided that retailer with that exact size or brand of container. The retailer, knowing that he can get his money back quickly and easily, will in turn accept containers from the customer regardless of their precise size, shape, or color. If, on the other hand, the producer has no economic motivation to redeem containers, he can refuse to buy back from a retailer any but the specific type of containers he has supplied him. The retailer will accordingly refuse redemption, obliging the customer to find a retailer who handles that specific item. The Oregon experience illustrates the operation of such economic incentives for bottlers and brewers. A “certified” beer bottle, uniform for two or more brands, carries a two cent minimum deposit, refundable on return. The cost of the brewer to return, store, handle, and wash the bottle is approximately one cent.24 A new bottle, however, costs 4.2 cents.25 Redemption thus saves the brewer 1.2 cents per bottle. Brewers are therefore quite willing to redeem a certified bottle, even of another brand, so retailers willingly accept them. By this process the certified bottle is being returned by Oregon consumers at a higher rate than any other container, despite its low deposit.26 If beer bottles carried a five cent deposit, a brewer would be better off to discourage returns, keep the five cent deposits, and buy new containers. His agent then would not accept bottles of other brands, would pick up bottles less frequently, and might take other action to discourage retailer redemptions.

Bottlers have a similar economic incentive to redeem soft drink bottles for five cents, since new bottles currently cost about ten cents.27 Since soft drink bottlers have not desired to give up the brand image of their containers, no certified (uniform) bottle is currently used in this sector. Consequently, bottlers do not redeem bottles of other brands. Most retailers, however, handle all major brands and will accept any size and type of those brands that the bottler will readily redeem. Soft drink bottles are thus quite convenient to return, but less so than certified beer bottles. The importance of consumer convenience is shown by the lower rate of soft drink bottle returns, despite the higher deposit. Clearly any

24. The average cost per container of return freight for the Oregon market is about 0.458 cents. The extra cost of handling returned rather than new containers is about 0.208 cents each. Washing and sterilizing cost about 0.25 cents.
25. This price was quoted to the authors by Oregon brewers in 1974.
26. Gudger & Bailes, supra note 18, at 20-22 found that the return rate of certified bottles is 95 percent; of non-certified soft drink bottles, 91 percent; of cans and non-certified beer bottles, approximately 70 percent.
27. This price was quoted to the authors by Oregon soft drink bottlers in 1974. However, prices of soft drink bottles vary considerably depending on size and design. Typically they are more costly than beer bottles, as they are heavier, must hold higher pressures, and tend to be more highly decorated.
mandatory deposit legislation proposal must not overlook the certification and deposit amount issues.

III

ACHIEVEMENT OF LEGISLATIVE GOALS: THE OREGON EXPERIENCE

A. Litter Reduction

The Oregon law's effect on reducing total litter cannot be directly ascertained. It has been estimated, perhaps conservatively, that five percent of discarded beverage containers are littered.\(^{28}\) Whatever the precise percentage, a dramatic increase in the proportion of containers returned to beverage manufacturers should result in a large decrease in littered beverage containers.

The only data available on litter change resulting from the Oregon law concern roadside litter. Oregon governmental agencies have conducted monthly litter counts on 25 to 30 one-mile sections of highway since October, 1971. These indicate a 92 percent reduction in the item count of carbonated beverage containers littered after the law's effective date.\(^{29}\)

B. Solid Waste Reduction

In the first calendar year under the Oregon law the use of refillable containers increased from 32 percent to 95 percent for malt beverages and from 60 percent to 91 percent for soft drinks.\(^{30}\) The number of refillables actually returned increased from 75 percent to 95 percent for beer and from 80 percent to 92 percent for soft drinks. Moreover, nonrefillable containers such as cans and one-way bottles have been returned at a 70 percent rate, whereas previously they were largely discarded. These changes in container use and return rates have resulted in 133.75 million fewer bottles and 251.75 million fewer cans per year entering the solid waste stream.\(^{31}\) These figures represent an 88 percent reduction in the carbonated beverage container component of solid waste. It is notable that this reduction of 385.5 million containers per year was achieved in a state that represents only 0.8 percent of the national market.\(^{32}\)


\(^{29}\) MAINTENANCE SECTION, OREGON STATE HIGHWAY DIVISION, OREGON GOVERNOR'S LITTER COMPOSITION SURVEY (1972-73).

\(^{30}\) The empirical data in this section are from Gudger & Bailes, supra note 18, at 24-26.

\(^{31}\) Gudger & Bailes, supra note 18, at 67. These figures were obtained by comparing 1972 and 1973 container use patterns and rates using 1973 sales volumes.

\(^{32}\) Bakkensen, A Comparative Analysis of the Impact on Social Welfare of
Estimates of dollar savings to governmental agencies and the public at large through reductions in solid waste and litter are tenuous and can be misleading for two reasons. First, a reduction in volume does not necessarily result in a similar reduction in total costs. Costs for trash disposal and litter cleanup are much more a function of the frequency and thoroughness of pickup activities than they are of total waste volume or weight. Second, costs in both areas are subject to easy manipulation. Litter collection costs could go up or down simply by a government official's adjustment of litter pick-up allocations, quite aside from the effect of the quantity of litter on collection costs.\(^\text{33}\)

C. Energy and Resource Conservation

The Oregon law mainly affects energy and resource usage in that 350 million fewer beverage containers per year are manufactured for the state's market.\(^\text{34}\) Since making an all aluminum can consumes 38 percent more energy than a bimetallic can,\(^\text{35}\) we will conservatively assume that before the Oregon law went into effect the 220 million cans used annually in the Oregon market were bimetallic. The total energy used to extract the raw materials, manufacture these cans, and transport them to bottlers comes to 1,744 billion BTUs,\(^\text{36}\) the energy equivalent of about 14 million gallons of gasoline or 511 million kilowatt-hours of electricity. Offsetting this yearly energy reduction is approximately 62 billion BTUs used to transport and collect the larger quantity of returnable containers.\(^\text{37}\)

Only 35 percent as many bottles and 17 percent as many cans are being made for Oregon since the mandatory deposit law.\(^\text{38}\) The resources used for glass manufacturing (primarily sand) have always been considered to be virtually inexhaustible. One ingredient, however, soda ash, has recently had a substantial price increase, suggesting at least a short-term shortage.\(^\text{39}\) A 65 percent reduction in bottle use nationally

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\(^\text{33}\) Oregon's "Bottle Bill" and Washington's "Model Litter Control Act" 173, 1973 (Stanford University senior honors paper).

\(^\text{34}\) Although this has not happened in Oregon, former Governor Tom McCall, a strong supporter of the law, could, for example, have shown highway cleanup savings on paper merely by spending less money on it. In fact, litter collection expenditures in Oregon have been increased since the beverage container law was passed. This has led to erroneous conclusions that litter has increased or that the law has failed to produce savings in litter collection costs.

\(^\text{35}\) Gudger & Bailes, supra note 18, at 67.


\(^\text{37}\) Calculations of energy savings are based on Hannon, id. at table 5.

\(^\text{38}\) Id.

\(^\text{39}\) Calculated from Gudger & Bailes, supra note 18, at 24-26.

would use 845,000 fewer tons of soda ash, a 15 percent reduction in its use for all glass manufacturing.40

The resources used in metal containers present a different picture, since the future availability of the necessary metal ores is being questioned.41 Although the percentage of steel and aluminum used for beverage containers in 1969 was only 2.0 percent and 5.6 percent of the market, respectively,42 a reduction in container manufacturing would contribute to conservation of these resources. Notably, Australia and New Zealand, which supply a large proportion of bauxite to the world aluminum market, are seriously considering a ban on the use of aluminum in beverage containers. Even if such predictions of resource shortages as those in The Limits to Growth43 prove exaggerated, a shortage of U.S. production capacity in both steel and aluminum is widely predicted.44 The changes in container use in Oregon have saved approximately 16,000 tons of steel and 2,000 tons of aluminum per year.

D. Safety

It is not possible to know the extent to which injuries to people and other animals have decreased under Oregon's bottle bill. Wildlife experts testified at hearings on the bill that many fish die from swallowing "pull-tops," mistaking them for food. The Oregon Court of Appeals, in upholding the constitutionality of the law, noted that one of the hazards the legislature sought to control was "the injury to children's feet caused by pull-tops discarded in the sands of our ocean shores."45 Presumably these hazards have been reduced in Oregon, but no study has been conducted to verify it. Nor have we any information on the reduction in injuries from broken glass. One must simply assume that with fewer bottles littered there are fewer injuries from broken pieces of such litter.

IV

THE ECONOMIC IMPACT OF THE OREGON LEGISLATION

While the above purposes are worthwhile, obviously some costs are involved in pursuing environmental goals. Consumer choice, the market

40. Calculations are based on Bingham & Mulligan, supra note 28, at 11.
42. Bingham & Mulligan, supra note 28, at 14.
43. MEADOWS, ET AL., supra note 40, at 64-65.
structure, and labor markets have also felt the impact of Oregon's bottle bill.46

A. Directly Affected Businesses

The business sectors directly affected by container legislation are the container manufacturers, brewers, beer distributors, soft drink bottlers and canners, and retailers. Effects on manufacturers of steel and aluminum were not included in the Guder and Bailes study, because of the production capacity shortages forecast for these industries. In any case, Oregon's share of the container market is so small that the effects would be almost impossible to trace. The one business saving to result from legislation encouraging container returns is the lowered cost of buying new containers. Although this saving is only available to brewers and bottlers, it has outweighed all other business cost increases.

Brewers and bottlers supplying the Oregon market are saving $16.5 million annually on the purchase of containers, a direct result of the container use and return patterns fostered by the bottle bill. The actual savings in other markets of similar size will vary according to the percentage of the beverage container market captured by refillable containers and the increase, if any, of the rate at which the containers are returned.

The adverse effects of a return system on business are the loss of profits by container manufacturers and the added costs of shipping, handling, storing, sorting, washing, and filling refillable containers. These costs offset the container savings, and thus bear a direct relationship to container use patterns and return rates. These offsetting costs vary considerably among different sectors of the industry and among individual firms in each sector. The Gudger and Bailes study does not deal with differences among individual firms, but only with the total effect on each business category, regardless of whether the members of that sector are located in Oregon. A brief summary of savings and offsetting costs in each sector follows.

1. Container Manufacturers

The loss of $16.5 million in annual sales results in a profit decrease of $265,000 for bottle manufacturers and $350,000 for can manufacturers. These figures may be conservative, as they were obtained by applying the industries' average profit per dollar of sales to the amount of the sales decline, and do not include the contribution of the lost sales to overhead costs. With Oregon's relatively small market size, the meth-

46. Unless otherwise noted, the data in this section are from Gudger & Bailes, supra note 18, at 30-60.
od is at least reasonable. A national law would have a far greater effect, because beverage containers represent a large proportion of container manufacturers' volume.

2. **Malt Beverage Brewers**

Malt beverage brewers enjoy operating cost savings by reducing container purchases. Moreover, unrefunded deposits partially cover the cost of those containers that are purchased. Offsetting the brewers' $10.5 million saving in container purchases are their increased costs of using returnables. Filling bottles is more labor-intensive than filling cans. Returned bottles must be received, handled, stored, washed, and sterilized. Inbound freight costs are incurred in bringing containers back to the breweries. Outbound shipping costs are higher for returnable bottles than for one-way containers, particularly cans, because they weigh more, take more space, and require more protective packaging. These higher operating costs total $4.7 million for the brewers serving the Oregon market. In addition, brewers have always charged more for products packaged in cans and nonreturnable bottles than in returnables. The shift to returnables has thus lowered brewer revenues by $400,000.\(^{47}\) In total, the brewers' savings of $10.5 million are offset by cost increases of $4.8 million and revenue diminutions of $405,000, for a net increase in annual income from operations of $5.3 million.

3. **Malt Beverage Distributors**

Wholesale distributors enjoy no cost savings, but have experienced increased costs in delivering and returning the added volume of returnable bottles. This extra cost is about ten cents per case, but in some instances is reimbursed by the brewers. The total yearly operating costs of distributors were increased by $589,000. Since distributors were handling 30 percent returnables before the law's inception, a price increase of seven cents per case would cover the added expense.

4. **Soft Drink Bottlers**

Soft drink bottlers also realize cost savings by purchasing fewer containers. Their share of this saving, approximately $5.75 million, is similarly offset by the added costs of filling, washing, sorting, storing, and packaging returnable containers. As bottlers usually manage their own distribution, they have costs similar to those of beer distributors in delivering and redeeming returnable containers. These handling costs are significantly higher for bottlers than for distributors. Soft drink bottlers must deal with many more sizes and varieties of containers, and

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47. Gudger & Bailes, *supra* note 18, at 43-44.
must make more deliveries of smaller quantities, particularly to vending machines. Consequently, their handling cost per case for returnable bottles is about 19 cents higher than for cans. This figure agrees closely with previous industrial engineering studies, which found a 16.1 cent differential. In total, the bottlers' $5.75 million savings are reduced by annual cost increases of about $2.98 million, for a net increase of $2.76 million in annual income from operations.

5. Retailers

Retailers enjoy no cost savings under the bottle bill. Returnable containers are more costly for retailers to handle because they must be checked in, refunded, handled, sorted, and stored. A detailed supermarket industry study showed that the extra cost of handling returnables is in the vicinity of one cent per container. The figure is quite close to the Gudger and Bailes survey result. Since 45 percent of all beverages came in returnable containers before the law, a price increase of one-half cent per bottle would almost recover the added cost. Overall, the annual operating cost increase to retailers is about $3 million.

In summary, offsetting the $16.5 million savings, businesses have total cost increases of approximately $12.5 million. The net effect of the Oregon bottle bill on directly affected businesses has been an increase of $4 million in annual income from operations. The following table recapitulates the net results.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Increase in Income</th>
<th>Decrease in Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Manufacturers</td>
<td>$ 264,000</td>
<td></td>
</tr>
<tr>
<td>Can Manufacturers</td>
<td>$ 350,000</td>
<td></td>
</tr>
<tr>
<td>Malt Beverage Brewers</td>
<td>$ 5,328,383</td>
<td>589,000</td>
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<tr>
<td>Malt Beverage Distributors</td>
<td></td>
<td></td>
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<tr>
<td>Soft Drink Bottlers</td>
<td>2,764,675</td>
<td></td>
</tr>
<tr>
<td>Retailers</td>
<td></td>
<td>2,945,825</td>
</tr>
<tr>
<td>Totals</td>
<td>8,093,058</td>
<td>4,148,825</td>
</tr>
<tr>
<td>Less Decrease in Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Increase in Income</td>
<td>$ 3,944,233</td>
<td></td>
</tr>
</tbody>
</table>

The above figures do not include one-time costs such as expenses to convert to a returnable system. The annual amortization of these costs, which would diminish the indicated income gains, has not been included in the above figures. These costs, however, could not reverse

49. Bingham & Mulligan, supra note 28, at 183. The study found 0.0028 man hours per container; personal interviews indicate an average wage of about $4.00 per hour.
50. Gudger & Bailes, supra note 18, at 59.
the total positive effects on industry's operating income, as they are not recurring.

B. The Effect on Consumers

The most direct potential impact of container legislation on consumers would be its effect on beverage prices. Indirect effects could also reach such areas as product choices, competition, inconvenience, deposits, losses, utility, and interest losses. We will examine each of these issues.

1. Prices

Because the Oregon law took effect just prior to a period of rapid inflation, the effect of the law on beverage prices should only be derived by comparing prices in Oregon to those in other similar states. The authors' comparison between the 1973 price changes in Oregon and Washington showed that prices rose in both states, but suggests that the Oregon law had no particular influence. Soft drink prices increased more in Washington than in Oregon, but the price of beer increased less.

2. Consumer Choice

Consumer choice has been reduced under the law, but to a minimal degree. Except for the "pull-top" can, no type of container is prohibited, so most of the wide range of consumer choice remains. It is true that some brands are no longer available in cans, but on the other hand some brands were not available in returnable bottles before the law. Some malt beverage manufacturers have withdrawn from the Oregon market. However, their total volume represented less than 0.6 percent of Oregon sales.51 No loss of soft drink product availability has been reported.

3. Loss of Deposit Funds

When consumers pay deposits on beverage containers, they suffer losses on the containers they fail to return. In such cases there is no net economic loss, since the beverage manufacturer gains the exact amount of the unclaimed refund. Moreover, the consumer forfeiting the refund is the one throwing away or littering his containers. Thus he, rather than the general public, is paying for his wasteful actions. Furthermore, the available refunds provide an economic incentive for someone other than the litterer to retrieve containers and return them. In fact, the percentage of containers returned has increased, and deposit losses in Oregon are

lower than they were before the bottle bill, even though total deposits are much higher.

4. Loss of Interest on Deposit Funds

Professor Ben Branch argues that the money consumers have tied up in returnable containers represents an interest loss in that beverage containers are not income-producing assets. This loss is a "small but significant cost,"\(^{52}\) Branch claims. We find this assertion debatable on two grounds. First, it seems that few consumers would invest the 12-cent to 30-cent deposit per six-pack in interest-bearing securities or income-yielding assets. Second, the amount of the consumers' deposit investment is in the hands of beverage manufacturers, who would seem to be in a better position to realize interest from it. Thus, if there is any overall effect, it would probably be for interest income to rise. This assumption was not, however, included in Gudger and Bailes' business income estimates.

5. Consumer Convenience and "Utility"

Some have urged that the environmental damage of a throw-away system is outweighed by its convenience to consumers. The issue is questionable, however. In the first place, since all containers are now returnable, the consumer no longer need separate returnables from nonreturnables. Except for a few unique containers, most can be returned to almost any retail outlet, so segregation by place of purchase and multiple trips to return containers are seldom necessary. It is hard to weigh the relative inconvenience of returning all containers during a regular shopping trip against carrying some to the trash and some to their respective places of purchase. In the Gudger and Bailes survey of Oregon retailers, not a single reply indicated consumer dissatisfaction with the inconvenience of returning containers. Moreover, Oregon consumers appear not to have been deterred by this supposed inconvenience. The return percentage of containers sold has risen from 35 percent to 93 percent since passage of the act.\(^{53}\)

The contention that container legislation reduces consumer "utility" is even more questionable. This line of reasoning holds that because consumers used to spend millions of dollars more for one-way containers, the elimination of "convenience" containers demonstrates a multi-million dollar utility loss. But in the first place, the convenience of return has been greatly increased. Secondly, the consumer can still treat

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the containers as one-way if he wishes. The law does not prohibit throwing away containers, it only discourages it. Throwing away a certified beer bottle and losing the two cent deposit is still less expensive than buying canned beer was. Yet consumers are returning these bottles at the highest rate of all containers, demonstrating that they either perceive no utility loss or never highly valued the “utility” of throwing containers away.

C. Effect on Market Structure and Competition

It has been alleged that a beverage container law drives many producers from the market and thereby reduces consumer choice, hinders competition, and leads to greater market concentration. Although no data are available on these matters for the soft drink industry, the law’s effect on the market structure and competitive situation of Oregon’s malt beverage industry is a matter of public record. Monthly sales statistics are published by the Oregon Liquor Control Commission.

Market concentration and consumer choice in Oregon have remained mostly unchanged since the law requiring a mandatory deposit on beverage containers took effect. In fact, the market share of the major malt beverage producers has declined marginally. Prior to the law, the top four producers accounted for 78.27 percent of Oregon sales, and the top eight held 93.85 percent. Another 23 brewers shared the other 6.15 percent of the market.64 Two years after the bottle bill became law, the top four producers claimed 77.70 percent of the market, and the top eight had 93.04 percent.65 An additional 17 brewers sold the remaining 6.96 percent.

The net drop in the number of brewers marketing in Oregon from 31 to 25 does represent a loss for consumers, but few beer drinkers were deprived of their favorite brands. The combined market share of the 11 dropouts was 0.58 percent before the law’s effective date. Only one dropout held more than 0.06 percent of the market, and that one had 0.38 percent. Most of the dropouts had 0.01 percent of the market or less. As of July, 1974, almost two years since the law, five new brewers had entered the Oregon market.66

From the foregoing it can be seen that the effect of the Oregon law on consumer choice has been very slight, and the industry’s market structure has not been further concentrated to any great extent.

54. OREGON LIQUOR COMMISSION REPORT, supra note 51, July 1972.
55. OREGON LIQUOR COMMISSION REPORT, supra note 51, July 1974.
56. Id. Four brewers, accounting for 2.5 percent of the 1972 market, dropped out of the Vermont market as a result of the Vermont mandatory deposit law. Branch, supra note 52, at 17.
The loss of a few brands from the market might suggest that the law caused a reduction in competition. However, national statistics indicate that the Oregon experience is in line with the rest of the country, even though most other states do not have mandatory deposit laws. Between 1950 and 1972, the number of breweries in the U.S. decreased from 407 to 147. At the same time, the national soft drink producers have increased their market share substantially at the expense of local bottlers.

Obviously, small local producers across the country have been suffering competitive disadvantages of many sorts. A beverage container law such as Oregon's does not overcome the disadvantages of smaller advertising budgets and smaller distribution chains, but a return system is slightly less costly for local firms with shorter transportation hauls. Such a law thus favors the small brewer or bottler in one small respect, and to that extent may foster competition.

D. The Effect on Labor

The Oregon law has caused labor dislocations. The net effect has not been detrimental, but there is no doubt that the law's effects on individuals have been negative in some cases. Container manufacturers have definitely reduced their work forces. However, the return system is more labor-intensive in all other sectors of the beverage industry than the one-way system. Beverage manufacturers have added production labor. Brewers, bottlers, and distributors have added truck drivers and warehouse labor, and all sectors have added sorters, handlers, and other labor. It has been contended that the displaced labor is highly skilled and the added labor is low in skills. To some extent this is true, but not universally. For example, in testimony on S. 2062 before the Senate Commerce Committee's Subcommittee on the Environment it was stated that glass blower apprentices who have been displaced made $4.50 per hour while truck drivers who have been added were paid $7.00 per

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59. From Gudger & Bailes, supra note 18, at 32-35 we may estimate employment losses of 220 in can manufacturing and 240 in bottle manufacturing, based on average employment per million dollars of sales lost.
60. Id. at 52-53. The authors estimate net additions in soft drink bottling, including losses in contract canning, as 15 production workers, 35 truck drivers, and 35 handlers, for a total of 85.
61. Id. at 40-45. The authors estimate brewers' additions as 80 production workers, 50 handlers and 50 truck drivers, either employed by brewers or contract carriers. They estimate that distributors added 60 truck drivers and 40 handlers. Id. at 46-48. They estimate from grocers' reported increases in labor hours that retailers added 460 equivalent positions. Id. at 57-60.
62. Branch, supra note 52, at 19.
hour.\textsuperscript{63} The net effect of the Oregon law has been an increase of 365 full-time equivalent jobs and $1.6 million in annual wages.\textsuperscript{64}

V

THE CONSTITUTIONAL CHALLENGE

So far, the most serious challenge to the Oregon bottle bill has been the claim that it violates the Equal Protection and Commerce Clauses of the United States Constitution. Out-of-state brewers alleged that the legislation had the effect of discriminating against them by forcing them, in effect, to pay increased transportation and handling costs for the empty containers, thus giving local manufacturers a competitive advantage.

In response to these claims, the Oregon Court of Appeals held that although the law had an effect upon interstate commerce, the legislation was a valid exercise of the state police power reserved to the states by the 10th Amendment.\textsuperscript{65} The court noted that the Oregon law was intended to promote legitimate environmental objectives, and did not give a competitive advantage to Oregon firms. The court also found that the legislation was reasonably related to achieving that legitimate objective.

The court noted that effective environmental laws will inevitably help some firms and hinder others: "As with every change of circumstance in the market place, there are gainers and there are losers."\textsuperscript{66} Stressing that one of the firms suffering the greatest losses under the law was a soft drinks cannery in Eugene, Oregon, the court said, "The evidence is clear that the cost of adjustment to the new exigencies of selling beverages in Oregon will be spread throughout the beverage industry, its suppliers, manufacturers, and distributors without regard to whether they are Oregon-based firms."\textsuperscript{67}

The court concluded that the state "is under no obligation to maintain equal levels of competitive advantage for all producers regardless of their distance from the market. We hold that the refund provisions of the bottle bill neither operate nor are designed to operate as devices of protection for Oregon interests."\textsuperscript{68} And indeed the relative market shares of Oregon-made beer and out-of-state beer did not change significantly under the law.\textsuperscript{69}

\textsuperscript{63} Hearing on S. 2062 Before the Subcomm. on the Environment of the Senate Comm. on Commerce, 93d Cong., 2d Sess., at 80, 118 (1974).
\textsuperscript{64} Gudger & Bailes, supra note 18, at 69.
\textsuperscript{66} Id. at 696.
\textsuperscript{67} Id. at 703.
\textsuperscript{68} Id.
\textsuperscript{69} Oregon Liquor Comission Report, supra note 51.
On the Equal Protection issue, the court, in addition to finding the law reasonably related to achieving the legislative objectives, also noted that it was immaterial that only one aspect of the litter and solid waste problems was being dealt with, but not others. Citing Railway Express v. New York\textsuperscript{70} and Williamson v. Lee Optical,\textsuperscript{71} the court reiterated the position taken by the U.S. Supreme Court that the legislature may deal with a problem one phase at a time.\textsuperscript{72}

VI

PROPOSED LEGISLATION

A. The Amount of the Mandatory Deposit

1. Reusable Containers

For the reasons discussed in section III (C) above, legislation should specify a maximum deposit level which is not too high. Given the industry cost structure, a maximum deposit of 75 percent of the original cost of the container retains the economic incentive for manufacturers to redeem, yet provides flexibility, so that the law will not have to be amended to reflect price changes over time.

2. Nonreusable Containers

Nonreusable containers present a special problem. Since the value of a nonreusable container to a bottler who redeems it is its worth as scrap, and since it costs slightly less than one cent to pick it up and return it, there is no economic incentive for the bottler to redeem it. In fact, there is good reason to discourage returns; bottlers would prefer to retain the five cent deposit and save the return cost. Under these conditions, retailers and bottlers redeem only those containers that the law forces them to redeem. A distributor, for example, is not required to redeem cans from a retailer who does not stock his cans. Consequently, retailers will redeem from consumers only the particular brands and sizes they sell. Despite the five cent deposit, cans are therefore being returned at substantially lower rates than reusable bottles.

Properly developed legislation could overcome the problems inherent in the use of nonreusable containers, while keeping them available for consumers who truly desire them. First, to prevent discriminatory deposit levels from being used to discourage refillable containers, the minimum deposit for nonreusable containers must be at least as high as

\textsuperscript{70} 336 U.S. 106 (1949).
\textsuperscript{71} 348 U.S. 483 (1955).
that charged by the dealer on a non-certified reusable container of equal size. No maximum need be specified. Second, to prevent manufacturers from profiting by retaining the deposits on unreturned containers, manufacturers selling beverages in non-refillable containers should be required to remit unrefunded deposits on such containers to the taxing authority. Third, to stimulate them to seek returns aggressively, manufacturers should be taxed at 20 percent of the value of all unredeemed containers. Thus an economic incentive makes it advantageous for bottlers to redeem non-refillable containers and bear the expense of collecting them. Administration of such a regulation would be relatively simple. Only beverage manufacturers would be required to report, and, when containers are redeemed far from the manufacturer, certified receipts from salvage dealers could serve as evidence of return.

B. Certification

The Oregon statute provides that containers used by more than one beverage manufacturer may be certified by the Oregon Liquor Control Commission.73 A certified container has a minimum refundable deposit of two cents. The statute further stipulates that a container may not be certified "if by reason of its shape or design, or by reason of words or symbols permanently inscribed thereon, whether by engraving, embossing, painting or other permanent method, it is reusable as a beverage container in the ordinary course of business only by a manufacturer of a beverage sold under a specific brand name."74 The purpose of certification is to enable competing manufacturers to make their containers fungible, and to aid consumer convenience. The Oregon experience has shown that, at least in the beer market, the certification process can lead to greater efficiency in the handling and return of empty bottles, and improved consumer convenience.

Many beers in Oregon now come in uniform 11-ounce "stubby" bottles. It is easier for consumers to return them, since virtually any store selling beer will redeem certified bottles. The lower deposit reduces the "shelf price" of the product. Some brands are still marketed in unique bottles, but these carry a minimum deposit of five cents.

Soft drink manufacturers have not opted for certified containers, since the shapes and colors of their bottles are often important for brand identification. Some soft drink manufacturers who have historically sold primarily in cans may seek to have a standard container certified. Likely candidates are the "house brand" soft drinks marketed by some of the major retail grocery chains.

73. ORE. REV. STAT. § 459.860 (1974).
C. Redemption Centers

If all beverage containers require a deposit, what will best assure the consumer of a convenient place to return them for refund? In our view, the best solution is not to set up government-operated redemption centers, but rather to specify by law that retailers who sell beverages must redeem all containers of a size, shape, and color sold by the suppliers with whom they do business. Thus retailers will accept all containers which they can readily pass on to an appropriate distributor.

The Oregon statute does not go this far, requiring only that a retailer or distributor accept “any empty beverage containers of the kind, size and brand sold by the retailer or distributor.”75 A retailer or supplier need not accept a container of a brand he does not carry, even though the container is identical to others he sells. In practice, with the great majority of brewers using the certified 11-ounce “stubby” bottle, virtually all retailers selling any brand of beer in this bottle will redeem all such bottles, regardless of brand, even though they are not legally obligated to do so. Since certified bottles are fungible, the retailer has no difficulty selling them to any brewer who supplies him with beer in such bottles. As mentioned earlier, the cost of new bottles is greater than the specified deposit, so brewers in Oregon are eager to buy back all the certified bottles they can find, regardless of the brand labels they display.

Consumer convenience is best served by redemption at retail outlets. Redemption at specialized centers requires consumers to make special trips, while redemption at stores does not. Furthermore, there is no economic incentive for privately owned and operated redemption centers to exist unless retailers find it in their interest to finance such a venture. Our estimate is that it would be more costly for retailers to subsidize special redemption centers than to continue to accept bottles in their stores. Retailers are free to pass container processing costs on to beverage consumers, of course.

D. Level of Government

At what governmental level is legislation economically and legally feasible? There are examples of actual legislation at the municipal and state levels and proposed legislation at the federal level, so we can assess the special issues to face in drafting and implementing legislation at each of these levels.

1. The Municipal Level

At least three municipalities have enacted laws regulating beverage

containers: Ann Arbor, Michigan; Oberlin, Ohio; and Bowie, Maryland. New York City has had a similar law under consideration for some time, but a recent report suggested that political influences from industry have delayed its enactment. It is questionable whether municipal legislation can effectively fulfill the legislative goals of reducing litter, solid waste, and resource usage. Since a municipality's jurisdiction is limited, the impact a municipal law has will necessarily be smaller than that of a state law covering the municipality. This is not to say that municipal laws have so little impact as to be ineffective. The realization of legislative goals is more a function of the population and market size of a jurisdiction than the governmental level at which the law is enacted. New York City legislation would do more to reduce litter, solid waste, and resource usage than many state laws combined. And if the state legislature declines to act, local legislation may be the only alternative. Schroth and Mugdan thus conclude that "local legislation . . . should not be foregone where nothing better is within reach. . . ."

There is little question, however, that local legislation is less effective in achieving environmental goals than is broader-based legislation embracing numerous local markets. Furthermore, small municipalities may not wish to establish bottle certification procedures, since beverage makers are unlikely to accommodate the special requirements of a small market. Small municipalities also could not enforce provisions for economic incentives for convenient returns, such as the provision that the government receive unrefunded deposits on nonrefillable containers. Under these circumstances, legislation in a small market should be limited to requiring a deposit on all beverage containers. The deposit on non-refillable containers should be at least as high as the deposit on a similar size of refillable container, so as to prevent discrimination in favor of non-refillable containers and to provide a system to encourage returns. This system would do much to accomplish the goals of reducing litter and promoting safety. To the extent that returned containers were recycled, it would also help reduce solid waste. The legislation could not be expected to affect greatly the patterns of container use outside the municipality, so it would have little success in reducing resource and energy use.

If it were a municipality's intent to achieve to the utmost all legislative goals, it could do so by banning the sale of beverages in nonrefillable containers. But this approach would compromise consumer choice, especially in small municipalities where not all brands are

77. N.Y. Times, July 8, 1974, at 1, col. 1.
marketed, and might lead consumers to do their shopping out of town. It might also cause some producers to withdraw from the market, to the further detriment of consumer choice and competition. To our knowledge, no empirical data are available as to the magnitude of any of these effects.

2. The State Level

Most of the problems facing a small municipality are less applicable to large municipalities, states, and the federal government. However, at least one problem is greater at higher levels, the loss of consumer choice if non-refillable containers are banned entirely. In our opinion such a ban is clearly undesirable at higher levels of government.

Some have argued that mandatory deposit legislation at the state level would drastically reduce beverage sales. The data from Oregon's experience belie this fear. In the first year after the Oregon law became effective, sales of malt beverages were up 1.38 percent over the preceding year, a trend which Gudger and Bailes found to be "above the projected trend-line" for the preceding 11 years. They concluded that "the hypothesis that the bill has caused a decline (or a decrease in the growth rate) of malt beverage sales cannot be supported." Neither is there any evidence that sales of soft drinks are below trends. It would appear, then, that Oregon consumers did not flock to neighboring states to purchase beverages in disposable containers, even though much of Oregon's population lives in Portland, on the Washington border. The unavailability of beverages in throw-away containers did not seem to discourage beverage sales within Oregon.

Besides Oregon, Vermont is the only other state to have enacted mandatory deposit legislation. Vermont's experience has been less fortunate than Oregon's with respect to beverage sales. Following the effective date of the Vermont law, sales for a seven month period were 8.5 percent under the comparable period in the preceding year, compared to increases in receipts for the neighboring states of New York (2.2 percent) and New Hampshire (8.4 percent). Retail prices of beverages went up drastically in Vermont following the law, but there is evidence that such increases were not caused by comparable cost increases.

The Vermont statute provides that "A deposit of not less than five cents shall be paid by the consumer on each beverage container sold at the retail level and refunded to him upon return of the empty beverage container."

79. Gudger & Bailes, supra note 18, at 11.
80. Id.
81. Id.
83. Branch, supra note 52, at 17.
container."\textsuperscript{84} No provision is made for certifying uniform containers to qualify for a lower deposit as is done in Oregon. In the spring of 1975 Vermont amended its law to ban "pull-top" cans and nonrefillable bottles.\textsuperscript{85} The prohibition on nonrefillable bottles was apparently necessary because the mandatory deposit provision had not succeeded in keeping throwaway containers off the market. The major supporters of the ban on nonrefillable bottles were retail grocers, who complained about having to sort too many kinds of bottles, refillables to be picked up by bottlers and nonrefillables to be shipped to the dump.

South Dakota is the only other state which has enacted legislation to control beverage containers. The South Dakota statute specifies that

Every beverage container sold or offered for sale in this state, subsequent to July 1, 1976, shall be either a reusable container or a container which is biodegradable according to standards to be established by the secretary.\textsuperscript{86}

It is unclear whether the statute intends to outlaw all cans, or whether the expectation is that the secretary will distinguish between aluminum and steel cans, holding the latter to be biodegradable. No mandatory deposit is established by South Dakota, nor does it establish a certification process to encourage use of uniform bottles.

3. \textit{The National Level}

At least nine beverage container bills have been introduced in Congress, four of which require that a deposit be refunded to consumers returning beverage containers. They differ primarily in administrative details. The differences in the bills were recently summarized as follows:\textsuperscript{87}

One would ban all one-way carbonated and malt beverage containers (one-way defined as a container without a ten cent refundable deposit)\textsuperscript{88}; another would require the Secretary of the Treasury to prescribe regulations under which "to the maximum extent the Secretary determines practicable" all alcoholic beverage containers shall be reusable\textsuperscript{89}; a third would place so high a tax on non-returnable beverage containers as to make them prohibitively expensive, require a minimum five cent deposit on returnable beer, wine, or carbonated beverage containers, and provide for a system to coordinate return of bottles for reuse or recycling.\textsuperscript{90} Two bills would rely upon enforce-
ment provisions of the Internal Revenue Code and one provides for a $1000 fine per violation, each offending container constituting a separate violation.

A national mandatory deposit law similar to Oregon's would have far reaching positive effects. First, all the environmental goals of such legislation could be substantially furthered by federal action. To cite just one example, EPA calculates that if 90 percent of all bottles were refillable, and each bottle were filled ten times, the energy saved in beverage container manufacture would be equivalent to 92,000 barrels of oil per day.

The economic effects of federal legislation may differ slightly from similar laws at lower governmental levels but can be projected with some degree of accuracy. The temptation would be eliminated for businesses to relocate in order to avoid operating under the law. The danger of driving away business, and thus tax revenues, is an inhibition on smaller jurisdictions contemplating container regulation. Aside from modest tax losses in Vermont, stemming, we believe, from deficient provisions in the Vermont law, no evidence suggests that existing laws have in fact resulted in such evasionary tactics. A national law, however, would completely eliminate these objections to legislation.

Among the principal gains of national legislation may be listed the following. (1) Consumers could redeem containers at any retail outlets selling such containers throughout the nation. (2) Consumers from all states would have an economic incentive not to discard containers, reducing the litter and waste disposal problems aggravated by nonreturnables bought in one state and discarded in another. (3) Containers once discarded would likewise be subject everywhere to the incentive for people to retrieve them and return them for the deposit.

A further advantage of national legislation is that long transportation hauls of empty beer bottles, necessary where only a few states have mandatory deposit laws, would be reduced. The brewing industry is organized into nine geographical regions in the continental United States. Brewers in each region would be able to acquire bottles returned in the region in which each manufacturing plant is located. Industry statistics show that production and consumption of beer is so evenly matched within these regions that uniform bottles would not need to be returned farther than to an adjacent region.

93. Congress Considers a National "Bottle Bill", supra note 11, at 10086.
94. Vermont has no certification procedure by which standard or uniform containers may qualify for a lower deposit. See VT. STAT. ANN. title 10, ch. 53 (1975).
96. Id.
Experience in Oregon during the past two years has shown that legislation imposing a mandatory deposit on beverage containers is effective in promoting the environmental goals of reducing litter, reducing solid waste, conserving resources and energy, and promoting public safety. The beverage industry itself has not been detrimentally affected to a significant degree; the major loser is the container industry.

Other possible legislative approaches, such as taxes on containers to finance litter collection and bans on the production of certain containers, appear to be either less effective than a mandatory deposit system in achieving the legislative goals, or more likely to have other disadvantages, such as a diminution of consumer choice.

Such alternative tactics as the “Keep America Beautiful” campaign and the attempted enforcement of litter laws have no doubt had some impact, but they have not markedly reduced litter, and are not even designed to solve the problems of solid wastes and resource and energy usage. The major drawback of such approaches is that there is no cost to the consumer for making waste. While there may be a fine for littering, it is prohibitively expensive to police littering effectively.

The alternative of relying on the market for recycling may show promise in the future if the cost of resources continues to rise, but sorting waste after it has accumulated is inefficient compared with a mandatory deposit system, which keeps the various containers segregated from each other and from other trash. Furthermore, recycling is costly and inefficient compared to reuse, since breaking down and remaking containers generally costs more than transporting, washing and refilling them.

The mandatory deposit system creates a ready market for beverage containers in which, ideally, consumers have an economic incentive to return containers and beverage manufacturers have an incentive to purchase them. The Oregon experience has shown that the deposit need not be high to entice consumers to make returns. The deposit should be lower than the cost of new containers, so that beverage manufacturers find it cheaper to reuse bottles than to purchase new ones. When these conditions are met there is no need to finance public redemption centers. The ideal redemption system allows consumers to return most containers to most retail outlets, as is the case under the Oregon law. Although legislation has proved to be feasible and desirable at the municipal and state levels, the rationale for national legislation is even more compelling.