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Page 213, table 4: The last five figures in column 2 should be, reading down, 1.20, 1.42, 1.23, 1.68, and 6.74. For note a, read “Figures from table 3 divided by column 1 of table 4.” For note b, read “Column 1 of table 4 divided by figures from table 3.”
DUMPING AND ANTIDUMPING: THE RHETORIC AND THE REALITY OF PROTECTION IN INDUSTRIAL COUNTRIES

J. Michael Finger

A wide gap separates the rhetoric from the reality of protection in industrial countries. Antidumping is the current reality of that protection. Protectionist interests stretch the definition of dumping as far as they may to shelter actions against imports under the antidumping umbrella.

This article is about antidumping, in particular about the history of antidumping regulation and its evolution under the GATT system into a major instrument of protection. The thesis is straightforward: antidumping is the fox put in charge of the henhouse—ordinary protection with a good public relations program. There is little in its history to suggest that the scope of antidumping was ever more particular than protecting home producers from import competition, and there is much to suggest that such protection was its intended scope.

The article has three sections. The first looks into the origins of antidumping regulation, the second examines contemporary regulation (antidumping under the GATT), and the third summarizes the significance of the first two.
times and for different reasons. These actions have been in response to the particular circumstances of the situation, and have often been conditioned by the demands of special interest groups. The authorities have generally assumed a permissive attitude toward requests for protection and failed to inquire into the impact of the measures applied on other industries and on the allocation of resources in the national economy. (p. xv)

The rhetoric of protection in developing countries was import substitution, the reality was ordinary protection. Recognizing the difference was an important step toward the many liberalization programs now under way in developing countries.

The gap between the rhetoric and the reality of contemporary protection is equally large in industrial countries. Antidumping is the current reality of that protection. According to Horlick and Oliver (1989, p. 5), two of Washington's top trade lawyers, such trade remedies 'have become the usual first choice for industries seeking protection from imports into the United States.' The United States is not alone. Although the EC '92 program is carrying the European Community (EC) toward more liberal internal policies, antidumping actions are the principal face of its trade policy toward the rest of the world. Australia, for several years in the mid-1980s, had more antidumping cases than any other country and seems to have regained that position in 1990-91. In Canada, antidumping has been a major instrument of trade policy for almost a century. Although antidumping provides the legal avenue used by protectionist interests to force the government to act against imports, almost half of such cases reach a negotiated, out-of-court settlement—a voluntary export restraint or a voluntary export price minimum—rather than a formal legal end.

Foreign dumping is the rhetoric industrial countries use to excuse contemporary protection. This rhetoric gives antidumping the aura of being a special measure to undo a special problem—it suggests that somehow, although antidumping restricts or threatens to restrict imports, it is not really protection, but something that will, in the end, allow the world economy to function more effectively.

But the presence of dumping, objectively defined, does not determine when an antidumping action will or will not be taken, any more than the strictures of the import substitution development model determined when a developing country did or did not restrict imports. When the politics of the matter compel the government to take action against imports, the legal definition of dumping can be stretched to accommodate that action. In a practical sense, the word "dumping" has no meaning other than the one implicit in antidumping regulations. Its operational definition is the following: dumping is whatever you can get the government to act against under the antidumping law.
The Origins of Antidumping Regulation

Dumping, under one name or another, has been part of the rhetoric of political economy for a long time. Jacob Viner (1923), the first scholar to pull together previous writing on the subject, notes a sixteenth-century English writer who charged foreigners with selling paper at a loss to smother the infant paper industry in England. Viner also notes an instance in the seventeenth century in which the Dutch were accused of selling in the Baltic regions at ruinously low prices in order to drive out French merchants. Alexander Hamilton, in his Report on Manufactures of 1791 (cited in Viner 1923, p. 37), used much the same argument against English manufacturers who were exporting to America. But, as in the pre-twentieth-century incidents described by Viner, Hamilton was not arguing for action specifically against foreign dumping. He was arguing for a high and protective American tariff behind which the manufacturing industry could prosper in the new country.

The history of antidumping in Canada provides an explicit lesson as to what antidumping is—ordinary protection. Its history in the United States provides an explicit lesson as to what it is not—an extension of antitrust regulation.

The First Antidumping Law: Canada, 1904

The Liberal Party government in Canada was in a bind in 1904. Cursing the tariff was an important tactic for getting votes from farmers; keeping it high was an important way of obtaining contributions from manufacturers to carry the party's campaign to the public. The Liberal Party owed its majority to the support of Canada's farmers, and its failure to reduce the tariff as promised was threatening to alienate that support, propelling a movement to break from the Liberal Party and create an independent farmers' party (Viner 1923, p. 193).

At the same time, Canadian steelmakers were pressing for higher tariffs on steel rails. As Canada's western plains were opened to immigrants, Canada's first transcontinental railroad, completed in 1885, was earning attractive profits, and railroad building began to surge. The U.S. Steel Corporation, recognizing an opportunity, set out aggressively to sell steel rails to Canadian railroaders. Canadian steelmakers alleged that U.S. Steel was unfairly aggressive and was dumping rails into the Canadian market (Easterbrook and Aitken 1988, pp. 438ff).

The Canadian government would have found it very hard to limit any tariff increase to steel rails alone. In Canada as in other countries, determining tariffs was not a discriminating process. Once the tariff was opened for revision, all producers to which the government owed a political debt would come forward; the increased tariff would spread to other iron and steel products, to textiles, to farm equipment, and on and on. (See Schattschneider's 1935 study of the log-rolling dynamic of setting tariffs in the United States.)

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The Canadian minister of finance, W. S. Fielding, in presenting his proposed solution in June 1904, explained the situation as follows (quoted in U.S. Tariff Commission 1919, p. 22):

We find today that the high tariff countries have adopted that method of trade which has now come to be known as slaughtering, or perhaps the word more frequently used is dumping; that is to say, that the trust or combine, having obtained command and control of its own market and finding that it will have a surplus of goods, sets out to obtain command of a neighboring market, and for the purpose of obtaining control of a neighboring market will put aside all reasonable considerations with regard to the cost or fair price of the goods; the only principle recognized is that the goods must be sold and the market obtained.... This dumping, then, is an evil, and we propose to deal with it.

Fielding's argument was not novel. Such alleged evildoing by foreigners, real or imagined, had for several centuries been a familiar justification for a higher tariff. It was a target of opportunity for interests seeking protection. The difference this time was that Mr. Fielding proposed to make antidumping an instrument of opportunity.

The substance of the proposed antidumping regulation, which is quoted in U.S. Tariff Commission (1919, p. 21), was contained in the proposal's first paragraph:

Whenever it appears to the satisfaction of the minister of customs... that the export price... is less than the fair market value thereof, as determined according to the basis of value for duty provided in the Customs Act... such articles shall, in addition to the duty otherwise established, be subject to a special duty of customs equal to the difference between such fair market value and such selling price.

The invention of antidumping was not a signal departure from what was standard practice at the time. Canada had a long history of making clever changes in the procedures for customs valuation to achieve increased protection. McDiarmid (1946, pp. 8–9), in his history of Canadian commercial policy, concludes that “Canada's principal contribution to the technique of trade restrictions has been in giving the executive and administrative branches of government a wide measure of control over the effective rate of duties through artificial valuation of goods for duty purposes.” Any pretext administrators could find to increase the customs value of a product would now have a double impact on the cost of importing the good. As with any trick of customs value, the regular tariff, assessed at an ad valorem rate, would be higher, and increases in the special antidumping duty would match dollar for dollar any increases in the customs value.

Canadian manufacturers at first opposed the antidumping law: making dumping illegal would vitiate one of their more effective arguments for a higher
tariff. But as soon as the law was passed, U.S. Steel raised its prices in Canada by the amount required, and this example of the law’s potential did not escape the attention of other manufacturers. The government held hearings in 1905–06 at which Canadian manufacturers supported the antidumping law: “We heartily approve the principle embodied in the tariff legislation of 1904, but we are of the opinion that steps should be taken by the government to give more practical effect to the legislation” (quoted in U.S. Tariff Commission 1919, p. 25). They went on to offer suggestions for making enforcement more effective.

Soon afterwards Canada, Australia, and New Zealand passed antidumping laws, and a series of such laws was passed in the United States. By 1921, the United States, France, Great Britain, and most of the countries of the British Commonwealth had antidumping laws in place. Dumping, of course, was not a new issue, so the explanation of why the time was ripe for passage of antidumping laws lies in several other factors.

**HOSTILITY TOWARD GERMANY.** Hostility toward Germany, combined with the popular conviction that German enterprises were particularly vicious dumpers, was certainly a factor. Viner (1923, p. 63) quotes a propagandist who insisted, as World War I neared its end, that “the German government was accumulating vast stocks of goods in order to dump them on the markets of the world... and regain in the field of economic warfare what she was losing on the military battlefield.” Viner then comments that “these accusations have an interesting parallel in the similar charges brought against England after the Napoleonic Wars and the War of 1812, but they appear to have had even less basis.”

**THE HALO EFFECT OF TRUST-BUSTING.** Trust-busting was in the political air at the end of the nineteenth century and the beginning of the twentieth. This provided a step up for any law that proposed to do something about the evil trusts. The emotion of trust-busting could be even more intense when directed at a foreigner. Frank Taussig, Harvard professor and first chairman of the U.S. Tariff Commission, once noted that “competition of any sort is unwelcome enough; competition from foreigners seems always to be regarded with particular dread” (Taussig and White 1931, p. 196).

Although emotion did lead to overstatement, the concern with regulating the evils of predatory trusts was not trivial, and price undercutting, employed just often enough to make its threat credible, was used by captains of industry to build and expand trusts. Driving the independent enterprise out of business was not, however, the trust’s usual objective. Too much money would be lost and too many assets run down by price cuts severe and enduring enough for that purpose. A quick merger, profitable to both companies, would be better. John S. McGee (1958) explains the logic of this approach and documents that it was the way things usually went. Officers of the independent company usually became officers of the trust (see Yergin 1991, ch. 2, for examples).
HIGH TARIFFS EVERYWHERE. Every country except Great Britain had a high tariff in those days. These tariffs gave national firms the opportunity to price monopolistically at home and at the same time protected them from reimports of goods they sold competitively in world markets. In the United States, an important part of the populist argument against the tariff was that it allowed and protected domestic monopolies. Cordell Hull was Franklin Roosevelt's secretary of state and the father of the U.S. Reciprocal Trade Agreements Program. In his memoirs, Hull (1948, p. 52) writes about the first speech he made as a U.S. congressman:

I made a vigorous attack on the high tariff and the monopolies and trusts that had grown up behind it. No kind of effort to curb and suppress trust violators [can] succeed unless such effort strikes at the main source of their constant creation—the protective tariff.

A NEW WAY TO DO IT. Canada had invented a new way to regulate foreign competition. The mechanics of enforcement under the Canadian law were seductively straightforward and familiar. Other high-tariff countries used valuation procedures similar to Canada's, and many of Canada's innovative uses of such procedures were soon copied by other countries. Where there is a way, there will soon be a political will.

The Evolution of U.S. Antidumping Law

In the early twentieth century the tariff was, for most countries, the major instrument for regulating imports. And in the United States, as in other countries, the evils of foreign trusts first entered trade politics as an argument for higher tariffs. But antidumping has a different history in the United States than in Canada. In Canada, policing the evils of monopoly power (trusts) was never more than rhetoric. In the United States at the early stages of antidumping regulation, the mechanics more closely matched the rhetoric—early U.S. antidumping regulations were, in substance, extensions of antitrust law. But these laws did not restrict imports, which is what the motivating politics demanded, and the pressure for change continued. The evolution of the U.S. antidumping law provides a graphic illustration of how different antidumping regulation is from antitrust law once antidumping has become a useful instrument for regulating imports.

THE SHERMAN ANTITRUST ACT OF 1890. The Sherman Antitrust Act of 1890 prohibits, under severe penalties, every contract or combination that restrains interstate or foreign commerce and every monopolization of or attempt to monopolize such commerce. Application of the act to sales of imports was severely limited by the Supreme Court, which refused to apply it to any sales contract that had been made in the exporting country rather than in the United States.
SECTION 73 OF THE WILSON TARIFF ACT OF 1894. The U.S. Congress, in section 73 of the tariff act of 1894, attempted to extend the scope of the Sherman act to imports by making unlawful every conspiracy or combination that was (a) engaged in importing and (b) intended to restrain trade or to increase the U.S. price of an imported article. Up until the time of Viner's writing (1923), the law had been invoked only once, against an association of U.S. bankers and importers plus the Brazilian state of São Paulo, to limit Brazilian exports and thereby rig the price of coffee on the U.S. market.

ANTIDUMPING LAW OF 1916. During World War I, the rise of anti-German sentiment and the widespread popular conviction that German enterprises were particularly vicious perpetrators of predatory dumping led to considerable pressure for revising the tariff upward. But the U.S. administration of President Woodrow Wilson, like the Canadian government in 1904, chose not to risk opening the tariff for revision and instead proposed legislation aimed specifically at foreign dumping. In line with the Wilson administration's recommendations, the U.S. Congress, in sections 800–801 of the revenue act of 1916, made it illegal to import goods at a price substantially below the “actual market value” in the producing country or in countries to which the goods were commonly exported providing there was an intent to injure, destroy, or prevent the establishment of an industry in the United States or to restrain competition.

This law is still on the books, but John J. Barcelo (1991), in his review of antidumping laws and actions, found that despite the attractive lure of triple damages, only one serious private suit had been brought under the law: a 1970 suit by Zenith Radio Corporation against Matsushita Electrical Industry Company. The suit was dismissed on summary judgment when Zenith did not provide facts to support a plausible theory of predatory dumping.

THE U.S. TARIFF COMMISSION STUDY OF 1919. In 1916, the U.S. Tariff Commission, at its own initiative, began investigating foreign competition in the U.S. market and Canada's experiences with its antidumping law. The key questions in its investigation of foreign competition sought “personal knowledge of unfair competition through the selling in the United States of articles of foreign origin at less than the fair market value when sold for home consumption in the country of origin” (U.S. Tariff Commission 1919, p. 12). The commission contacted 562 U.S. business enterprises directly. In addition, thirteen associations of producers or traders circulated the commission's questions to their membership. Thus, every enterprise in the United States against which imports provided some degree of competition was informed of the investigation and had the opportunity to respond.

The commission's survey of virtually every business enterprise in the United States found twenty-three that claimed knowledge of foreign dumping. Almost six times as many reported that they had no knowledge of unfair foreign competition or dumping. Of the complaints of foreign competition, the commission

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classified by far the largest share as "severe competition." An example demonstrates the tenor of these complaints (U.S. Tariff Commission, p. 15):

Patent leather. After the enactment of the last tariff bill, Germany began to ship in grain-finished patent leathers made from cowhides and kid skins and these leathers were sold at a lower cost than we could produce the same article in our country, although we were the originators of grain-finished patent leathers.

Several of the complaints classified by the commission as dumping had a similar tone (U.S. Tariff Commission 1919, p. 14):

Japanese army equipment leather. Our representative in the East reports the sale of Japanese leather at prices that barely cover the cost of the green hide, to say nothing of the cost of manufacture.

These statements are similar to those that Schattschneider (1935), in his study of the U.S. politics of protection in the 1920s and 1930s, quotes from statements made before tariff committees to justify a higher tariff rate. They are all based on the cost-equalization formula, the principle of protection that dominated the tariff politics of the day. (The 1908 Republican Party platform statement of the formula is quoted on page 140.)

We see, then, that advocates of antidumping regulation presented no singular reasons for this unique form of import protection. As in Canada in 1904, the voice that called for antidumping action was the voice of ordinary protection.

ANTIDUMPING LAW OF 1921. Where there is a way, there is a will. The 1916 antidumping act did little to diminish pressure for a Canadian-style antidumping law, and proposals for such a law were soon introduced before the Congress. And although most of the complaints about foreign competition brought forward by the 1919 U.S. Tariff Commission's study were not about foreigners selling at a lower price in the United States than in their home markets, the commission nonetheless recommended Canadian-style antidumping legislation.

Congress passed such an antidumping law in 1921, and the present law can be traced to it. The law empowered the secretary of the treasury (whose department included the customs service) to determine when a U.S. industry is being or is likely to be injured or prevented from being established by imports of a product at a price below its fair value in the exporting country or in other export markets. It also empowered the secretary to impose a special dumping duty in such a case. Congress has since reassigned the determination of injury to the U.S. International Trade Commission (originally the U.S. Tariff Commission) and pressed the president to assign the determination of dumping to the U.S. Department of Commerce. Numerous amendments have expanded its technicalities, but the form of the law has remained basically unchanged.
Changes in U.S. Law from 1890 to 1921

Initial U.S. regulations against “unfair imports” were, in substance, extensions of antitrust law. They brought forward the criteria and depended on the mode of enforcement and standards of proof of antitrust law. The sequence of revisions from 1890 to 1921 brought changes in both these dimensions. Trust-busting remained the rallying cry, but the object of the regulation shifted from trusts to imports, the instrument from law to bureaucracy.

CRITERIA FOR DEFINING THE OFFENSE. The major shift of criteria was from an antitrust standard to an injury-from-imports standard. The 1916 act, as table 1 shows, eliminated the need to identify a conspiracy or combination of sellers organized to commit some act toward some end. The offense under the 1916 act is simply to sell imports below the actual market value of the goods. The 1916 act states that this pricing is illegal if the intent is to restrain competition, but it also contains a second and more easily proven condition—the intent to injure a U.S. industry. The 1921 act completes the shift of criteria. Any mention of antitrust criteria—conspiracy, combination, or restraint of competition—is gone. Antitrust's injury-to-competition standard has been replaced by a diversion-of-business standard—the sort of diversion that is a normal part of the competitive process. A trade restriction is allowed if the pricing to win customers is undertaken by a foreign enterprise and the customers are domestic.

STANDARDS OF PROOF. The 1921 law differs from the 1916 law in two ways:

- The injury criterion of the 1921 law is not prefaced by the words “intent to.”
- Enforcement is an administrative, not a legal, matter.

Proponents of antidumping action often point to the word “intent” to explain why the 1916 law has engendered no import restrictions. Intent, they argue, is difficult to prove: if the concept of effect had been used instead, the law would have worked.

Others, such as Barcelo (1991), argue that the lack of action against foreign predation under the 1916 and previous laws is a sound indicator that there was no such predation, or at least much less of it than the political rhetoric insisted. The 1916 antidumping act was, after all, the third attempt to legislate the basis for such prosecution, not counting proposals introduced but not passed into law. Technical glitches would have been worked out by then.

There are several other grounds for arguing that dropping the word “intent” was not a significant change. Like the 1921 antidumping act, section 316 of the tariff act of 1922 did not qualify its injury clause with the word “intent.” The difference between the two was that enforcement of section 316 was in the strict legal tradition of antitrust laws. Viner (1923, p. 250), citing this aspect, concluded that section 316 would not be effective.

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Table 1. *Elements in Early U.S. Laws to Regulate Unfairly Traded Imports, 1890–1922*

<table>
<thead>
<tr>
<th>Act and date</th>
<th>Principal elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sherman Act, 1890</td>
<td>Conspiracy or combination of restraint, monopolization, or attempt to monopolize interstate or foreign commerce. Criminal statute, strictly construed. Fine, imprisonment; triple damages.</td>
</tr>
<tr>
<td>Section 73, Wilson Tariff Act, 1894</td>
<td>Conspiracy or combination engaged in importing goods, intent to restrain trade, increase the price in the United States. Criminal statute, strictly construed. Fine, imprisonment; triple damages.</td>
</tr>
<tr>
<td>Antidumping Act, 1921</td>
<td>Importing below fair value. Injury to a U.S. industry. Administrative determination by the secretary of the treasury. Special duty, equal to the difference between the fair value and the import price.</td>
</tr>
<tr>
<td>Section 316, Fordney-McCumber Tariff Act, 1922</td>
<td>Unfair method of competition and unfair acts in importation. Effect or tendency to destroy or substantially injure a U.S. industry. Special duty, with court review of questions of law only. Additional duty to offset such act or method.</td>
</tr>
</tbody>
</table>

*Sources: Dale 1980, ch. 1; Viner 1923, ch. 13; U.S. Tariff Commission 1919, appendix.*

Another argument is suggested by inserting (hypothetically) the word "intent" into the injury clause of the 1921 antidumping act. It seems unlikely that the additional word would change the way the clause is interpreted today. Anyone who offers goods for sale does so with the intent of winning the sale from someone else. So, in an administrative context, free from the precedents of the legal system, it is unlikely that the word "intent" would have limited the circumstances under which injury would be found.

We are left, then, with the conclusion that the limited effect of the 1916 law stemmed from its being a *legal* remedy, a part of criminal law and therefore subject to the strict rules of meaning and proof that apply to the law. The courts took antitrust law to be the relevant legal context for giving meaning to...
the terms in the law, and in this context the 1916 act was interpreted to demand the injury-to-competition standard.

Dissatisfaction with the 1916 act was political, not legal, and in politics, this dissatisfaction was relative to what a Canadian-style administrative remedy would provide. The rule of law, not any particular word in the law, was blocking action. Enlarging the scope for action against imports would require a shift from a legal to an administrative approach or, to use the pejorative synonym, a bureaucratic approach.

ANTIDUMPING AS A BUREAUCRATIC, NOT A LEGAL, PROCESS. The Australian antidumping law explicitly abandoned a legal for an administrative standard. When referring matters to the High Court, Australia’s 1906 law stated that the court proceedings were to be informal and not subject to the rules of general jurisprudence or evidence (Viner 1923, p. 209). The United States and Canada made the same change by building antidumping regulation out of pieces—administrative functions—not subject to such standards.

Andreas F. Lowenfeld (1980, pp. 217–18), after comparing the standards of proof required for relief under the “fair” and “unfair” sections of U.S. trade law (both having administrative standards), concluded that there may be “a difference in the burdens of proof placed on the parties, although my impression is that burden of proof in the sense that lawyers are familiar with the term, in, say, determining the issue of contributory negligence in an automobile accident, simply does not exist in determinations of the kind we are talking about.”

Perhaps the most straightforward expression of this soft standard of proof is the “facts available” or “best information available” clause, which is part of every country’s antidumping regulations. In the GATT antidumping code (GATT 1990, par. 8), this clause reads as follows:

In cases in which any interested party refuses access to, or otherwise does not provide, necessary information within a reasonable period or significantly impedes the investigation, [decisions], affirmative or negative, may be made on the basis of the facts available.

The import of this clause is that the threshold level of information necessary to open an investigation is sufficient to complete one. In almost every case, threshold information is provided by the party seeking import relief.4

The importance of the shift from a legal to an administrative standard of proof and evidence should not be underestimated. It not only broadened the scope of action against imports but also made the criteria for such action much more malleable. Under the softer standard of interpretation and proof, administration of the law could follow changing political pressures for protection much more quickly than a more rigorous, rule-of-law standard would allow. Thus it prepared the way for the eventual emergence of antidumping as the main vehicle for import-competing interests to press for protection—and for governments to respond to those pressures.

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Early Use of Antidumping

The passage of antidumping laws did not mean that antidumping became a major instrument of import regulation right away. In the United States, the tariff remained the dominant instrument throughout the interwar period. The year after passing the 1921 antidumping bill, the U.S. Congress passed an extensive upward revision of tariff rates, the Fordney-McCumber Tariff. The tariff had been revised downward during the 1913–21 administration of President Woodrow Wilson—Wilson had vetoed the same bill that eventually became the 1921 antidumping bill—and the Fordney-McCumber Tariff pushed rates back up to or above the rates that had been in force at the end of the nineteenth century.

In Australia, South Africa, and especially Canada, antidumping actions soon became a prominent part of trade controls. Amendments to the Canadian antidumping clause adopted in 1921 and 1930 allowed the law to be interpreted with even greater flexibility, and Canadian administrators exploited that flexibility. The amendments established that fair market value would never be “less than the actual cost of production of similar goods...plus a reasonable advance for selling cost and profit” (quoted in McDiarmid 1946, p. 308). The minister of customs was able to find many degrees of freedom in both actual cost and reasonable profit, sufficient to bring McDiarmid to conclude that “the implication of this new conception of the potentialities of dumping duties is clear. The power of the executive to fix prices at which imports could be sold in Canada was practically unlimited.... The decision of the minister of customs and his civil service advisers became the final arbiter of ‘fair market value’” (McDiarmid 1946, pp. 310–11).

Summing Up

The arguments made in this section can be summed up in three points:

• Antidumping has long been part of the rhetoric of protection.
• Manipulation of customs valuation has long been part of the arsenal of anti-import weapons.
• Antidumping is, in substance, another clever way to use customs valuation procedures as a weapon against imports. Antidumping preserves all the old tricks against the discipline that GATT brought to customs valuation. Actions that were once questionable practices of customs valuation are now routine antidumping calculations. Moreover, antidumping makes these tricks even more powerful. As increases of the dumping margin, they are fully added (at a rate of 100 percent) to import charges; as increases of the customs value, they would be added at the ad valorem tariff rate, which even in high-tariff countries is seldom as high as 100 percent.

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The ingenuity and the magic of antidumping are how it harnesses the righteousness of trust-busting to propel the bureaucrats of customs administration in the service of restricting imports.

**Contemporary Antidumping**

The history of how antidumping expanded to become the principal means for controlling imports in four important trading entities—Australia, Canada, the European Community, and the United States—illustrates its inherent flexibility as a weapon against imports. Ultimately, antidumping regulations have come to label as dumping circumstances broad enough to encompass every instance in which domestic output is displaced by import competition—in the language of the regulation itself, any instance of “injury from imports.”

**Antidumping and the GATT**

The accepted reading of the GATT’s negotiating history is that no country delegation strongly insisted on including a provision for antidumping (see, for example, Barcelo 1991 and Jackson 1969). Nonetheless, despite concern that antidumping laws, if overused, might compromise the objectives of the agreement, the drafting committees concluded without controversy that provisions for antidumping and countervailing duties were needed.

During GATT’s first two decades, antidumping was a minor issue. Although the GATT came into force in 1948, the contracting parties (as GATT member countries are called) did not canvass themselves about the use of antidumping until 1958. The resulting tally showed that, as of May 1958, thirty-seven antidumping decrees were in force across all GATT member countries, twenty-two of them in South Africa (GATT 1958, p. 14). At the end of December 1989, a comparable tally, covering only Australia, Canada, the United States, and the European Community, counted 530 such decrees (Low 1991, p. 22). The GATT report (1958, p. 14) notes, however, that “this table does not contain figures for Canada and New Zealand, since in those countries the customs authorities can take action without decree and therefore an enumeration comparable with that given by the other countries is impossible.”

Antidumping first became a significant GATT issue at the Kennedy Round of 1964–67, perhaps more by dint of diplomatic manipulation than by clear intent. As Kenneth Dam (1970, p. 174) explains, “The United States, having introduced the subject of nontariff barriers into the negotiations, was chagrined to find that the nontariff barriers most often singled out by other countries for priority of action were those maintained by the United States, of which one of the most often mentioned was the U.S. antidumping statute.” The attack on U.S. antidumping was clearly a strategy in which offense was considered to be the best defense of the European nontariff barriers that the United States had
wanted brought to the negotiating table. From passage of the U.S. antidumping law in 1921 through 31 December 1967, the U.S. government conducted a total of 706 antidumping investigations, all but 75 of which ended with a negative determination (Seavey 1970, p. 65).

Nevertheless, the U.S. delegation to the Kennedy Round adopted a strategy of accommodation rather than of explanation or defense. When the administration realized that Congress would not legislate the changes required by the code, it insisted that the executive branch had the power to implement these changes by modifying investigation and enforcement procedures. Congress disagreed.

The resulting scrimmage between the administration and Congress was one of many through which the Congress reasserted its control over U.S. trade policy. Antidumping, countervailing duties, and safeguards—the major trade remedies—were often at the center of these affrays. Broadening and strengthening these trade remedies were, to Congress, much more than a means of taking control of trade policy back from the president. They were an important congressional objective on their own. Adding this or that technical amendment—tailor-made to fit the situation of a particular and powerful constituent—soon became another vehicle for constituent service, the lifeblood of congressional politics.

The reasons antidumping emerged as a major policy instrument in the EC were not all that different from those in the United States. Slower growth made European governments sensitive to the displacement of domestic production by emerging exporters from Asia. The EC antidumping mechanism—essentially the GATT Tokyo Round antidumping code translated into operational language (Eymann and Schuknecht 1991)—proved a doubly convenient means for responding to that challenge. As economics, it was flexible enough to cover all problems. As politics, it was a community instrument. The EC Commission, with the instinct of any organization for demonstrating its usefulness and thereby expanding its turf, pressed forward with antidumping action to preempt member state governments from serving the increased demand of industries for protection. Those who might have opposed either the illiberality of such actions or the shift of regulatory practice to Brussels were slow to see through the camouflage of propriety that cloaks antidumping actions.

The growth of unfair trade regulation in national policies is taken up elsewhere (for example, Finger and Messerlin 1989 and Low 1991). In this article I want to provide an overall sense of how antidumping came to expand. That story is, in essence, the cumulation of many small changes, each of which was made because antidumping, if expanded in a particular way, could fix a pressing political problem. The dominant question was always “How can antidumping be applied to this problem?” The question was never “Is this really a problem caused by dumping?”

In the end, dumping is just the cumulation of circumstances in which the politics of the immediate problem have exploited the flexibility of the underly-
ing structure to rationalize taking action against imports. Dumping became, in law as well as in practice, anything you could get the government to act against under the antidumping law.

**Extension to Pricing below Full Cost**

Perhaps the most significant step transforming antidumping into a weapon to be used against all imports was its extension to imports not priced at full cost. This extension not only broadened the substantive scope of the instrument itself; it also brought its administrative focus in line with its political focus: keeping prices high enough to prevent injury to domestic companies. And, as has been true for many expansions of substantive scope, this extension significantly increased the administrative discretion needed to implement the standard. The extension to below-cost pricing also illustrates the role played by power politics, at both the national and international levels, in the emergence of antidumping as an all-purpose weapon against imports. Each of these effects is discussed in turn.

**SUBSTANTIVE SCOPE.** Competitive pricing does not always cover full costs. When demand surges, sellers can collect a premium, but when the market is sluggish, any order that pays enough to cover out-of-pocket (marginal) costs is welcome. As noted earlier, Canada, in amendments passed in 1921 and 1930, extended its antidumping regulations to cover sales priced below fully allocated costs plus a reasonable allowance for overhead and profit. Given the depressed markets of the 1930s, this meant that antidumping action could be taken against almost any import shipment—and, had the same standard been applied to national trade, to almost any sale. The fact that nowhere in the world did the exporter get a better price than in Canada did not matter: antidumping could be used to combat generally low prices, which the Canadian government perceived to be a major economic problem.

But business conditions do not have to be as severe as they were during the depression of the 1930s to activate the below-cost pricing provision. Gary Banks (1990) points out that the below-cost pricing provision in Australia's antidumping law was the basis for the expansion of Australian antidumping in the 1980s and that the government-commissioned inquiry into this expansion recommended repealing the provision in order to bring antidumping under control. Gary Horlick (1989, p. 136), once a high official in antidumping administration, estimates that some 60 percent of U.S. cases involve sales below cost.

**POWER POLITICS: NATIONAL.** Action against below-cost imports came into U.S. antidumping practice through the back door. Antidumping administrators found the necessary legal cover in the law's use of the phrase “in the ordinary course of trade”: “The foreign market value of imported merchandise...shall be the price...at which such or similar merchandise is sold...in...the home...
country...in the ordinary course of trade” (U.S. Code 1677b). (The same phrase appears in GATT article VI.) Sales below full cost, the U.S. administrator interpreted, were not made in the ordinary course of trade. Before data on foreign price could be used, prices had to be compared with the exporter's cost, and prices below cost could be thrown out.

Action against import sales below full cost thus came into U.S. antidumping policy as a revision of administrative interpretation, not as a legislated change. When the administering agency (the U.S. Treasury Department at that time) first adopted this interpretation, it tried to limit application to instances that could not be explained as reductions of price to meet competition in a temporarily depressed market. But the agency had the bad judgment not to apply the below-cost standard in a case in which doing so was critical to an antidumping request made by a company with a powerful friend. The friend was Senator Russell Long of Louisiana who, as chairman of the Senate Finance Committee, probably wielded more power over trade legislation than any other person in Congress. Pending at the time was the 1974 trade bill, whose main purpose was to authorize U.S. participation in the Tokyo Round of GATT negotiations. Senator Long included in the bill an amendment to the antidumping law that required sales below cost to be considered dumping.

Current U.S. administrative practice for implementing this amendment is that if 10 percent or more of observed foreign sales are below estimated cost; such sales are not included in the calculation of foreign market value. This means that in any investigation, up to 90 percent of the U.S. government's information on foreign prices—the 90 percent most favorable to the exporter's case—may be thrown out.

POWER POLITICS: INTERNATIONAL. International sanction for taking antidumping actions against imports priced below fully allocated costs came about in a similarly arbitrary way. In November 1978, before the Tokyo Round antidumping code had reached the approval stage, Australia, Canada, the European Community, and the United States agreed to regard sales below costs as "not in the ordinary course of trade" and to exclude them from the determination of foreign market value. A document announcing this understanding was circulated in the manner in which negotiating proposals or comments on proposals were normally distributed (Koulen 1989, p. 366). Ever since, action against below-cost imports has been an integral part of antidumping policy in each of the parties to the understanding. The code itself does not address the matter.

Administrative Discretion

The story of how antidumping expanded to cover below-cost pricing shows that administrative discretion plays an important role not only in the enforcement of antidumping law but also in its expansion. In particular, three facets of administrative discretion have been influential:

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• Adjustments (inferences), not observations, are the major input into an antidumping investigation.
• The detail of administrative regulation provides complexity, but not precision.
• Complexity camouflages opportunity for abuse.

Each is now examined in turn.

ADJUSTMENTS. Comparing home price with export price and then determining if any detected difference has injured an industry in the importing country appears at first glance to be a straightforward operation. But the simplicity disappears quickly under any kind of scrutiny. First of all, the GATT provides that the price of the exported good be compared with the price of a “like product” sold in the home market. The Korean electronics industry exports basic, no-frills television sets, while its home-market sales are concentrated in expensive, top-of-the-line models, with wooden cabinets and all the bells and whistles that can be installed. The intent of the investigation process is to compare apples with apples, not apples with pears, so the investigator must adjust for the different characteristics of the product to make the price of a fancy 27-inch set that retails in the neighborhood of $2,000 comparable to that of a 13-inch set in a metal cabinet that retails for $169.95.

Suppose that the antidumping investigation established from import documents that Sears paid $100 for the sets it retails for $169.95. In the case dealing with Korean televisions, the U.S. government found dumping margins to be about 15 percent, indicating that the “comparable” price of the sets sold in Korea was $115. This means that making adjustments for different characteristics of the product and for different ways of doing business in Korea and the United States reduced the $2,000 retail price to a comparable ex-factory price of $115. In other words, these administrative adjustments provide 95 percent of the information on which the eventual finding is based. The list of such examples is almost endless. Litan and Boltuck (1991) filled a book with them.

COMPLEXITY, NOT PRECISION. The increased scope of antidumping has brought a commensurate increase in administrative detail, but detail does not imply precision. William Carmichael (1986, p. 2), drawing on twelve years of experience as head of the staff of the Australian Industries Assistance Commission, concluded that “the procedures to be followed in antidumping investigations are not amenable to precise and consistent application. This means that the task of administering the legislation is not simply a task of following a set of unambiguous rules.”

COMPLEXITY AS A COVER FOR ABUSE. Considerable expertise is needed even to see which technical alternatives exist, let alone exploit them. The general public and the news media do not possess this expertise: the result is an environment
made to order for special-interest power politics. Extending the provision to cover pricing below full cost illustrates the typical sequence of events: first, pressure is applied to push administrative interpretation to the limit of existing law, then the extended interpretation is added to the law. Each time, the law becomes more detailed and its administration more complex—a medium more and more hospitable to power politics, more and more favorable to the home country petitioner’s case over the exporter’s, and more and more detached from the initial rationale for the regulation.

An Example of Skewed Procedures: Treatment of Selling Costs

Many writers have documented specific examples of changes in law or administrative practice that have worked in the petitioner’s favor. Bierwagen (1990) provides an excellent tabulation; only one example is provided here.

As mentioned above, manufacturing companies often sell or transfer goods to a subsidiary sales company (for example, Sony to Sony-USA) so that the first arms-length transaction occurs when the sales company sells the product. To adjust costs to an ex-factory basis, the expenses of the sales company must be deducted. The following quotation (Bellis 1989, p. 83) relates specifically to practices in the European Community, but other countries treat selling costs the same way:

A producer which sells a consumer branded product at exactly the same price in both domestic and export markets, a situation which to anybody outside an antidumping administration would appear to be a typical case of no dumping, will systematically be credited with a dumping margin corresponding to the indirect selling expenses of his domestic sales organization for which no allowances can be made.... Indirect selling expenses for consumer branded products are substantial, often in the order of 15 to 20 percent of the selling price.

The End Result

My conclusion borrows much from other analysts. N. David Palmeter (1991, p. 66), referring specifically to U.S. practice, describes the situation as follows:

The standards of the day, the procedures it uses, and the implementation of these standards and procedures by the Department of Commerce increasingly ensure that, at the end of the day, an exporter determined to have been selling in the United States below fair value probably has been doing no such thing in any meaningful sense of the word “fair.” On the contrary, rather than being a price discriminator, a dumper is more likely [to be] the victim of an anti-
dumping process that has become a legal and an administrative non-tariff barrier.

The European Community uses different procedures, but the end result is the same. As Angelika Eymann and Ludger Schuknecht (1991) point out, the United States applies protectionist rules, the European Community applies protectionist discretion. The result in both cases is protection. In Brian Hindley's (1988, p. 460) words, “From antidumping law, the Commission and the Council have fashioned a trade-policy weapon of great power. No legal process, either domestic or international, seems likely to place any substantial impediment in the way of the further development and deployment of that weapon.”

Descriptions of worlds like that of antidumping are more often encountered in fiction—weird fiction—than in academic discourse. Note in the following passage by Douglas Adams (1980, pp. 38-39) the relationship between the *Hitchhiker's Guide to the Galaxy* and the galaxy. The relationship between antidumping law and dumping is the same.

The *Hitchhiker's Guide to the Galaxy* is an indispensable companion to all those who are keen to make sense of life in an infinitely complex and confusing Universe, for though it cannot hope to be useful or informative on all matters, it does at least make the reassuring claim, that where it is inaccurate it is at least definitively inaccurate. In cases of major discrepancy it's always reality that's got it wrong.

This was the gist of the notice. It said, “The Guide is definitive. Reality is frequently inaccurate.”

This has led to some interesting consequences. For instance, when the editors of the *Guide* were sued by the families of those who had died as a result of taking the entry on the planet Traal literally (it said “Ravenous Bugblatter Beasts often make a very good meal for visiting tourists” instead of “Ravenous Bugblatter Beasts often make a very good meal of visiting tourists”), they claimed that the first version of the sentence was the more aesthetically pleasing, summoned a qualified poet to testify under oath that beauty was truth, truth beauty, and hoped thereby to prove that the guilty party in this case was Life itself for failing to be either beautiful or true. The judges concurred, and in a moving speech held that Life itself was in contempt of court, and duly confiscated it from all those there present.

**In Defense of Antidumping**

Partly in response to criticism that dumping margins were frequently overstated by contemporary procedures, defenders of antidumping have pointed to what in EC practice is called the lesser-duty rule. The idea behind the rule is expressed in the GATT antidumping code: “It is desirable that the...”

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[antidumping] duty be less than the margin, if such lesser duty would be adequate to remove the injury to the domestic industry” (GATT 1980, art. VIII, par. 1).

EC Commissioner for External Relations Willy de Clercq, in defending the EC’s antidumping policy as “incontestably by far the most liberal” (his emphasis), pointed out that “unlike U.S. authorities, the commission is not obliged to apply antidumping measures at rates which reflect the full margins of dumping established. On the contrary, under Community law the rate is restricted to that necessary to remove the injury caused” (de Clercq 1988, p. 29). Jean-François Bellis, a prominent Brussels lawyer and legal scholar—and sometimes critic of EC policy—is an outspoken advocate of the lesser-duty rule:

The EEC justifiably prides itself on the fact that, unlike the U[nited] S[tates], it applies the “lesser duty rule,” i.e., it limits antidumping duties to the level necessary to eliminate the injury. This practice should be multilateralized in GATT in the form of a binding obligation.5 (Bellis 1989, p. 94)

Bellis also explains how to do it:

In practice, the level of the duty is mainly determined by the level of price undercutting...or by the level of resale prices that would be required to cover the costs of Community producers and provide a reasonable profit. (pp. 84–85)

Compare that statement with the following (quoted in Taussig 1931, p. 363):

In any protective legislation the true principle of protection is best maintained by the imposition of such duties as will equal the difference between the cost of production at home and abroad, together with a reasonable profit to American industries.

The second of these is the statement contained in the 1908 U.S. Republican Party platform of the cost-equalization formula, which the U.S. Congress followed in writing the Smoot-Hawley Tariff.

As to the usefulness of the formula as a guide to policy, E. E. Schattschneider (1935, pp. 84 and 284) argues emphatically that the formula has no operational meaning:

Talk of tariffs written on the cost formula is no more than an elaborate sham and a bluff.... The committees did not generally determine rates according to the formula advertised, and they did not do so for the conclusive reason that they could not.... The difference of cost formula is to be classified more properly as a slogan belonging to the politics of gaining acceptance of [protection] than as a method of determining rates.

Frank Taussig (1931, p. 633) is equally critical of the lack of substance of the formula, but less scathing. He points out that anything can be made within any country if the producer is assured a price high enough to cover all costs of
production together with a reasonable allowance for profits. "Yet," he adds, "little acumen is needed to see that, carried out consistently, it [the formula] means simple prohibition and complete stoppage of foreign trade."

Perhaps it is overkill to recall the wisdom of Schattschneider and Taussig to argue that contemporary antidumping is out of control. It should be sufficient to point out that its own defenders bring forward the economic philosophy of the Smoot-Hawley Tariff as its rationale.

**Summing Up**

The cause that justifies an action is often far removed from the motives that propel its advocates. When push comes to shove, the motives, not the cause, dictate the details of the action. And the details, in turn, dictate the substance. In trade policy, existence precedes essence.

Antidumping is not public policy, it is private policy. It is a harnessing of state power to serve a private interest: a means by which one competitor can use the power of the state to gain an edge over another competitor. Antidumping regulation was created by removing from antitrust law the checks and balances that limit it to disciplining only the competitive practices that compromise society's overall interests. Antitrust is in both theory and practice an instrument to defend the public interest. Antidumping is a different matter. Free from the constraints that the rule of law imposes on antitrust, antidumping is an instrument that one competitor can use against another—like advertising, product development, or price discounting. The only constraint is that the beneficiary interest must be domestic and the apparent victim must be foreign.

Antidumping puts the fox in charge of the henhouse: trade restrictions certified by GATT. The fox is clever enough not only to eat the hens, but also to convince the farmer that this is the way things ought to be. Antidumping is ordinary protection with a grand public relations program.

**Notes**

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1. Horlick and Oliver were writing about both antidumping and antisubsidy (countervailing duty) measures. In the United States, the number of trade remedies cases is divided roughly equally between the two; in other countries, antidumping is by far the most popular instrument.

2. The Country Party practiced similar politics in Australia in the middle of the twentieth century. For one discussion, see Rattigan (1986).

3. The result brings to mind Frank Taussig's explanation of pricing strategy of a firm so situated: "The monopolist sells at high prices where he can, and accepts lower prices where he must" (Taussig and White 1931, p. 208). Taussig's quip reminds one to ask who came out ahead: Canada or U.S. Steel or U.K. exporters.
4. Palmeter (1991) explains that if the provision of best information available were not included, the respondent could block an investigation by refusing to cooperate. He points out that the provision was rarely used until recently. In recent cases, however, information requirements have been so complex that the respondents were either unable to comply or the estimated costs of complying were so high that they chose not to.

5. Bellis is, however, critical of how the EC has put the rule into practice.

References

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POLICY INSTRUMENTS
FOR POLLUTION CONTROL IN
DEVELOPING COUNTRIES

Gunnar S. Eskeland
Emmanuel Jimenez

What are appropriate strategies for protecting the environment in developing
countries that also seek to promote growth and reduce poverty? This article
reviews the literature on cost-effective intervention, comparing regulatory and
fiscal instruments that can be attuned to the purpose of reducing pollution. The
authors look at what happens when developing country ingredients are intro-
duced into the standard policy problem, and show how indirect instruments
can be effective when monitoring and enforcement are costly. They discuss dis-
tributive concerns for two reasons: the effect on the poor may need particular
consideration for equity reasons, and the effect on groups with vested interests
can determine whether reforms are likely to stand or fall.

Rigorous studies of pollution control in developing countries do not
exist, but there is convincing casual evidence that regulations to protect
the environment are ineffective or unnecessarily costly. Often, there are
no regulations or they are badly designed or enforced (see Bernstein 1991). In
addition, economic policies seemingly unrelated to the environment—subsidies
for water consumption, pesticides, fertilizers, and energy use—nevertheless
affect it, often for the worse (Schramm and Warford 1989). Evidence on the
damage that pollution is doing to human health and productivity is starting to
accumulate (see Thomas 1981 and 1985 on São Paulo; Hertzman 1990 on
Poland; Margulis 1992 on Mexico).
This article reviews the design of cost-effective interventions to protect the environment from excessive pollution in developing countries. The focus is deliberately limited to domestic policies to control pollution. We do not treat policies to address other environmental problems, such as soil erosion, deforestation, biodiversity, or desertification; nor do we deal explicitly with transnational problems (acid rain) or the global consequences of pollution (climate change; ozone depletion). Many of the principles we present, however, relate broadly to correcting for externalities, or spillover effects, and can be applied to these other problems as well (see Binswanger 1989; Mahar 1989; Repetto and Gillis 1988; Schramm and Warford 1989).

The analysis concentrates on policy instruments that have traditionally been in the realm of public finance, such as taxes, prices, and subsidies, comparing these with regulations and other instruments traditionally used to reduce pollution or ameliorate its damage. The interventions can be categorized as (a) market-based incentives (MBIs) that affect the incentives of private agents, (b) command and control (CAC) instruments that regulate activity through constraints on the source of pollution, and (c) government spending on cleanup or enforcement (table 1). In this article we focus on (a) and (b), because the principles guiding the decisions regarding (c) are fairly well established in the cost-benefit literature. We also distinguish between instruments directly associated with the amount of damage created or pollutants emitted, and those addressing pollution indirectly via related variables such as inputs and outputs.

The analysis begins by examining the rationale for government intervention and goes on to look at the relative merits of the policy instruments traditionally prescribed for that intervention in industrial countries. The arguments for these standard policy prescriptions are based on several simplifying assumptions—

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competitive markets, costless transfers, certainty, full information. These assumptions may be less applicable in developing countries. The remainder of the article investigates what happens to policy prescription when the standard assumptions are relaxed to take conditions in developing countries into account.

The Rationale for Government Intervention

The efficiency argument for public intervention to mitigate pollution problems is well established in the theoretical literature (see Baumol and Oates 1979, 1988; Tietenberg 1988b). Pollution is an example of a negative external effect; it imposes harmful effects and costs on people other than the polluters. The free market offers the polluters no inducement to reduce the damage, since the costs are largely paid by others. The market, if left to itself, is consequently not the most effective mechanism for keeping pollution at reasonable levels. Optimal control of pollution would occur if the marginal costs, including damages from pollution, were low enough to be balanced by the marginal benefits from the activity.

Is public intervention in fact essential to correct for such externalities? According to Coase (1960), there is no efficiency reason for a government to be involved except to help enforce property rights. Coase's proposition is that if those affected by pollution hold the rights to an unpolluted environment, polluters will "bribe" them to allow some level of pollution. (Member states of the Organization for Economic Cooperation and Development [OECD] and many other countries have, in principle, given property rights to victims through the "polluter pays" principle.) Similarly, if polluters have the right to pollute, victims will bribe them to pollute less. In either case, as long as negotiations are not costly, the resulting amount of pollution would be optimal.

When polluters and victims are few and the number of beneficiaries from an agreement is fixed, the Coase proposition may indeed be valid: negotiations can provide for the internalization of externalities. Such a negotiated solution seems feasible in a situation such as in the Philippines, where soil sediments caused by a single logger threatened the development of tourism in a bay (Dixon and Hodgson 1988). When rivers run from one jurisdiction to another (as the Paraíba does between São Paulo and Rio de Janeiro), the parties involved are easily identified, and they could agree on pollution loads through negotiation. In Turkey, farmers have been awarded damages in court when emissions from factories have hurt their crops; here the established right to an unpolluted environment did provide incentives to abate. Thus, when stakeholders are easily identified and law enforcement is assured, a case can be made that government intervention is unnecessary for efficient outcomes.

But, for the Coase proposition to hold, the costs of negotiating and enforcing agreements must be zero or negligible. In practice, the costs will increase with the number of polluters and victims. In Mexico City, for example, there are

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20 million consumers, 2.5 million motor vehicles, and 30,000 industries; it seems hardly feasible that the economic agents concerned will conduct efficient negotiations without an intervening authority. In private negotiation, parties have an incentive to free-ride, either by not revealing willingness to pay or by breaking the agreement. Moreover, to be efficient in the long run, the agreement must accommodate the entry of newcomers into the market and the exit of others. Public intervention will often be the only efficient solution to these coordination problems.

**Standard Policy Prescriptions**

Given that intervention is required, what form should it take? Policies aim either to regulate the level of pollution at the source or to change prices or regulations to increase the private costs of polluting. To facilitate comparison, discussion of the standard policy instruments that follows starts out with some restrictive assumptions: (a) pollution is uniformly dispersed—that is, the external costs to society are independent of the location of the source; (b) transferring revenue to or from the public sector is not in itself costly; (c) the costs of monitoring damage and emissions are low; (d) there is no uncertainty about the costs and benefits of pollution control; and (e) a competitive market structure prevails. Toward the end of this section we refine the comparison of instruments by relaxing the first assumption—uniform dispersion. The subsequent section will relate the argument to developing country conditions by relaxing each of the remaining assumptions in turn and adding the issue of distributive objectives.

**Uniform Dispersion of Pollutants**

When pollutants are uniformly dispersed, ambient quality can be improved or protected only by curbing emissions overall. Command and control policies constrain emissions from each source and do not allow sources to trade the right to pollute. Most industrial countries have relied predominantly on CAC methods, setting and enforcing standards for equipment, processes, or emissions (Opschoor and Vos 1989; Bernstein 1991). Emerging experience from developing countries does not appear to break this trend. With market-based incentives, by contrast, constraints are not source-specific; they provide equal incentives to all by increasing the marginal costs of polluting. Tradable permits, subsidies for abatement, and emission taxes are examples of such instruments. All let the market distribute abatement to where it is cheapest.

CAC VERSUS MBIs IN GENERAL. Command and control and market-based incentives can achieve the same ambient quality, but market-based incentives are generally more cost-effective. CAC can possibly minimize the cost to society if
the regulator tailors the abatement costs to each firm, so that no polluter is asked to reduce emissions if another can do so at lower costs. The policy is feasible if polluters are few and readily identified—for example, power plants emitting sulfur oxides in some cities. CAC by a strong regulatory agency may then be quite cost-effective. But generally, and especially in situations with many heterogenous polluters, a large informal sector, and weak public administration, command and control policies will not work so well. Furthermore, in practice, source-specific constraints allow marginal costs to vary among polluters, so that total costs of abatement are not minimized.

In contrast, market-based incentives generally require the regulator to estimate only aggregate (rather than individual) costs of abatement to minimize cost. A regulator would, for instance, issue enough tradable permits for the marginal benefits and costs of abatement to be equated overall; a polluter whose abatement costs are high would purchase permits, whereas one with cheaper abatement options would prefer to reduce emissions (Dales 1968 is an early proponent of this point). A pollution tax can also achieve cost-effective abatement. It allows each polluting source to decide whether to pay the tax or to undertake additional abatement, with the result that low-cost abatement is selected since each source will abate only if the marginal costs of abatement do not exceed the tax rate.

Empirical investigations have strongly supported the theoretical case for market-based incentives: cost saving is reported to be significant over the command and control alternative. Tietenberg (1988b) reviews nine studies in which market-based incentives are calibrated to reach the same ambience level as applied command and control methods. In seven of these studies, the ratio of MBI to CAC costs is 1:4 or lower; in two of them, the ratio is 1:14 or lower. Thomas's (1981) findings from São Paulo, with vastly differing abatement costs between firms and sectors, indicate that savings from market-based incentives would be high.

Market-based incentives are sometimes used in combination with command and control instruments to obtain some of the advantages of a more flexible approach without going to a full MBI system. In the United States, for example, some limited opportunities to "trade" the right to pollute within a command and control framework have been allowed in an attempt to gain some of the savings possible with market-based incentives (see Hahn 1989; Opschoor and Vos 1989). Expanded provisions for emission trading are among the amendments to the United States Clean Air Act (U.S. Government 1990). Some of the manifestations of emission trading have been netting, offsets, bubbles, banking, and lead trading.

• **Netting** allows for internal trades within a firm: a firm can avoid the stringent emission requirements for a new source if it reduces emissions from existing sources.
• **Offsets** are used in areas where the establishment of new polluting activities is banned because air quality standards are not met. Through the offset

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provision, a new source may be created if it will reduce more emissions from another source than it will create itself. Germany and the United States have offset provisions.

- **Bubbles** place an imaginary “bubble” over a factory. This allows a firm to combine emissions from its various sources and comply with the general rather than the particular requirements.

- **Banking** allows a firm to earn credits if its emissions are under the legal limit; credits can be used later or sold to others.

- **Lead trading** between refineries in the United States was allowed in order to reduce the costs of a major program to phase out lead in gasoline (1982–87).

The savings from limited opportunities to trade within bounds like these are substantial if the trade allowed is between sources that would otherwise abate at vastly differing marginal costs. Hahn (1989) estimates that the savings related to netting, offsets, bubbles, and lead trading have been considerable.

**PRICE-BASED VERSUS QUANTITY-BASED INCENTIVES.** As long as there is no uncertainty about abatement costs, price-based incentives (such as taxes) and quantity-based incentives (such as tradable permits) have exactly the same effect. The same level of emissions and economic costs should result. A uniform emission tax will have the same incentive effects as emission permits, because the market will distribute them within the industry according to willingness to pay. Both minimize abatement costs overall, because high-cost abaters will either pay the tax or outbid low-cost abaters for permits.

But although taxes and permits that can be traded freely are conceptually equivalent, some analysts have argued that, for administrative reasons, tradable quotas may be preferable to tax or price instruments (Baumol and Oates 1988). First, adjustment of the tax rate to reach appropriate environmental goals may be costly, particularly in inflationary environments. Second, permits may be easy to implement, because they make it possible to introduce controls without increasing the costs for existing firms. But in some cases, tax-like instruments may be easier to administer than quotas. For example, an indirect pollution tax on fuel consumption may fit more easily into existing administrative processes than a quota (Anderson 1990). In most developing countries, input taxes to curtail emissions would be easier to implement than a completely new scheme such as permit trading.

Unless permits are auctioned, their distributive implications differ from those of taxes. Nonmarket distribution of permits, as well as other compensation schemes, must be designed with caution so as to avoid creating undesirable incentives.

**SETTING PRICE-BASED INCENTIVES.** Governments using a pollution tax to protect ambient quality should select a base and rate so that the external cost of the activity is internalized. Such an instrument is often called a Pigouvian tax.\(^2\)
The appropriate base for the tax should be the damage caused or a close proxy for damage, such as the volume of emissions. An example might be a carbon tax, which has lately been proposed as a tool for efficient reduction of the emissions that cause global warming. Other examples are taxes applied on air pollution in France, on discharges into water in Germany, and on solid waste in Denmark (Whalley and Wigle 1991; Opschoor and Vos 1989).

The Pigouvian incentive can be either a tax on pollution or a subsidy for abatement. In the short term, the incentive effects can be the same. In the long term, when market entry and exit can be affected, a tax is normally preferable because it does not give firms incentives to enter a subsidized polluting industry.

What determines the rate of the tax? The general rule is to set taxes or public prices of commodities that produce externalities at a rate equivalent to marginal cost of production plus the incremental value of the externality (see Eskeland and Jimenez 1991 for a full discussion). There is no need to tax complements or to subsidize substitutes when the tax on the polluting good fully internalizes the externality. In practice, many polluting activities are subsidized, being priced at less than marginal cost (Schramm and Warford 1989; Repetto and Gillis 1988; Anderson 1990). In such cases, raising prices or taxes closer to marginal cost will already be an improvement over the present situation; emissions can be reduced with no cost at all.

**Nonuniform Dispersion of Pollutants**

The preceding discussion of policy instruments, for the purposes of comparison, has assumed uniform dispersal of pollutants. Greenhouse gases, such as carbon dioxide, are uniformly dispersed. But often pollutants are concentrated in some pattern around the source and downwind or downstream. Removing the assumption of uniform dispersal does not affect the general argument about the relative merits of command and control policies versus market-based incentives, but it does have implications for the details of policy design.

The damage (per unit of emission) caused by a polluting activity will vary, depending on location, on the dispersion characteristics of emissions (determined, for air pollution, by such variables as stack height or speed and temperature of flow), and on the site being polluted. For many major air pollutants, reducing emissions has few benefits over vast rural areas, so that applying uniform emission charges (or one-for-one tradable emission permits) in zones comprising both urban and rural areas would not be cost-effective. The rural/urban dimension illustrates differences in marginal damages per unit of emissions. The principle, and the need for differentiated instruments, is valid for any pattern of nonuniform damages (or, equivalently, benefits). Area A may be vulnerable, but less important to protect than area B if higher present pollution loads in B make the marginal damage there higher. Similarly, for water pollutants such as those characterized by biological oxygen demand, marginal
damage from discharges may be high where discharges are high but lower both upstream and downstream. Uniform emission charges might require unnecessary abatement from many sources whose emissions do not pollute the "hot spots." In these cases, the most cost-effective program would require abatement for each source according to whether its emissions pollute vulnerable locations or not. For example, emission charges could vary by location to reflect the ratio of damages to emissions.

In essence, differences in damages per unit of emissions mean that unlimited trading of emission permits is not a good idea. If zoning is in effect, permits need to be distributed carefully among zones, since sources are barred from solving problems of misallocation through trades.

If the polluters in a region display very different ratios of damages to emissions, differentiating instruments accordingly can yield significant cost savings. By the same token, the costs of applying uniform emission charges or permits without zoning will also be high. Atkinson and Tietenberg (1982) calculate that a market-based scheme for particulate emissions in St. Louis would save 83 percent of the costs of a command and control scheme if charges were fully differentiated. The savings would be lower if geographical differentiation of emission charges were limited, and would be only 50 percent if charges were uniform throughout. Seskin, Anderson, and Reid (1983), modeling control strategies for nitrogen oxides in Chicago, find that savings of 93 percent relative to command and control fall to 50 percent if instruments have to be uniform within industries, whereas a scheme with completely uniform instruments would cost twice as much as the command and control strategy. The regulators, not surprisingly, have had an eye on the geographical dimension when designing the command and control scheme, and thus it did better than a market-based scheme that ignored geography.

Efficient Pollution Control Policy in Developing Countries

How are the standard results just discussed affected when we change the standard assumptions? Let us assume a public revenue constraint, inability to monitor emissions and damages, uncertainty, and a market structure that is not competitive—constraints that confront policymakers in many developing countries.

Pigouvian Taxes under a Public Sector Revenue Constraint

Public budgets are often tight in developing countries. Raising additional revenue through existing tax structures can injure resource allocation, as firms and households adapt to a distorted price regime. And such distortions can be immense: estimates from the United States assess costs at 17 to 56 cents for every additional dollar of tax collected (Ballard, Shoven, and Whalley 1985). In
developing countries, where the tax base is often narrow and rates high, distortionary costs are likely to be higher (World Bank 1991).

One attraction of pollution taxes is that they can raise revenue while improving efficiency, by persuading firms and households to reduce negative externalities. Taxing commodities with negative externalities will thus reduce not only the efficiency losses arising from the externality itself (say, damage from pollution) but also the efficiency losses related to generating revenue, since the proceeds may allow other rates to be reduced.

How much can be raised by such efficient taxes? Sandmo (1975) shows theoretically that pollution taxes belong in an optimal tax structure, adding to the rates on polluting goods. Some empirical studies indicate that revenues from efficient pollution control policies will be of the same order of magnitude as total control costs. In a simulation of particulate control in St. Louis, Atkinson and Tietenberg (1982) found that proceeds from permit charges would be in the same range as abatement costs. The study of control strategies for nitrous oxides in Chicago (Seskin, Anderson, and Reid 1983) also found charges in the same range as control costs.

So far, charges have not made an impressive contribution to general revenue in OECD countries. At less than a third of 1 percent of gross national product (GNP) in the Netherlands and at 0.04 percent or less of GNP in the other countries surveyed, the revenues were found to be of no importance for the general budget (Opschoor and Vos 1989). The OECD study further showed that charges were rarely effective in changing behavior because rates were too low and the base was usually insufficiently responsive to individual behavior. But proceeds from pollution charges were an important mechanism for funding selective environmental expenditures in countries where they were earmarked for that purpose. Indirect taxes, such as fuel taxes, could be important in generating revenue: for countries such as Pakistan, the Republic of Korea, and Turkey, a 20 percent increase in the tax on fossil fuels could raise an additional 3–5 percent of revenue. Gil Diaz (1987) found that energy subsidies in Mexico from 1977 to 1984 amounted to $100 billion—equal to the total amount of foreign public debt. Clearly, the budgetary implications of energy pricing can be immense.

Pollution charges may yield more or less than what is needed for environmental expenditures, so the benefits of earmarking should be examined in the broader context of public expenditure analysis (see McCleary 1991 on the pros and cons of earmarking).

Monitoring Damages or Emissions: A Role for Indirect Instruments

The theory reviewed earlier implies that the efficient economic policy (whether market-based or command and control) is to address the external effect directly—for instance, by taxing a polluter or regulating emissions according to the environmental damage caused. In practice, monitoring damages or
even emissions at the source may be costly, particularly in developing countries, for technological and institutional reasons. The emissions of many pollutants can only be imperfectly monitored, and the fact that the results of monitoring may cost the polluter money does not make the task easier. In the United States the Environmental Protection Agency (EPA) has 14,000 federal employees, and even so, it monitors very few sources continuously. Russell (1990) notes that the EPA largely trusts corporations in matters of compliance and self-reporting, even though experience with motor vehicles has shown that active tampering (not only inadequate operation and maintenance) is prevalent (see also Hamrin 1991). The monitoring problem is likely to be worse for regulatory agencies in developing countries, since the agencies are often inadequately funded and have less access to technology and trained labor. In Mexico only three plants are scheduled to install equipment for continuous monitoring of emissions; the rest of the 300 most-polluting firms report their own emissions.

To be credible, regulatory agencies must be able to design and administer new schemes; behavior will change only if a threat to penalize noncompliance is seen to have teeth. Even in industrial countries, sophisticated schemes, such as permit trading, have run afoul of implementation issues (Hahn 1989). And even when monitoring is technically feasible, institutions may be too weak to enforce the taxes or regulations based on the monitoring.

When environmental damage or emissions cannot be tackled directly because monitoring and enforcement costs are too high, the regulator will use indirect instruments aimed at the outputs and inputs of the polluting industry or substitutes and complements to its outputs. Indirect pollution taxes applied to fuels such as coal and gasoline—presumptive Pigouvian taxes—are an example. How would the use of such instruments affect the policy choices discussed earlier? With indirect instruments, the “tradability” results apply, in that actions that reduce (increase) emissions by an equal amount should receive an equal subsidy (tax). Indirect instruments, however, typically specify physical actions (such as installation of catalytic converters) rather than emission reductions, and they often yield more emission reductions at one place than another. Investments that reduce emission coefficients for vehicles, for instance, yield highest benefits for the vehicles that are used most intensively. For this reason, indirect instruments will often need to be applied with stronger inducements to specific polluters and, consequently, will have aspects of command and control. An example in which this principle is applied: In Mexico City, high-use vehicles such as taxis and minibuses are required to be cleaner than vehicles in general. Presumptive emission taxes on fuel will thus be effective if emission coefficients for one fuel are the same across users, but they should otherwise be differentiated, if possible. The cement industry, for instance, which does not discharge the sulfur of its fuels, should ideally be refunded presumptive sulfur taxes on fuels.

In assessing the desirability of indirect instruments, the reduced cost of the externality must be compared with the distortions the instruments themselves

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create through their effect on other choices. A fuel tax, for instance, is efficient if the relationship between consumption and emissions is fixed, if nonpolluting fuel use will be unaffected, and if fuel consumption can be monitored relatively easily. A fuel tax is relatively inefficient, however, for fuel used in polluting as well as nonpolluting activities. Furthermore, other effective abatement measures (such as catalytic converters and scrubbers) are not triggered by fuel economy and thus require instruments other than fuel taxes. Deposit refund systems, similarly, can be attractive when unsafe disposal, rather than use, causes damages (Bohm 1981).

Indirect instruments are blunter tools for tackling pollution in that they may also have undesirable effects on behavior. How can such side effects be minimized?

**Outputs and Inputs as a Base.** If a polluter's emissions are fully determined by the consumption of one good, then taxing the good according to marginal external costs is equivalent to an emission tax. Carbon taxes on fuels are an example, because the external effects are independent of both source location and combustion process. But if a polluting good cannot be fully taxed, a related good should be taxed if it is a complement to the polluting good, and subsidized if it is a substitute good. For example, suppose that private vehicle use in urban areas is polluting but cannot be taxed sufficiently (or only at a prohibitive cost). A clean substitute such as a subway should be subsidized, but a clean complement such as central parking facilities should be taxed. This holds unambiguously as long as demand for subway service is unrelated to demand for parking space.

Wijkander (1985) shows that taxation of complements and subsidization of substitutes are efficient under fairly general assumptions, but counterintuitive results can take place depending on own-price and cross-price elasticities of demand. These occur when the indirect instruments bring unintended distortions. In our motor vehicle example, if public transport and central parking facilities are sufficiently strong substitutes for each other, subsidizing subways and taxing parking spaces may lead to overutilization of subways. If this problem arises, parking space should not be taxed so much and may even have to be subsidized.

Sandmo (1976) presents another situation in which indirect instruments are useful. A commodity is used by consumers for two purposes, only one of which has negative external effects. Gasoline use, for example, can be said to be "innocent" when used for countryside driving, but it has negative external effects in terms of pollution and congestion when used in cities. A commodity tax to address the externality is then itself distortionary in relation to the innocent use, and the question is whether an additional instrument on a related good can reduce the costs of that distortion. Sandmo concludes that a related good should be taxed if it is a complement to the polluting activity and a substitute for the "innocent" activity, and subsidized if it is a complement to the
“innocent” activity while a substitute for the polluting activity. Intuitively, supplementing gasoline taxes with taxes on central parking and central road use, and subsidizing parking at peripheral metrorail and bus stations, would fit in this picture. If the related good is a complement to both uses, it should be taxed if it is more complementary to the polluting use, but subsidized if it is more complementary to the “innocent” use. Likewise for a substitute good: it should be subsidized if it is more substitutable to the polluting use, but taxed if it is more substitutable for the “innocent” use. For instance, if bus services are substitutes for polluting cars, but also for “innocent” bicycles, then one would subsidize buses only to the extent that the former effect is stronger. (See Sandmo 1975 and Balcer 1980 for further illustration of this point.)

There are several possible bases for pollution taxes:

- **Taxing the damage created** makes it possible to differentiate between polluters according to the amount of damage caused per unit of emission. Each source balances marginal abatement costs equally against individual differentiated marginal benefits. No such taxes have yet been applied. Other damage-related instruments are used, however. Liability rules hold polluters accountable for accidents, such as oil spillage (a market-based incentive). Offsets, bubbles (market-based), and zoning policies (market-based and command and control) give some consideration to the location of the source and thereby to the amount of damage it creates. Ambience permit systems are markets in damage quotas and have been simulated but not tried in practice.

- **Taxing emissions** minimizes the costs of abatement by equalizing marginal abatement costs across sources but does not differentiate between sources according to damages. Emission charges thus fail to provide incentives to relocate within a region. Examples include France’s tax on emissions to air, water charges in Germany, waste charges in Denmark, manure taxes in the Netherlands, and carbon taxes in Norway.

- **Taxing inputs and outputs of polluting activities** mimics an emission or damage tax (imperfectly) but fails to give incentives to minimize emissions or damages for a given level of inputs or outputs. As an example, lead in gasoline is taxed in Norway and Germany. Many countries also tax fossil fuels in general.

- **Taxing (or subsidizing) fixed inputs of polluting activities** can provide some abatement incentive, but fails to influence how carefully and frequently the equipment is maintained and used. Tax differentiation is applied according to emission characteristics of cars in Germany, the Netherlands, Norway, and Sweden. Many countries tax noise characteristics of aircraft and subsidize or mandate the installation of “clean” equipment or processes.

- **Taxing complements and subsidizing substitutes** are alternatives if the polluting activity is untaxable; they can also be valuable supplementary instruments. Apart from complementary inputs (vehicles), complements are
not otherwise known to have been taxed. As a substitute for private transport, urban mass transport is subsidized almost everywhere.

- **Taxing unreturned items.** Depending on cost relationships, many materials will be recycled without government intervention, particularly if labor is cheap. When additional incentives to recycling are desirable because of external costs, a deposit refund system may be efficient. Such systems have been proposed for batteries and are in place for car hulks and beverage containers in Scandinavia.

**FIXED INPUTS.** If one cannot monitor emissions or variable inputs and outputs, one can still achieve something by targeting fixed inputs, such as equipment and installations. When it is difficult to observe what people do and earn, governments have often resorted to presumptive taxation to raise revenue, basing the taxes on observable proxies for income such as land ownership or house size. To correct for externalities, the analogous approach would be to tax pollution-generating equipment as if it were used (when use is unobservable) and to tax cleaner equipment at a lower rate. Unlike presumptive taxes used for revenue collection, presumptive taxes on pollution make sense only if they affect behavior.

Technical standards can thus be regarded as indirect instruments under monitoring costs. In the United States the costs of monitoring emissions continuously are prohibitive not only for mobile sources, but often for stationary sources as well (Hamrin 1991). In the United States, Mexico, and many other countries, emissions from mobile sources are controlled through testing of new sources (and in some places through annual testing), even though the results are imperfectly correlated with actual emissions.

Technical standards have been heavily criticized by economists because they tend to be applied in a mandatory, uniform, and thus excessively costly way—and generally in the form of command and control policies, instead of through selective taxes or subsidies on equipment that are differentiated according to presumed emissions. Often, regulations are applied only to new sources, failing to exploit abatement opportunities among other sources. Another problem with this "new-source bias" is that it may increase the market power of incumbents.

Many developing countries now follow the United States's example in lowering vehicle emissions mainly by setting strict tailpipe standards for new vehicles. Thus the major instrument for control is a source-specific constraint applied to equipment, as opposed to emission taxes or taxes on variable inputs such as fuels and road use. The strategy certainly reduces emissions per kilometer traveled. It would be more productive, however, when combined with fuel taxes or other instruments that encourage people to buy smaller vehicles or use their vehicles less.

The effects of indirect instruments are often subtle, because they are frequently a stopgap device, instituted to compensate for the lack of first best
instruments. Take, for example, the interaction between standards for new vehicles and a proposed presumptive Pigouvian tax on fuels in Mexico City. As new cars are purchased, the vehicle fleet will become cleaner and larger. Whether the Pigouvian tax should decline over time as the fleet becomes cleaner on average depends on whether the air pollution situation overall deteriorates or not.

Charges and Permits under Uncertainty

Even under perfect monitoring, the effects of environmental policies may be uncertain. The benefits from abatement may be subject to events that are inherently difficult to predict. For example, the effects of air pollution can depend on the health of the affected population—about which there is little information in developing countries. Furthermore, the costs of abatement depend on how easily polluters adjust, which a regulator cannot know with certainty.

The standard recommendations about the choice of instruments are affected by uncertainty in three ways: (a) the equivalence of price-based versus quantity-based instruments may no longer hold; (b) in an uncertain environment, flexible instruments are better; and (c) liability rules may be an attractive option.

PRICE-BASED VERSUS QUANTITY-BASED INSTRUMENTS UNDER UNCERTAINTY. When the marginal costs of pollution abatement are known to the regulatory agency, uncertainty about the benefits does not favor one type of instrument over the other. Firms’ abatement response depends only on costs and on the policy instrument, which are both known to the firm. So, even if the benefits deviate from expected levels, the abatement level and the efficiency losses will be exactly the same whether the price or the quantity instrument is used.

When abatement costs are uncertain to the agency, producers are assumed to have information that the agency does not have (Weitzman 1974). The quantity instrument, which can guarantee an emission level, is better if unexpected emission loads are costly. This would occur if marginal damages from unexpectedly high emissions are steep (as with leaks from nuclear facilities). Correspondingly, the price instrument, which guarantees that marginal abatement costs do not exceed the tax rate, is better when marginal damages are relatively flat.

In an empirical study, Kolstad (1986) evaluated policies to control sulfur emissions from power plants, where abatement costs were uncertain because of uncertainty about future electricity demand. He found that if marginal benefits were constant, a price instrument would be slightly preferable, but that a mild slope would be enough to make permits the more desirable option. Lyon (1989) argues that tradable permits are particularly attractive to developing countries because they provide certainty about ambient quality in a dynamic context, and they also allow implicit property rights to be changed gradually.
However, if marginal benefits are seen as fairly flat, then price instruments do have the attraction of placing a definite upper bound on control costs.

A combination of instruments may be the solution. Roberts and Spence (1976) suggest a permit to be accompanied by a (high) fee for further emissions and by a promise to repurchase unused parts of the permit (as a subsidy for additional abatement) at a (low) price. As they explain, “The subsidy provides a residual incentive for firms to clean up even more when costs are low. The finite penalty provides an escape valve if costs are very high” (page 203).

FLEXIBILITY OF INSTRUMENTS. What if the planner can adjust policy instruments when information is revealed? The results just mentioned may change if some instruments are more easily adjusted than others. Bawa (1988) suggests a mixed policy under the assumption that a regulatory policy (command and control) can be put into effect faster and more flexibly than a charge (or a tradable permit).

Suppose, for example, that stochastic changes (such as weather) make the ambient quality resulting from a steady flow of emissions worse in some periods than others, but the periods are too short for the effluent charge to be adjusted. An emission tax can then be complemented by a command and control instrument—for instance, factories are closed down under a “smog alert” (see Plourde and Yeung 1989). In practice, pollution control authorities are often authorized to shut down polluting activities selectively on short notice. In several cities in Brazil and also in Mexico City, industries are shut down during crisis periods (Sebastian forthcoming). Both Mexico City and Santiago close central areas to traffic when air pollution reaches threshold levels.

LIABILITY RULES. If monitoring of actions to avoid causing damage is expensive but the source of discharges or spills can be identified, a liability rule might usefully substitute for a regulation (Bohm and Russell 1985). This view of liability is similar to the Coasean proposition about negotiation—that negotiation between polluters and victims can take the place of government intervention—but it explicitly requires support from a legal system. Liability rules will usually distribute property rights, for instance, by postulating that everybody has the right not to be harmed by others. Liability rules can be seen as a complement to other regulations (Posner 1986; Farrel 1987) and will then undoubtedly allow for more flexible case-by-case damage assessment. Incidents such as the Bhopal catastrophe and the Prince William’s Sound oil spillage (with sizable damage awards and losses of reputation for the responsible firms) warn firms of their potential liability and thus induce them to take more precautions.

But there are many potential problems that might limit the usefulness of liability rules: low likelihood that offenders will be detected, high costs to victims for representation and litigation, the unpredictability of an underdeveloped judicial process, and the potential insolvency of the liable party. Ringleb
and Wiggins (1990) find that in the United States, where liability is generally unlimited, industries prone to litigation are increasingly being dominated by small, independent firms. Shell, for instance, pulled out of oil transport in U.S. waters in 1990. This pattern could indicate that less wealth is backing the potential liabilities, in which case the incentives given may be less powerful, since owners have little to lose. Bohn and Russell (1985) note that the liability instrument may encourage people not to protect themselves against pollution, since the price paid by the polluter is actually passed on to the victims. Kolstad, Ulen, and Johnson (1990) add that uncertainty about liability assessment gives a rationale for supplementing ex-post liability with ex-ante regulatory standards.

**Noncompetitive Market Structure**

The rules of policy intervention generally assume that markets are competitive. But often that assumption is untenable. In industrial countries, utilities are prime examples of monopolies; they are often subject to controls on both pricing and emissions. In developing countries, many markets may be small; entry barriers, tariffs, and transportation costs high; and access to credit, technology, and law enforcement limited. Utilities and some industries are often public and loss-making, and profit maximization—or even cost minimization—may not be a primary objective.

How do the recommendations for policy intervention change when the polluting firm is also a monopoly (such as a utility) whose market power permits it to supply less than optimal output? In such a case there are two sources of market failure—pollution externalities and market power. Indeed, it is theoretically possible (since output is lower from a monopoly than from a competitive firm) that the exercise of monopoly power may partially address the pollution externality (Buchanan 1969). There would be efficiency gains with two instruments to address each source of market failure. But, if a tax to address the externality directly were infeasible, an output tax would address both problems and would be the sum of a Pigouvian tax and a subsidy to output (Baumol and Oates 1988).

Market power introduces a more serious problem if abatement is to be regulated within a market for pollution permits. If the permit market does not result in competitive pricing, abatement will not be efficiently distributed, even if the number of permits available is optimal. That permit markets will often be fragmented and interdependent may be an additional argument for using price instruments. If polluters behave strategically to manipulate the charge, however, problems similar to those in permit markets will emerge (see Jack 1990).

Different policies may affect firms’ entry into and exit from markets, and thereby the extent of their market power (Dewees 1983; Kohn 1988; Spulber 1985). This intuitive conclusion runs counter to the finding in short-term
static models that nonmarginal rewards are neutral. The most important consideration is probably that quotas and standards, if they raise the costs of entry, could provide for collusion among existing firms. Assuming competitive behavior, Spulber (1985) shows that an optimal effluent charge (or number of tradable permits) will yield the efficient number of firms and efficient output even if there are economies or diseconomies of scale in production and abatement.

There are many claims that industries in industrial countries (paper and pulp, for example, and copper smelting) have become more concentrated as a result of environmental control policies. This may, however, be a response to excessive concentration on mandated equipment, or a reflection of the fact that abatement requirements usually favor incumbents, thereby discouraging new entrants. (As noted earlier, abatement activities that rely on equipment and fixed installations may justifiably be preferred to other, equally cheap abatement options if they are less costly to monitor.) There are also examples, such as fossil-fueled power generation and steel production in the United States, where pollution control policies have eroded some economies of scale, thus giving a boost to small plants (Gollop and Roberts 1983).

In developing countries, small firms in the informal sector are often major polluters. Restructuring and concentration in an industry could lower the costs of monitoring and enforcement, but using flexible instruments such as taxes and regulation of inputs may also save on those costs. This may be a way to curb emissions from small firms without forcing them underground or out of business.

**Distributive Effects: Welfare and Political Economy**

The distributive effects of alternative pollution control policies are important for two reasons. First, an increase in income may be valued more highly for the poor than for others. Second, the government should know who gains and who loses so that it can judge whether a particular reform will have sufficient political support.¹

**Environmental Policies and the Poor**

The distribution of the benefits of pollution control is an empirical issue, and the evidence on the differential health effects of reducing pollution is mixed. Several authors have noted that the poor are likely to benefit more (see Anderson 1990; Asch and Seneca 1978), because they tend to live in unhealthy, unsanitary conditions in polluted urban areas and cannot afford to protect themselves or move. Some U.S. studies (see Christiansen and Tietenberg 1985 for a review) support this view—they show that air pollution is worse in cities with many poor residents and, within cities, in the areas

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where the poor live. Theoretical arguments and some empirical evidence, however, indicate that wealthier people may be more willing to pay for environmental improvement than the poor. This could make the wealthy the principal beneficiaries of control policies (Johansson 1987; Christiansen and Tietenberg 1985).

Most of the researchers comparing the incidence of costs assume the distribution of benefits to be uniform. An exception is Harrison (1975), who notes that the policies to control air pollution from motor vehicles in the United States have affected the rural poor badly—their car ownership rates (and thus control costs) are necessarily high because they have no public transportation alternatives, and the environmental benefits in their areas are modest. In the 1990 Clean Air Act Amendments (U.S. Congress 1990), emission standards for vehicles were made stricter only in the most polluting cities, and this could somewhat reduce the costs to households that derive only minor benefits. Such differentiation makes pollution control harder to administer but perhaps more efficient, if damages per unit of emissions are lower in less polluted areas. As for water pollution in developing countries, it is clear that the wealthy can protect themselves from exposure. Private wells, piped water, and bottled water are available to households that can afford them, leaving the poorer families most vulnerable to surface water conditions.

The incidence of the costs of alternative pollution policies depends on the ability of polluters to pass on the costs to customers, to other producers (if intermediate goods are produced), and to workers. Thus, the elasticities of demand and supply in production and consumption must be analyzed along with the amount that poor households spend on the polluting goods. A higher gasoline tax, for example, may have very little effect on slum dwellers who own no cars and do not use public transport. A diesel price hike may affect commuters and rural communities; vulnerability will depend on the availability of substitutes. Regulatory intervention can also have distributive effects because it affects the cost of doing business, which can be shifted forward to prices or backward to labor and capital. The poor may be especially vulnerable to selective price increases and at greater risk of unemployment if an industry becomes uncompetitive (Yu and Ingene 1982; Yohe 1979).

In industries for which environmental regulations are very costly, changes in costs and practices may affect incidence. For example, if labor is a substitute for polluting inputs (labor and energy are often substitutable), abatement policies can lead to increased labor-intensity in production and can thus increase employment or remuneration of labor. Another situation arises when abatement does not change input combination but simply raises costs in the industry. Assuming flexible prices, Forster (1983) uses a simple theoretical general equilibrium framework to show that the factor most intensively used in the polluting sector will lose remuneration, while the other factors will earn more. Alternative assumptions, such as the introduction of price/wage
rigidities (and possible unemployment) or immobile factors would affect the results.

Most empirical studies incorporating the incidence of costs do not explicitly compare alternative instruments. Pearson and Smith (1990) find that carbon taxes sufficient to reduce carbon emissions in the United Kingdom by 20 percent would raise £8 billion in the short run and would be highly regressive, reducing the real income of the very poor by up to 2.7 percent compared with only 0.4 percent for the very rich. They do find, naturally, that if all the proceeds from the carbon tax were redistributed to the poor, the scheme could end up being progressive.

Because the poor most likely spend more of their income, price increases generally tend to have a regressive effect (Gianessi, Peskin, and Wolff 1979; Dorfman 1975), although this may be seen as a transitory phenomenon. Over and above this, Yan and others (1975) found no pattern of regressiveness or progressiveness arising from the specific prices that increased as a result of environmental policies. Water pollution treatment, which is typically partially financed through charges and taxes, appears to have been progressive in some cases and regressive in others.

Lessons about presumptive Pigouvian taxes on marketed goods and services can be derived from empirical studies in developing countries. An internal World Bank study on Indonesia found that the average household spends 4.2 to 4.5 percent of its income on fuels and 0.2 to 0.3 on transport. Among manufacturing industries, no industry had an elasticity to costs of fuel prices higher than 9 percent (most are in the range of 1–3 percent), and labor was assumed to be a substitute for energy. Another internal World Bank study, on Mexico, found that wealthy households spend a higher share of their budgets on transport and communication, suggesting a good tax base for distributive purposes.

Political Economy and Implementation

If some instruments are so much better than others (for instance, market-based incentives rather than command and control, direct rather than indirect), why are they not applied more in practice? Many researchers have shown that policy outcomes are influenced not so much by net gains to society as by who gains and who bears the burden of different strategies. (See Hahn 1989 for a brief review and interpretation; see also Baumol and Oates 1979, 1988; Dewees 1983; Buchanan and Tullock 1975.) If a group that prefers one instrument over another can influence policy decisions, it is likely that a policy will be chosen that does not minimize costs. For example, Buchanan and Tullock (1975, pp. 141–42) compare regulation to an effluent tax, and note:

Regulation is less desirable on efficiency grounds...but this instrument will be preferred by those whose behavior is subjected to either one or the other of the two policy instruments.... [In] their own
private interests, owners of firms in the industry along with employees will oppose the (effluent) tax. By contrast, under regulation firms may well secure pecuniary gains from the imposition of direct controls that reduce total industry output.... This political choice setting is...the familiar one in which a small, concentrated, identifiable and intensely interested group may exert more influence on political choice making than the much larger majority.

Thus, a tax on emissions is unpopular among influential polluting industries that, for any given level of abatement effort, strongly prefer not to pay for the remaining emissions. The regulatory agency, for its part, is likely to settle for any solution that is consistent with its ambient quality goals. Those who pay the additional costs of inefficient intervention are citizens at large, who are often badly organized compared to the industry in question. In addition to the inefficiency problems already mentioned, real-world command and control policies tend to be selective and thus very susceptible to rent-seeking behavior.

Political economy—the study of how distributive effects affect decisions—can also be important in setting priorities among environmental problems. Dixon (1991) argues that the wealthy can privately avoid the consequences of water pollution to a greater extent than they can avoid the consequences of air pollution, and that as a result, water pollution control will lag in the policy process.

Implications for Policy Reform

Which policy instruments are more efficient, practical, and equitable under the constraints that developing country governments confront? What research must be done to provide better answers to the questions we have raised?

The stringent budgetary restrictions in developing countries probably strengthen considerably the case for price-based versus quantity-based interventions, particularly if the instruments are related only indirectly to damages or emissions.

Even though quantity-based interventions (such as tradable permits) can incorporate aspects of market-based incentives, they will in most cases require new administrative systems. For indirect instruments, many governments already have ways of charging for or taxing relevant commodities, and the administrative capacity to manipulate domestic relative prices is generally well established. What price-based interventions and permits have in common is that they can generate revenue. But the potential revenues from pollution control instruments are likely to be small in relation to the overall needs of the treasury—except in the case of fuel taxes, which can generate vast revenues.
In an uncertain world, price-based instruments provide greater certainty
about abatement costs. Such instruments are superior when there are concerns
that underestimating costs would yield controls that are “too strict” and envi-
ronmental quality that is “too high”—concerns that arguably trouble policy-
makers in many developing countries.

The costs of monitoring individual emissions and enforcing their abatement
can be high, particularly in developing countries, for technological and institu-
tional reasons. Indirect taxes or subsidies for marketed inputs and outputs are
desirable alternatives because they depend less on vulnerable and costly moni-
toring and enforcement functions. But these instruments also imply additional
costs because they can only imperfectly mimic taxes on monitored emissions
and damages. The choice of which commodities to tax and at what rates
should be sensitive to demand relationships, which play a role in emission re-
duction and in the probable incidence. These empirical issues should be the
subject of future research.

The considerations raised in this article do not mean that instruments such
as tradable permits should not be tried out, but that less sophisticated instru-
ments should be considered wherever they can potentially do much of the job
in an easy-to-implement, low-cost way. Then, monitoring and enforcement
capacity can be developed and priorities set for remaining problem sectors or
pollutants. Schemes that encourage self-compliance, such as deposit refund sys-
tems, should also be considered.

Notes

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ment.

1. On the long-term efficiency of the negotiated solution with well-defined property rights,
see Frech (1973) and Tybout (1972, 1973). Efficiency can be the result if firms that leave or en-
ter a market can charge or be charged for doing so. For a discussion of incentive-compatible
demand revelation, see Groves and Ledyard (1977) and Green and Laffont (1979). Farrel (1987)
uses a simple approach to show that an intervening bureaucrat may be more efficient than ne-
gotiations, even when the bureaucrat is limited by poor information and there are only two
agents.

2. Since A. C. Pigou’s (1920) seminal contribution, the expression “Pigouvian taxes” has been
used for taxes intended to discourage activities with negative externalities. The “polluter pays”
principle, as defined by OECD guidelines (OECD 1975; Opschoor and Vos 1989) is not a “true”
Pigouvian instrument, because it usually requires payment for abatement but not for damages
from emissions.

3. The perspective of this article is policy analysis under a well-defined welfare objective. In
this context, insights from public choice models are relevant mostly for problems of policy adop-
tion and implementation. See Buchanan and Tullock (1975) and Hahn (1989) for applications to
environmental policies.

4. This calculation is a rough approximation using Roy’s identity and a money measure of
utility.
References

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A SURVEY OF THE COSTS
OF WORLD SUGAR POLICIES

Brent Borrell
Ronald C. Duncan

The world sugar market has long been characterized by volatile prices and widespread intervention. Controls on domestic prices, demand, and supply have created an inefficient pattern of world production, consumption, and trade. Without government controls, production would shift from the countries with higher-cost, subsidized production (especially the European Community, Japan, and the United States) to the countries with lower costs (such as Australia, Brazil, and Thailand). The resources saved could then be directed to other activities.

Sugar policies in countries with high costs reduce world sugar prices quite substantially in the long run and increase price variability significantly; production controls in countries with low costs increase world prices somewhat and also increase their variability.

What would happen if all interventions ceased? Average world sugar prices would probably—but not definitely—rise. World prices would definitely vary less, and economic conditions would definitely improve, especially in developing countries that depend heavily on sugar exports. But the prospects for substantial reform of the sugar market are not promising, even though the GATT Uruguay Round continues. This article puts forward some modest proposals for changing the existing interventions to lessen economic distortions and reduce costs.

Volatility in world agricultural commodity markets compels farmers to demand political action to remedy the problems caused by price instability. Consumers and taxpayers may also respond politically to unstable prices, although their incentives differ from those of farmers and may
be weaker. The uneven political pressures from the different groups usually result in market interventions that favor farmers.

The volatile prices and widespread government intervention characteristic of the world sugar market have shown up in a pattern of short, sharp price peaks and extended price troughs. To insulate themselves from the world market, producers in most countries have lobbied their governments to control domestic prices, supply, and demand. Numerous price, production, trade, and stockholding policies have been devised. Ultimately, detachment from the free market greatly distorts production, consumption, trade, and world prices. Under a more liberal trading order, production would shift from countries where sugar production is subsidized and costs are high (such as the European Community, Japan, and the United States) to countries where costs are low (such as Australia, Brazil, and Thailand). The world's sugar requirements would be met with fewer resources, and the resources saved could be transferred to other industries to generate additional income. Consumers currently paying high domestic sugar prices would be able to buy more agricultural and other goods and thus have higher real incomes. Such changes would benefit many small, low-income developing countries that have been hurt by the existing policies.

The Uruguay Round of the General Agreement on Tariffs and Trade (GATT) multilateral trade negotiations opened an avenue for agricultural trade liberalization. But many special interest groups stand in the way of trade reforms. Long-lasting and effective reforms will not be achieved easily. To ensure durable reforms, governments must alter the incentives that affect the formation of policy. Understanding the process that spawns and sustains interventionist trade policies in particular markets will help in assessing the viability of various trade reforms in the long term.

To provide a framework for assessing the prospects for trade reform in the sugar market, this article begins by explaining the main features of policy formation in that market. Some of the key features of existing policies are discussed, and the findings of a number of empirical studies are highlighted to draw attention to the economic costs and benefits of intervention. The discussion draws heavily on a model of the world market developed by Wong, Sturgiss, and Borrell (1989), and indeed some parts of the article summarize that work directly.

The World Sugar Market

In June 1985 the world market price slumped to a historic low of $0.06 per kilogram. A decade earlier, in the boom year of 1974, sugar had sold for a brief period at around $2.60 per kilogram (in 1985 values) and averaged $1.30 per kilogram for the year. The average price over the past thirty-five years (in 1985 values) has been $0.35 per kilogram, and the average cost of production worldwide is estimated at $0.44 per kilogram. The price instability in the world
sugar market has caused virtually all countries—even exporting countries with low production costs—to insulate their domestic producers from low prices. This protection has both compensated for and sustained the long-term excess of costs over export returns.

Among sugar-producing countries, those most exposed to the world market are those that export a large share of production, such as Australia and Thailand. Cuba, although a large exporter, has reduced its exposure through a bilateral trade agreement with the former U.S.S.R. The producers that are least exposed are those with large domestic markets. In these countries, consumers and taxpayers subsidize producers who receive a high and stable domestic price. The most notable examples in this category are the United States, the European Community, Japan, the former U.S.S.R., India, and China.

The sugar policies of major industrial countries have attracted much attention because of the magnitude of support offered to producers and the governments' seeming disregard for the high costs incurred. The stated goal of the policies is usually to stabilize and maintain farm incomes. In some cases, notably in Europe and Japan, self-sufficiency has been a consideration. Intervention is also widespread in both producing and consuming developing countries, where a primary aim of policy is to earn (or conserve) foreign exchange.

To achieve their goals, governments may control supply, both in domestic production and trade, or operate a stockpiling policy. Controls on supply allow producer prices in the European Community, Japan, and the United States to be very high relative to the world price (Wong, Sturgiss, and Borrell 1989). In Japan the producer price in 1986 was eleven times the world price. These domestic prices are not only higher than the world price but also more stable. In all cases, producers are protected in times of declining world prices. The United States is notable for insulating producers from world price troughs but not from peaks, suggesting that support of producers' incomes is a higher priority than stabilization of prices.

When restrictions are placed on domestic production, as in Australia and the European Community, controlled expansions of the domestic industry occur but contractions do not, even in times of very low prices. The policies, which were designed in part to protect producers from price instability, have actually exacerbated world price fluctuations, partly because increases in supply have not been well synchronized with the rather stable growth in demand. Governments change production controls only after world price peaks, and then in large steps. The resulting surges in world supply have far exceeded increases in consumption. When world prices fall due to a surge in production, protective policies are activated to support the expanded industries and new fixed investments, depressing world prices for some years. In addition, because of the insulation of many domestic markets, the burden of adjustment is borne by the relatively small, unprotected world trade sector. To induce the necessary adjustments of supply and demand, the world price must vary more than would otherwise be required.
Economic Effects of Policy Intervention

Under a trading system with less market intervention, producers would respond directly to the world price and would likely base their production plans on anticipated growth in consumption and on changing market conditions. Severe shortages of sugar and the high prices that follow would then be less likely to occur, as would overexpansion and periods of drastically low prices; the price would become less variable.

Whether the average world price level would be higher or lower in the absence of intervention is hard to predict. The average world price could increase because producers with high costs would lack the support prices needed to expand. The removal of supply controls in the countries with low costs, however, might make it profitable for efficient producers to supply the world market at a lower price. What is more certain is that there would be a shift in production away from countries with subsidies and high costs toward those with low costs. Efficient producers would gain from greater trade opportunities. Consumers and taxpayers in importing countries would also be better off because the world's sugar would ultimately be produced with fewer resources. Prices paid by consumers would be lowered overall and subsidies paid by taxpayers would be reduced or eliminated.

The Policy Formation Process

Intervention in the world sugar market began more than 300 years ago, when European countries strictly regulated the trade in sugar to facilitate taxation of sugar-producing colonies (Ballinger 1971). The colonies were forced to sell exclusively to their respective mother countries (or to other colonies) and to pay large duties. These duties increased the landed price of sugar, thereby providing more incentive to produce sugar (especially from sugar beets) in Europe and North America. These sugar industries grew up heavily dependent on the artificially high price, and thus with a strong interest in continuing this intervention.

With few exceptions, groups whose welfare is directly affected by government intervention seek to influence policies in their favor. In the countries with high costs, producers have backed policies that consistently favor them at the expense of consumers, taxpayers, and producers in other countries. In the European Community, Japan, and the United States, for example, government subsidies in recent years have made up more than half the income of a sugar farmer or sweetener producer. These costs, unless they are budget items, are usually not transparent to consumers, taxpayers, or voters.

The amount that firms or individuals stand to gain from policy interventions determines their incentive to form “distributional coalitions” (Olsen 1982) to lobby the government. Those who pay the costs of the support policies—consumers and taxpayers, for example—have, as a group, a strong incentive to
press for reforms. For individuals, however, the incentives are weak because the
cost of the policies to individuals, even when clearly perceived, tends to be
small. Additionally, the cost of forming a strong lobby from a diverse and nu-
merous group such as sugar consumers is usually quite large in comparison
with the benefits to be obtained from policy reform.

Producers, however, may have strong incentives to form coalitions. Sugar
farmers and processors have a great deal of fixed capital tied up in production
and a vested interest in maintaining support. In 1984–85, for example, the six
large companies that own all the mills and farms in Florida received total sup-
port estimated at $329 million (in 1984 dollar values) (Borrell, Sturgiss, and
Wong 1987). In the same period, the estimated cost of the sugar policy to a
U.S. family of four was about $55. When the benefits of an existing policy are
enjoyed by relatively few while the costs exceed the benefits but are borne by
many, the political will to reform is not strong.

The variability of world market prices seems to help producer groups in-
crease the total level of support they receive. When the world price rises, pro-
ducers seek increases in either production quotas, producer prices, or
investment subsidies. At the same time, if security of supply and conservation
of foreign reserves are government objectives, high prices in the world market
may lead governments to encourage expansion of domestic production, even if
it is not profitable for the economy as a whole. When the world price falls due
to a surge in production, producers seek protection of the value of their fixed
investments. In spite of the rising financial and economic costs, it can be polit-
ically difficult to reduce protection, particularly for a government that has en-
couraged the previous expansion. High levels of protection are thus given to
enlarged industries, lengthening the period of excessive production and de-
pressed prices. It is usually only after a long period of depressed prices, if at
all, that some action is taken to decrease levels of support. Indeed, the expect-
ation of protection against low prices may encourage producers to overexpand
when given the opportunity to increase production.

Empirical Evidence of the Effects of Intervention

Protectionist agricultural policies have so distorted world markets that it is
difficult to determine what form these markets might assume under more lib-
eral trading practices. Nonetheless, studies of policies in various countries cast
some light on the consequences of intervention and the effectiveness of policy
reform. Market interventions have affected both the level and the variability of
world sugar prices. Although the combined effect of all countries’ policies is
open to some question, there is little doubt that the policies of the United
States, the European Community, and Japan have, separately and jointly, sig-
ificantly depressed world sugar prices. At the same time, they have ensured a
sustained misallocation of resources in the production and consumption of

Brent Borrell and Ronald C. Duncan
sweeteners worldwide, imposing high costs on their own economies and on those of efficient exporting countries as well.

The United States

The principal feature of U.S. sweetener policy has been the level of protection offered not only to sugar producers but also to producers of high-fructose corn syrup. The target domestic price, termed the market stabilization price, is supported by import controls where the import quota is based on the chosen stabilization price and the expected domestic supply and demand. When the world price exceeds the stabilization price, import quotas are not binding and the domestic price follows the world price. As a result of this price support policy, consumption and imports of sugar have declined. The United States, formerly the largest importer of sugar with annual imports of 5.5 million tons (20 percent of world imports), now imports only 1–2 million tons annually.

A key reason for the fall of U.S. sugar consumption and imports is the development of alternative sweeteners, including high-fructose corn syrup and low-calorie sweeteners such as aspartame. Corn syrup has many of the attributes of sugar and can be readily substituted for it in many uses—for example, in soft drinks. In the United States, corn syrup production costs are low relative to the protected sugar price, enabling corn syrup producers to undercut the sugar price and rapidly expand their share of the caloric sweetener market. Domestic production is not limited by quota, and by 1985, corn syrup had almost completely substituted for sugar in applications where substitution was relatively easy. Sugar’s share of the total U.S. sweetener market fell from 79 percent in 1970 to 41 percent in 1988.

Domestic sugar production, including both beets and cane, has increased rapidly in recent years, from just under 5.5 million tons in 1985–86 to 6.7 million tons in 1987–88. This increase has come mainly from farmers switching production from wheat to sugar beet in response to declining returns from wheat relative to sugar. In the 1980s the sugar support price was also more stable than in the previous decade and was announced up to four years in advance. The greater certainty of sugar returns has increased the relative attractiveness of beet production.

The reduction in U.S. sugar imports greatly depressed world sugar prices in the 1980s. Sudaryanto (1987) estimated that in 1982–83, U.S. sugar policies depressed the world price by 49 percent. Borrell, Sturgiss, and Wong (1987) estimated that in 1982–86, world prices were 34–50 percent lower due to U.S. policies, and for a twenty-year period, world prices were 9 percent lower on average. More recently, Sturgiss, Field, and Young (1990) have estimated that the U.S. sugar policy depressed the world price by 21–33 percent on average from 1982 to 1988, although for some years the estimated reduction was as high as 48 percent.
The work of Borrell, Sturgiss, and Wong and of Sturgiss, Field, and Young suggests that the effect of U.S. policy is particularly severe during cyclical periods of low world prices, because it is then that the gap between U.S. and world prices is greatest. Borrell, Sturgiss, and Wong estimated that U.S. policy increases world price instability by 8.0–12.5 percent (with instability measured as the coefficient of variation of prices). Moreover, the policy increases the chance of both very low and very high prices.

There are at least two reasons why U.S. policy has had such a big impact. First, the increases in domestic production of both high-fructose corn syrup and sugar had displaced an estimated 68–82 percent of imported sugar by 1988 (Sturgiss, Field, and Young 1990). Second, consumers and producers elsewhere in the world are mostly unresponsive to changes in the world price. Changes in the world price cause only small changes in the world supply of and demand for sugar, so relatively large price declines are required before other markets absorb the imports displaced from the United States. With so little adjustment in production and consumption, falling prices generally induce increased stockholding.

U.S. policy provides compensation to some sugar exporters in the form of restricted access to the high-priced U.S. market. For most exporting countries, however, access to the U.S. market has been insufficient to compensate for the export revenue lost because of low world prices. Table 1 indicates the estimated cost or benefit of the policy to exporters in selected years. For Australia, Brazil, the European Community, Fiji, and Thailand, U.S. policy imposed hefty costs, at least between 1982 and 1988.

Table 1. Income Transfers to Trading Partners Resulting from U.S. Sugar Policies, Selected Years, 1982–88

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<tbody>
<tr>
<td></td>
<td>A^a</td>
<td>B^b</td>
<td>A^a</td>
<td>B^b</td>
</tr>
<tr>
<td>Argentina</td>
<td>—</td>
<td>—</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>Australia</td>
<td>—17</td>
<td>—34</td>
<td>—76</td>
<td>—194</td>
</tr>
<tr>
<td>Brazil</td>
<td>20</td>
<td>—3</td>
<td>—16</td>
<td>—134</td>
</tr>
<tr>
<td>Caribbean Basin countries</td>
<td>—</td>
<td>—</td>
<td>198</td>
<td>111</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>—</td>
<td>—</td>
<td>120</td>
<td>84</td>
</tr>
<tr>
<td>Fiji</td>
<td>—</td>
<td>—</td>
<td>2</td>
<td>—4</td>
</tr>
<tr>
<td>Philippines</td>
<td>—</td>
<td>—</td>
<td>83</td>
<td>48</td>
</tr>
<tr>
<td>Thailand</td>
<td>—</td>
<td>—</td>
<td>—54</td>
<td>—110</td>
</tr>
</tbody>
</table>

— Not available.

a. U.S. supply of high-fructose corn syrup is assumed independent of sweetener prices.
b. U.S. production of high-fructose corn syrup is held constant at its 1981 level.

Source: Sturgiss, Field, and Young 1990.
For the Caribbean countries, access to the U.S. market is considered a form of aid under the U.S.–Caribbean Basin Initiative. Although the benefit was sizable through the mid-1980s, it has since declined as the region’s import quota has fallen. Indeed, in 1988 U.S. policy imposed a net cost on the region. Considering that the estimates given in table 1 exclude the cost of resource misallocations arising from trade distortion, the total costs are likely to be greater than reported. When exposure to foreign competition is reduced, as in those exporting countries with large U.S. import quotas, domestic industries tend to become uncompetitive and to resist the changes adopted in other countries (Kindleberger 1973).

Faced with quota reductions in the last decade, areas that once produced sugar for the U.S. market have abandoned production because they are unable to compete on the depressed world market. Sturgiss, Field, and Young (1990) report that annual exports from the Caribbean fell by 0.6 million tons over the period 1983–88, resulting in an annual revenue loss of $340 million by 1988. When this consequence of U.S. policy is taken into account, the costs to the region may have outweighed the benefits as early as 1986. Ives and Hurley (1988), in a detailed analysis of the effects of the U.S. sugar program on the Caribbean countries, conclude that it has imposed great hardship. Unemployment has soared, and because the sugar industry is the region’s largest employer, the U.S. sugar program is often blamed.

The U.S. policy may similarly impose net costs on Argentina and the Philippines when the wider economic effects are considered. As in the Caribbean countries, both total exports and exports to the unprotected world market from the Philippines declined during the 1980s. The country was highly dependent on access to the U.S. market in the early 1980s, and when its import quota was reduced, the Philippines was unable to export to the world market. In contrast, Fiji, Malawi, Swaziland, Thailand, and Zimbabwe were given very limited access to the U.S. market. Highly dependent on the free world market, these countries had to keep production costs low to remain competitive. Despite depressed world prices, these countries increased their exports during the 1980s.

Although U.S. policy has been costly for exporting countries, it has imposed even greater costs on the U.S. economy. Estimates of the income transfers and costs to U.S. groups are given in table 2. Between 1982 and 1988, the costs to U.S. consumers and stockholders exceeded the transfers to U.S. manufacturers of sugar and high-fructose corn syrup and to the government by an estimated $776–785 million annually. The cost varied with changes in the world price and was highest in 1982—in excess of $1 billion. The annual subsidy equivalent given to sugar producers and high-fructose corn syrup producers is on the order of $1 billion each between 1982 and 1988. The estimated costs imposed on consumers over the same period are on the order of $2.5 billion annually. Costs and transfers of a similar order of magnitude have been estimated in several
Table 2. Estimated Annual Income Transfers and Costs to U.S. Groups Resulting from U.S. Sugar Policies, 1982–88
(millions of 1988 dollars)

<table>
<thead>
<tr>
<th>Crop year&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Transfer to sugar producers&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Transfer to corn syrup producers&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Cost to consumers&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Transfer to government</th>
<th>Cost to stockholders&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Net loss to U.S. economy&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982–85 (average)</td>
<td>1,164–1,304</td>
<td>739–1,035</td>
<td>2,959–3,362</td>
<td>95</td>
<td>57–42</td>
<td>1,003–986</td>
</tr>
<tr>
<td>1986</td>
<td>1,299–1,302</td>
<td>1,014–1,645</td>
<td>3,506–4,197</td>
<td>9</td>
<td>48–13</td>
<td>1,232–1,054</td>
</tr>
<tr>
<td>1987</td>
<td>716–1,124</td>
<td>548–1,237</td>
<td>1,853–3,042</td>
<td>8</td>
<td>50–43</td>
<td>716–632</td>
</tr>
<tr>
<td>1988</td>
<td>558–1,019</td>
<td>394–1,044</td>
<td>1,327–2,538</td>
<td>6</td>
<td>34–30</td>
<td>500–404</td>
</tr>
<tr>
<td>1982–88 (average)</td>
<td>904–1,108</td>
<td>614–1,008</td>
<td>2,315–2,903</td>
<td>51</td>
<td>45–43</td>
<td>785–776</td>
</tr>
</tbody>
</table>

Note: Transfers may not cancel due to rounding.

a. September–August.

b. The first-mentioned figure in the range is derived when the U.S. supply of high-fructose corn syrup is held constant at its 1981 level. The second figure is derived by assuming that U.S. production of high-fructose corn syrup is independent of sweetener prices.

Source: Sturgiss, Field, and Young 1990.
other studies of U.S. sugar policy. (For a review of estimates from partial equilibrium studies on the U.S. sugar program, see Rendleman and Hertel 1989.)

The net losses to the U.S. economy include both efficiency losses and losses arising from the transfer of income from U.S. consumers to foreign suppliers of sugar (quota holders). U.S. sugar policy encourages industry to use resources in the production of sweeteners at a cost higher than the international value of such products, and the United States pays more for its sweetener imports than their international value. Because the policy confers benefits on some countries, such as cheaper sugar imports for China, Japan, and the former U.S.S.R., the net losses to the world economy are less than those to the U.S. economy itself. For the period 1982–88, the loss to the world economy is estimated to have averaged between $300 million and $500 million (Sturgiss, Field, and Young 1990). There are many reasons for believing this is a conservative estimate; in particular, the impact of the policy on other sectors was not included. Rendleman and Hertel (1989) estimated the effects of the sugar program on seventeen other producing sectors and concluded that the gains to the U.S. economy from free trade in sugar could be as much as double the estimates of most other studies.

The European Community

The support provided to the European Community’s (EC’s) beet sugar industry under the Common Agricultural Policy transformed the Community from a net importer of sugar in the early 1970s into a large exporter with net exports of 4 million tons in 1983. Domestic prices are maintained at levels well above the world price, although the amount of production receiving the supported price is limited by quotas. The only imports are those that enter under the Lomé Agreement, which allows certain African, Caribbean, and Pacific Island countries to export around 1.4 million tons of raw sugar annually to the high-priced EC market. These imports are subject to a system of variable levies, and the allowable level of imports has remained virtually unchanged since 1975.

The established domestic price serves as a price floor, since intervention agencies are required to purchase any sugar offered to them (up to the production quota) at this price. In 1988–89 the intervention price was 0.54 ECU per kilogram for refined sugar and 0.45 ECU per kilogram for raw sugar (while the world raw sugar price—cost, insurance, and freight to Rotterdam—was around 0.22 ECU per kilogram). In fact, producers do not usually receive the full intervention price because their receipts are taxed. These taxes offset the losses incurred by the European Community on sugar exports when (as is generally the case) the world price is lower than the supported domestic price that traders must pay. The Community pays an export “restitution” to traders to cover the difference. The beet producer price is also regulated, with a minimum price set on the basis of the sugar intervention price. This “intervention beet
price" is reduced in proportion to any levies paid by the sugar producers, and the reduction is significant for beets used in B-quota sugar production.

Sugar production is divided into three categories: A, B, and C. The first two are limited by production quotas and receive supported prices; production of the third is unlimited but must be sold at the world price. When quotas are binding, a "co-responsibility" levy of 2 percent is placed on both A and B sugar. If the funds from the co-responsibility levy do not cover the cost of export restitutions, an additional levy of either 30 percent or 37.5 percent is applied on B sugar. On occasions when this levy is still not enough, a further levy of 5 percent has been imposed on A sugar and the total levy on B sugar has been raised to around 50 percent. Even with these high taxes, however, the net price for B-quota sugar exceeds the world price by one-half of the difference between the intervention price and the world price.

The bulk of sugar produced is A-quota sugar, which receives nearly the full intervention price. Production of A-quota sugar for the nine-member Community in 1988-89 was 9.2 million tons (refined). The intervention price is high enough relative to costs to ensure that all A quotas are filled except when adverse weather or disease outbreaks make this impossible. The B quota is much smaller; in 1988-89 it was set at 2.2 million tons. Production quotas are allocated to individual countries and then to individual factories, and are nontransferable. Thus, shortfalls in quota production cannot be met by other factories or countries, and it is possible for the Community as a whole to produce B-quota sugar without having a full A quota, owing to production difficulties in particular localities.

Although C sugar must be sold on the world market without any government support, the support provided to A- and B-quota production can indirectly assist producers of C sugar. In some countries, the A, B, and C revenues are pooled (Bureau of Agricultural Economics 1985), allowing producers of C sugar to earn more than the world price for an unlimited quantity of sugar. Even in countries where this does not occur, the assistance given to produce A- and B-quota sugar covers the fixed costs of production, making it worthwhile to produce additional C sugar whenever the world price covers the marginal costs of C production. In some cases, C sugar may be produced only to ensure sufficient supplies to meet a grower's A and B quotas, and not because it is economical in itself.

To protect the market from imports, a threshold price is established and used to determine levies on imports. The threshold prices for raw and refined sugar in 1988-89 were 0.57 ECU and 0.66 ECU per kilogram, respectively. When the world price is lower than the threshold price, imports are subject to a levy equal to the difference between the world and threshold prices. The levy removes the incentive to import sugar. Conversely, import subsidies and export taxes (additional to the levies described above) are used when the world price is higher than the threshold price. This stabilizes the domestic market.
In essence, the effects of EC policy are to restrict imports, to raise domestic producer and consumer prices above the world price, and to raise production, lower consumption, and increase exports. Overall, the policy greatly adds to the structural surplus on the world market.

The long-term price-depressing effect of EC policy on the world market has been estimated at between 5 and 12 percent (Anderson and Tyers 1986; Bureau of Agricultural Economics 1985; Koester and Schmitz 1982). The Bureau of Agricultural Economics (1985) estimates that EC production is 1.3–2.3 million tons higher and exports are 1.6–2.5 million tons greater than they would be in the absence of price supports. The nature of intervention in the EC sugar market, however, distorts supply to such an extent that it is very difficult to model accurately how producers would respond if they were exposed to the world price. Nonetheless, because the intervention price is usually several multiples of the world price, it seems reasonable to assume that supply would be substantially reduced.

EC policies may have an even greater effect on the world market than indicated above. Using the model of Wong, Sturgiss, and Borrell (1989), simulations were conducted in which A- and B-quota production was reduced to a level equal to EC consumption. It was assumed that only C sugar was traded, and all export restitution payments ceased. Subsidies were assumed to be paid on the reduced A- and B-quota production. The underlying assumption was that in the absence of export restitutions, current producers of A- and B-quota sugar would not export to the world market, though producers of C sugar would and could increase their supply as world prices rose. This assumption does not seem unreasonable considering that the European Community became a net exporter only after support prices were raised and A and B quotas were increased to a level well above 100 percent self-sufficiency in 1975–76. Although changes in technology have increased productivity in the industry, it appears that the large boost in subsidies since 1975–76 is the principal factor sustaining the export of A- and B-quota sugar. The Bureau of Agricultural Economics (1985) concludes that the support arrangements enable production of substantial quantities in parts of the Community where cost structures would otherwise prevent such production.

The simulations based on Wong, Sturgiss, and Borrell indicate that the European Community’s export of A- and B-quota sugar to the world market alone has the potential to lower the world price by 17.5 percent on average, and by at least 30 percent during low points of the world price cycle. In addition to encouraging excess production and exports, the EC policy also depresses the world price because the consumer price is set above the world price, so that EC consumption is lowered as well. Taking this effect into account, Sudaryanto (1987) estimated that EC policies lowered the world price by 35 percent in 1982–83.

The effects on the economies of exporting countries can also be calculated. The annual average cost of the policy between 1982 and 1988 (in 1984 dollars)
is estimated at up to $160 million each for Australia and Brazil, up to $72 million for Thailand, up to $50 million each for the Philippines and South Africa, $23 million for the Dominican Republic, and $13 million each for Colombia and Guatemala. For most of the African, Caribbean, and Pacific States (ACP countries) with access to the EC market under the Lome Convention, the net effect of the policy between 1982 and 1988, after allowing for the price-depressing effects on the world market, is estimated to be positive. The statistics are summarized in table 3. Among the larger exporters in this group, Mauritius clearly benefited from the policy, while for Zimbabwe, Swaziland, and Fiji the benefits have been considerably fewer—especially when measured on a unit export basis, as in table 4. More than 75 percent of Mauritian exports are allowed into the EC market; less than 33 percent of the exports of the other ACP countries are allowed.

Koester and Schmitz (1982) estimated the effects of EC sugar policy on the ACP countries for 1978–79 and also found wide disparities in the net benefits to recipient countries. They point out that although the preferential access granted to ACP countries is regarded as a form of economic aid, there is no correlation between the net benefit conferred and the gross domestic product of those countries. The effects on the economy are arbitrary and do not correspond to any obvious objective of EC development policy.

Like the estimates made by Sturgiss, Field, and Young (1990) for the effects of U.S. policy on Caribbean countries, the estimates given in tables 3 and 4 exclude the economic effects associated with resource misallocations, so the benefits are likely to be less than reported. Swaziland and Zimbabwe, for example, increased their exports to the world market during the 1980s despite the low world price. If world prices had not been so depressed by the EC policy, export revenues would have been higher and exports from these countries may have expanded even more quickly. Furthermore, world prices were low during 1982–88, so the reported benefits are near their maximum. At other stages of the world price cycle, when prices are higher, the gross benefits decline and may even be negative. Because the world price has risen considerably in recent years, the gross benefits from access to the EC market are less than they were from 1982 to 1988.

**Japan**

Japanese consumer and producer prices are maintained well above the world price, with consumer prices at five times the world price in 1985–86, and the producer price of raw sugar at eight times the world price in 1985–86. The key policy instrument is a system of fixed and variable levies on imported raw sugar, administered by a stabilization agency that trades both domestically produced and imported sugar. Direct subsidies are also paid to growers.

The high prices are intended to encourage domestic production and are set broadly in line with production costs. The very high consumer price for sugar
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<td>2.24</td>
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<td>-0.58</td>
<td>3.62</td>
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Source: Authors' calculations.
Table 4. Net Benefits or Losses to the African, Caribbean, and Pacific States from the European Community's Sugar Policy, Per Ton of Exports, 1982–88
(1984 dollars)

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<td>Barbados</td>
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<td>153.41</td>
<td>115.48</td>
<td>141.75</td>
<td>106.95</td>
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<td>80.36</td>
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<td>82.59</td>
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<td>194.17</td>
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<td>155.46</td>
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— Not available.
Source: Authors' calculations.
not only reduces demand for sugar directly but also allows high-fructose corn syrup to be priced below sugar. Consumption of high-fructose corn syrup is subject to a small tax, but maize, its major raw material, can be imported duty-free. The unequal treatment of sugar and corn syrup has encouraged the production and use of the syrup in place of sugar. Although Japan is the world’s second largest importer of sugar, its per capita sugar consumption is the smallest among industrial countries and has declined in recent years. The consumption of high-fructose corn syrup has risen from virtually nil before the world sugar price peaked in 1974–75 to 20 percent of the sweetener market by 1986–87. The decline in sugar consumption has been accompanied by a decline in sugar imports.

Sturgiss, Tobler, and Connell (1988) estimate that Japanese demand for sugar imports may be as much as 54 percent lower than it would be in the absence of government intervention. They also estimate that because of Japan’s sugar policy, the world price is 2–5 percent lower on average and up to 14 percent lower during the trough period of the world price cycle. Also, variability measured by the coefficient of variation of prices is 11 percent higher. Japanese policy in 1986 is estimated to have cost Australia $41–50 million, Brazil $38–46 million, and the Philippines and Thailand $33–40 million, all in 1984 dollar values. It is estimated that the policy has provided high-fructose corn syrup producers with an effective subsidy of more than $700 million over the period 1985–87. Over the same period, sugar millers, processors, and growers together received subsidies of about $2 billion. The cost to Japanese consumers over the period was $7 billion. In pointing out the sheer inefficiency of Japanese policy, Sturgiss, Tobler, and Connell note that for every dollar transferred to Japanese sugar producers in 1987, the cost to Japanese consumers was an estimated $2.27 and to producers elsewhere in the world between $2.50 and $3.40.

Joint Effects: The United States, the European Community, and Japan

Because of interactions among policy effects, the joint effects of U.S., EC, and Japanese policies are not simply the sum of the separate effects. To estimate the joint effects, the model of Wong, Sturgiss, and Borrell (1989) was simulated assuming no intervention in the Japanese and U.S. sugar markets and minimal intervention in the European Community. EC consumers were assumed to be exposed to world prices, and A- and B-quota sugar production was assumed to be restricted to current levels of consumption. (The model cannot easily simulate complete removal of intervention because A, B, and C sugar are modeled separately.) It was assumed that consumption of high-fructose corn syrup grew in line with population growth in Japan and the United States.

The joint policies were estimated to depress the world price by 33 percent. The policies were also estimated to increase world price variability by 28 percent and to increase the probability of very low world prices. It is estimated that under current policies, the world price exceeds $0.174 per kilo.
gram (in 1984 dollar values) 83 percent of the time, whereas under the policies assumed in the simulation, the world price exceeds $0.275 per kilogram 83 percent of the time.

Effects of Other Countries’ Policies

Large producing and consuming countries other than the United States, the European Community, and Japan may also be affecting the price of sugar through their policies. China, India, and the former U.S.S.R. heavily insulate their producers and consumers from the world price; the former U.S.S.R. also provided considerable support to the Cuban sugar industry. Studies of the separate effects of the interventions by these countries, however, are not available.

Australia and Brazil also insulate their producers and consumers from the world price to some degree. Australia is not a large producer of sugar by world standards, but it is one of the leading exporters because its domestic market is small, with annual consumption of only 0.8 million tons. In 1988–89 Australia exported 2.8 million tons of raw sugar. Sugar sold on the domestic market receives a high support price. Over the past two decades, however, protection of the industry overall has on average been low or negative (Connell 1989), because a greater proportion of Australian production is exposed to the world price than in any other country, except possibly Thailand.

The principal policy instruments are quotas on area planted and production, and the pooling of returns from domestic and export markets. The domestic price, formerly set by the government, has been market-determined since July 1989—although imported sugar is subject to duty. All sugar produced in Queensland (95 percent of total production) is compulsorily acquired by the Queensland state government. Quotas on the area that can be planted, known as “land assignments,” restrict production. It is not illegal to grow sugarcane on unassigned land, but sugar produced from such cane must be sold to the Queensland government at about $0.75 per ton—well below market price; thus, in effect, land assignments are binding. Because of this tight restriction on area, increases in production are limited to those gained by more intensive use of the assigned land.

Australia can produce sugar cheaply and, in the absence of intervention, it could considerably expand its output, even at low world prices. The work of Sturgiss, Connell, and Tobler (1990) indicates that in the existing world market, each 1 percent increase in Australian production could lower the world price by up to 0.2 percent over the long term. Regulatory provisions, however, allow certain groups who benefit from production controls to resist their elimination (see Borrell and Wong 1986). The cost to the Australian economy of maintaining its intervention is conservatively estimated by Sturgiss, Connell, and Tobler at about $22.4 million per year for each 5 percent of forgone supply.

Brazil is by far the largest sugarcane producer, producing well over 200 million tons of cane annually. Only about one-third of the cane is processed into
sugar; the majority is used to make ethanol, a gasoline substitute. Brazil is the fourth largest sugar producer after the European Community, India, and the former U.S.S.R. The vast quantities of cane grown give Brazil an immense capacity to increase sugar production. If all its cane were used to produce sugar, we estimate that Brazilian sugar output would rise from 8 million tons annually to more than 20 million tons. According to the International Sugar Organization, world sugar production is presently about 105 million tons annually.

The Brazilian cane industry features a tight net of institutional controls and interventions. The industry's ability to switch cane between ethanol and sugar production is strictly limited, although the economic incentives to divert cane from ethanol to sugar are great. Assuming a border price for gasoline of $24 per barrel, the opportunity cost for ethanol as a fuel substitute, measured in sugar equivalents, is $0.09–0.11 per kilogram. In comparison with the current world sugar price of about $0.20 per kilogram, continuing to produce ethanol from cane is clearly not its most profitable use.

The Brazilian government allocates annual production quotas to farms, mills, and distilleries to regulate the location, size, and distribution of the sugarcane crop. Domestic sugarcane, sugar, and ethanol prices are fixed, and exports are controlled. These interventions insulate producers and consumers from changes in world market conditions.

Producer prices for sugarcane, sugar, and ethanol are fixed high enough relative to costs to ensure that all available production quotas are filled. Ethanol production is not cost-competitive with imported oil, but the ethanol producer price is set sufficiently high to ensure that distilleries fulfill their quotas. Concessional credit is also provided for investment in distilleries. However, sugarcane quotas, allocated between sugar and ethanol production, are the main determinants of production. Any switching that occurs between the production of sugar and ethanol occurs as the direct result of changes in quotas only. The empirical evidence (see Wong, Sturgiss, and Borrell 1989) suggests that Brazil's capacity to shift between sugar and ethanol in response to even large changes in oil and sugar prices is greatly limited under current policies.

Like Australia, Brazil has low production costs and considerable potential to increase production even at low world prices. In the absence of intervention, output could expand significantly. Using the model of Wong, Sturgiss, and Borrell (1989), we estimate that for each 1 percent increase in Brazilian exports, the world price could be lowered by up to 0.3 percent over the long term.

**Overall Effect of Policy Intervention on the Sugar Market**

It is difficult to calculate how much more sugar countries such as Australia and Brazil might produce in the absence of intervention. Estimates of the total effects of intervention on the world market provide only partial insights—but insights nonetheless.
Most studies have examined the effects of intervention on the sugar market in a general, static, multicommodity framework. The Ministerial Trade Mandate model developed by the Organization for Economic Cooperation and Development (OECD 1988) includes eleven regions and fourteen commodities. Simulations of a 10 percent reduction in assistance to sugar producers from 1979–81 levels would have led to a 0.93 percent increase in the world sugar price in those years. Webb, Roningen, and Dixit (1987) used the Static World Policy Simulation model developed by the United States Department of Agriculture, with eight regions and twelve commodities. The framework of the model is similar to that used in the OECD study. The results indicate that under complete trade liberalization the 1984 world sugar price would have been 53 percent higher.

Anderson and Tyers (1986) use a model in which thirty countries and seven commodity groups are represented. Protection is measured at average 1980–82 levels. The results indicate that under full trade liberalization by Western European and East Asian countries, the world sugar price in 1987 would have been 10 percent higher and price variations would have been reduced by 22 percent. Western Europe and East Asia would have imported an additional 3.5 million tons of sugar annually, purchasing most of this from developing countries.

Zietz and Valdés (1986) analyze the effects on fifty-six developing countries of removing trade barriers in seventeen industrial countries in a multicommodity context. They show that for 1983, the world sugar price would have been 13 to 30 percent higher. This, in conjunction with their earlier work (Valdés and Zietz 1980), indicates that sugar exports from low- and middle-income developing countries would have generated up to $5 billion more in revenue (in 1980 dollar values) and that the gains from sugar liberalization are among the largest of all agricultural commodities.

The results of these studies are not strictly comparable, since the choice of the base period affects the results. Because world sugar prices were relatively high during 1979–82, the measured level of assistance to sugar producers in those years was relatively low. The results obtained by the OECD and Anderson and Tyers can therefore be treated as conservative estimates of the effects of liberalization on the world price over the longer term.

Departing from static frameworks, Wong, Sturgiss, and Borrell (1989) used a dynamic analytical model to study the adjustments made in the marketplace over time in response to policy changes. A long period, 1985 to 2004, was simulated under sixty different market scenarios, so that the results would be less sensitive to the choice of base period. Wong, Sturgiss, and Borrell found that significant reductions in the variability of the world price and sizable increases in the average price could be expected even from partial (although well-targeted) multilateral trade reforms.

They also found that if countries with low costs allowed a small volume of production (2.5 percent of world levels) to respond to the world price, and if OECD consumers were charged the world sugar price, consumption in OECD
countries increased and the average world price was 7.6 percent higher than in the absence of policy reform. In addition, the variability of world prices dropped 33 percent: price peaks were lower, and prices were higher in the trough periods. The lower peaks resulted from the quick response of producers with low costs to rising world prices, and from the contraction in OECD consumption in times of high world prices. Lower price peaks reduced the incentives for producers with high costs to expand production. Although such expansions were not completely eliminated, they were lessened, resulting in a less severe price trough. Given such results, the benefits to efficient exporting countries would be sizable. For instance, Australia was estimated to benefit by as much as $294 million a year, which includes the gains in price stability enjoyed by producers.

Prospects for Policy Reform

Agricultural trade reforms are under discussion in the Uruguay Round of multilateral trade negotiations currently taking place through the GATT. Contracting parties to the GATT have agreed that there is an urgent need to overcome the policy-induced distortions of agricultural trade. The most ambitious reform proposals are those of the United States and the Cairns Group, calling for multilateral elimination of protectionist agricultural policies within ten years. Other participants, including the European Community and Japan, have been less supportive of major changes in agricultural protection. It remains to be seen whether an agricultural trade liberalization package can be agreed upon and whether this package would include substantial reform in the sugar industry.

The interests of groups involved in the sugar market are many and varied. In many cases, opposing parties cannot reconcile their differences through the political process because they are separated by national borders. Probably the main channel by which one national interest group can influence policy in another country is by influencing the world price. The results of the study by Wong, Sturgiss, and Borrell (1989) suggest that the world price level, and its variability, have the potential to modify incentives governing policy formation in several countries.

To achieve durable reforms, Wong, Sturgiss, and Borrell argue, the incentives affecting the policy formation process must be altered. This will require reducing the variability in the world price. To do this, marginal production, at least, should be exposed to the world price. The reduction of support prices could, to a small extent and in the short term, modify the drop in world price during trough periods, but would not significantly affect instability. Indeed, it could slightly intensify price peaks, which induce producers to lobby for changes that encourage production. Marginal production in the European Community is exposed to the world price since C sugar is largely unsupported. This C produc-
tion is quite responsive to the world price, as shown by the decline of total EC production by more than 3 million tons in 1983 as world prices dropped. If other sugar-producing countries adopted policy instruments similar to the C-category element of the EC policy, marginal production would respond to changes in world price, which would tend to stabilize that price.

In a growing market like that for sugar, it may be possible to make producers in several countries with low costs more responsive to the world price without imposing adjustment costs on domestic producers, consumers, or taxpayers. World sugar demand is expanding by about 2 percent annually, despite the growth of alternative sweeteners (Borrell, Wong, and Sturgiss 1989). World production must increase in some fashion to meet this increased demand. If producers with low costs were not constrained by supply control policies, they would respond more rapidly to rising world prices. In the past they have collectively responded some time after each world price peak. Without supply constraints, producers would have an incentive to anticipate growth in demand and to match their expansion more closely to emerging market opportunities. Smaller, gradual increases in production would then be likely, rather than the large, widely separated jumps in production that have occurred in the past. If oversupply occurred and drove down the world price, marginal production would contract, so that a low world price would not persist for long periods.

**The United States**

Sturgiss, Field, and Young (1990) argue for the adoption of various policies that are trade-neutral. Trade-neutral support policies provide assistance to targeted producers through direct income payments from government while leaving consumption, production, and trade outcomes unchanged. Such policies could be adopted with considerable cost savings for the U.S. economy and U.S. consumers, and would also practically eliminate the costs of U.S. policy to other countries. Conflicts between U.S. domestic and foreign objectives would then be resolved. The U.S. delegation to the GATT has proposed that all countries in the Uruguay Round adopt the goal of achieving trade-neutral policies using direct income payments.

After evaluating a range of options, Sturgiss, Field, and Young conclude that to reduce the costs of U.S. policies, any reform should include direct and visible payment to producers and exposure of U.S. sugar and sweetener producers and consumers to world prices. Their study concludes with the following observation:

There is a danger that U.S. policies, if not reformed unilaterally or as part of multilateral trade negotiations, could follow the path taken earlier by EC sugar policies. The United States, with the development of new corn and chemically based sweeteners, could become
a large exporter of subsidized sweeteners. This would raise the costs of the program and would also create a new set of unintended beneficiaries with a stake in seeing policies maintained. The tendency to perpetuate current inefficient policies would thus be increased.

The European Community

Because the EC sugar regime is largely self-financing and does not impose excessive budgetary costs, it is regarded within the Community as one of the less problematic components of the Common Agricultural Policy. Nonetheless, subsidies derived from price supports have constituted more than half of the revenue received by A- and B-quota sugar producers in recent years, and high consumer prices have caused consumption to be lower than otherwise. Policy reforms that expose consumers to world prices and limit or reduce subsidized production through the use of quotas would benefit the European Community as well as other exporters. In the past the European Community raised production quotas or prices following booms in the world price. If prices boom some time in the next few seasons, pressures may arise again to increase these support mechanisms. Ensuring that current production quotas and subsidized prices are not increased in response to high world prices will be an important policy challenge in the 1990s. Any reforms that reduce quota levels would considerably increase efficiency.

Japan

Many of the benefits of liberalization in Japan would come from the reduction of consumer prices and the exposure of consumers to world prices. Support for producers could be continued through the use of well-targeted direct payments from the government. Sturgiss, Tobler, and Connell (1988) conclude that direct income supplements to farmers would be a more efficient and equitable means of assistance than the current unit subsidies. Payments to induce inefficient farmers to leave the industry or incentives to establish alternative industries might be more efficient ways of providing support to various regions than the distortion of prices.

Prompted by internal forces as well as pressure from the United States, Japan introduced a number of reforms in its agricultural sector in 1988. While this may be an indication of a desire on Japan’s part to liberalize some agricultural markets, reforming the sugar industry in particular may be a low priority. To date, the reforms have mostly affected products exported by the United States. As in the United States, failure to reform the sugar industry could lead to the establishment of larger groups with a stake in retaining existing supports. The further technical development and market penetration of alternative sweeteners could ultimately increase the market share held by subsidized domestic sources.
The Cairns Group

The Cairns Group consists of Argentina, Australia, Brazil, Canada, Chile, Colombia, Fiji, Hungary, Indonesia, Malaysia, the Philippines, New Zealand, Thailand, and Uruguay. The sugar exporters of this group constitute the majority of the world's low-cost producers. Acting collectively, this group may reduce volatility of the world sugar price by allowing their producers to make their marginal production decisions based on expected world prices. As pointed out by Wong, Sturgiss, and Borrell (1989), a Cairns Group initiative designed to prevent booms on the world market could be undertaken by countries with low levels of protection independently of the high-protection countries. Such an initiative would be consistent with the Cairns Group's first aim, that is, it would prevent a buildup in protection by removing the incentive for new demands by vested interests in countries with higher sugar production costs. At the same time, such an initiative would not be likely to jeopardize other moves by the Group toward a more open trading system. Indeed, it might strengthen the position of the group. By reducing the probability of low prices, protectionist policies such as those of the European Community and the United States would be perceived as unnecessary.

Of the Cairns Group members, Australia and Brazil are the two countries with the greatest potential to influence world price variability. While production controls in Australia have recently been relaxed somewhat, they still greatly restrict the responsiveness of Australian supply. And in Brazil, instead of increasing sugar production, sugar quotas have been reduced in the past two years to allow for the expansion of ethanol output. Although Brazilian producers have pushed to relax the production controls on sugar, no significant liberalization has occurred.

Notes

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1. Dollars ($) are U.S. dollars throughout.

References


Tariff reduction designed to encourage outward-oriented development will work only if alternative sources can be found to replenish revenue lost in the cause of reducing protection. Integrated reform of tariffs with taxes would seem to be the answer, but so far analysts have often tended to treat the two instruments separately.

This article looks at the tariff and tax instruments used by developing countries to protect their producers and to increase their revenues, and then lays out the contours of an integrated structure for taxes with tariffs. This structure takes into account not only objectives of efficiency and equity but also constrained administrative capacity. The analysis concludes with an examination of how these ideas may be used to guide the coordinated reform of tax and tariff structures.

Reducing the bias against exports caused by extensive import protection is an early priority in the move toward outward-oriented development. But trade liberalization can be delayed or aborted if complementary macroeconomic policies, especially appropriate fiscal policies, are absent (see Halevi 1988). With public sector deficits averaging 7 percent of gross domestic product in developing countries in 1986 (see Chhibber and Khalilzadeh-Shirazi 1988), revenue losses arising from tariff reductions must be forestalled by tapping other sources of revenue. Such losses—and their macroeconomic repercussions—can be significant: in 1985, for instance, the contribution of import taxes to tax revenue was 14 percent in Latin America, 21 percent in Asia, 22 percent in the Middle East and North Africa, and 26 percent in Sub-Saharan Africa, compared with 2 percent in industrial countries (World Bank 1988).
The tradeoff between moves toward outward orientation and fiscal imperatives is thus frequently central to policy reform.

**Tariff and Tax Policy**

Tariff reform must be seen as part of a broader program of tax reform. Often advice on tariff and tax policy has been insufficiently coordinated, deflecting or even ultimately frustrating the intentions of the reformers.

**Tariff Reform**

Reform of trade policy has figured prominently in strategies for structural adjustment in developing countries. One review (World Bank 1989a) notes that it has accounted for 30 percent of the conditions in the World Bank's adjustment lending.

Typically, recommendations on the reform of import policy consist first of converting quantitative restrictions and other forms of nontariff licensing into tariffs; and second of reducing the level and dispersion of tariffs (Rajaram 1990; World Bank 1989a). The reformed system, to the extent that it includes non-zero tariffs, embodies some discrimination against exports, a feature that is partly offset by various schemes that exempt from tariffs imported inputs into export production.

The implications of tariff reform for revenue, however, are not tackled systematically. A move in 1984 to eliminate the Special Import Tax in Morocco, for instance, miscalculated the impact on revenue; that impact, together with the poor initial performance of the value added tax (VAT), led to a subsequent tariff increase. The same thing happened in Thailand in 1981 because proposals for alternative sources of revenue focused on one-time increases rather than elasticity-enhancing tax reform. In the Philippines, too, the effect of trade liberalization on revenue seems to have been underestimated. The government subsequently introduced an across-the-board import tax and a domestic turnover tax to raise revenue, but these policies are ascribed more to the deterioration of the economy in 1983-86 than to tariff reform. The program of import liberalization was, however, stalled by the above developments (see Rajaram 1990).

**Tax Reform**

Tax reform in developing countries is designed to increase revenue, to improve efficiency, and to promote equity (World Bank 1991). Indirect taxes account for most tax revenue—from 43 percent for the Middle East and North Africa to 61 percent for Sub-Saharan Africa (World Bank 1988). For the reform of indirect taxes, the instrument of choice is a VAT on consumption or a single-
stage sales tax, either of which is applied symmetrically to domestic production and to imports. The VAT replaces a wide range of existing indirect taxes; its coverage is allowed to expand as more and more taxpayers see the advantages of registering in order to benefit from crediting of taxes paid on inputs.

Tariff reform and tax reform are largely studied separately. Studies of tariff reform, as well as neglecting revenue issues, often pay insufficient attention to the domestic tax-subsidy instruments that, along with tariffs, protect local producers. Tax studies, for their part, recommend symmetric treatment of domestically produced and imported goods but leave analysis of the structure and level of protective customs duties to tariff studies. Obviously this separation is practical from the point of view of managing tasks; it also has the apparent virtue of not straining absorptive capacity of policymakers in countries where such resources are often scarce—although the policy reversals noted earlier, which arose from a failure to address budgetary concerns, potentially compromised the credibility of reform. This article (and see also Shalizi and Squire 1989; Linn and Wetzel 1989) argues that a coordinated trade-cum-public finance perspective is preferable. Its particular concern is the interaction of tariffs and indirect taxes with respect to protection and revenue. It leaves aside other important instruments of trade liberalization (for a broad overview of these, see Thomas and Nash 1991) to concentrate on the neglect of revenue issues in tariff reform and on the consequent need to develop in-depth principles that should guide the coordinated reform of tariffs and indirect taxes.¹

**Tax and Tariff Instruments**

Imports are usually taxed through (a) customs duties applied to the c.i.f. (cost, insurance, and freight) price and (b) sales taxes or value added taxes levied on the price inclusive of customs duty. Table 1 reports the use of those (and other) instruments in Bangladesh, Malawi, Nepal, Tanzania, and Uganda, which, with per capita incomes in 1987 of $160, $160, $160, $180, and $260, respectively, are among the poorest low-income countries (World Bank 1989b). Even in the three Sub-Saharan African countries, where import taxes do not loom as large as in the two South Asian countries, the sales tax on imports is evidently a significant source of revenue.

The table shows, first, that even the poorest countries use at least two different policy instruments to tax imports. A simple example makes the point. Suppose that the c.i.f. price of an imported good in local currency is 100. The customs duty is 20 percent, and the sales tax, which is levied on the customs duty–inclusive price as well as on domestic production of the good, is 10 percent. Assuming that there is no nontariff licensing of imports, the price that domestic producers can charge for the good is the c.i.f. price plus customs duty, or 120. In this example, the customs duty is a measure of the subsidy extended by the incentive system to producers. The customs duty also raises the price of

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<table>
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<tr>
<th>Tax type</th>
<th>Imported goods</th>
<th>Domestic goods</th>
<th>Total</th>
</tr>
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<tr>
<td><strong>Bangladesh, 1987-88</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customs duty(^a)</td>
<td>37.8</td>
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<td>37.8</td>
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<tr>
<td>Excise duty(^b)</td>
<td></td>
<td>26.8</td>
<td>26.8</td>
</tr>
<tr>
<td>Sales tax(^c)</td>
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<td></td>
<td>12.4</td>
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<tr>
<td><strong>Total</strong></td>
<td>50.2</td>
<td>26.8</td>
<td>77.0</td>
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<tr>
<td><strong>Malawi, 1988</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Import duty(^a)</td>
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<td></td>
<td>17.8</td>
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<tr>
<td>Excise duty(^b)</td>
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<td>3.5</td>
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<td>Surtax(^c)</td>
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<td>20.2</td>
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<td>23.7</td>
<td>55.2</td>
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<tr>
<td>Excise tax(^b)</td>
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<td>14.3</td>
</tr>
<tr>
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<td>11.8(^d)</td>
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<td>47.4</td>
<td>25.4</td>
<td>72.8</td>
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<td><strong>Tanzania, 1988-89</strong></td>
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<td>18.6</td>
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<tr>
<td>Excise tax(^b)</td>
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<td></td>
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<tr>
<td>Sales tax(^c)</td>
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<td>72.8</td>
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<td>91.4</td>
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<td><strong>Uganda, 1988-89</strong></td>
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<td>39.9</td>
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<tr>
<td><strong>Total</strong></td>
<td>29.7</td>
<td>38.8</td>
<td>68.5</td>
</tr>
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<table>
<thead>
<tr>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>a. Customs and import duties are levied on the c.i.f. value of imports. In Nepal there is a two-tiered structure: only the first slab applies to imports from India, and both the first and second slabs apply to imports from other countries.</td>
</tr>
<tr>
<td>b. The excise duty is levied on the ex-factory price of domestically produced goods. In Nepal and Tanzania it applies to imported and domestic goods at the same rate.</td>
</tr>
<tr>
<td>c. For imports, the sales taxes and surtax in all countries are levied on the customs duty- or import duty-inclusive price; in Nepal the excise duty is included in the base for sales taxation as well. In Bangladesh the tax applies only to imports. For domestically produced goods, in Malawi, Nepal, and Uganda the sales tax/surtax is levied on the excise duty-inclusive ex-factory price, and in Tanzania on the ex-factory price (that is, not including excise duty). All three countries treat imports and domestically produced goods in a symmetric way (although until recently in Uganda there were a number of items for which the sales tax rate on imports exceeded that on the corresponding domestic product).</td>
</tr>
<tr>
<td>d. Sales tax revenue collected from imported inputs is reported as revenue from domestic goods, so that the 11.0 percent share reported is an underestimate of sales tax collected from imports.</td>
</tr>
</tbody>
</table>

*Source: World Bank data.*

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*The World Bank Research Observer*, vol. 7, no. 2 (July 1992)
the good to the user above its international price (from 100 to 120), exemplifying the standard observation that a tariff is a subsidy to a domestic producer financed by a tax on the user. Because the tax component of the customs duty raises the price to users of domestic products as well as of imports, whereas its subsidy component applies only to domestic production, the tax revenue from users exceeds the outlay on the subsidy to producers; for this reason, the tariff is revenue-raising. But the customs duty is not the only tax on users of the good. The latter includes the sales tax (10 percent), which, together with the customs duty, raises the price from 100 to 132. The tax on the user of the good is thus, ultimately, 32.

The example suggests that the two instruments could be used in concert both to provide protection and to raise revenue. If the sales tax or VAT applies at an equal rate to imports and domestic production (as it does in Nepal, Tanzania, and, recently, Uganda), the customs duty can (a) play its primarily protective role and (b) combine with the sales tax or VAT to meet revenue objectives. The level and structure of customs duties should be set with reference to objectives of protection, and the sales tax or VAT can then be set at a level that, together with the customs duty, satisfies the government’s revenue requirements.

A second important point illustrated by the table is that the excise tax, although it features separately in all the countries, may be thought of as combining the functions of the customs duty and the sales tax. This is because it has both revenue-raising and protective aspects. In Nepal its function is purely to raise revenue; in Malawi and Uganda, however, the excise duty applies to domestic production only and therefore subtracts from the protection afforded by import duties. This effect could be reproduced by adjusting import duties and by offsetting the impact on revenue by adjusting the surtax or sales tax.

Third, faced with an array of taxes and surcharges on imports, it is tempting to recommend that they be consolidated into a single levy to make administration simpler. The foregoing analysis shows that this would be a mistake. Thus customs duties that apply to imports alone fulfill a different function from sales taxes that apply to imports as well as to domestic production. Because the two instruments (which are used not only in the poorest but in a wide range of countries) are aimed at two objectives, protection and raising revenue, consolidation would result in giving up one instrument and reduce the opportunity to treat tariffs and taxes consistently.

Coordinating the Design of Tariffs and Taxes

The simple example in the preceding section showed that

- the difference between the producer price and the world price of a good is the subsidy to producers, whereas
- the difference between the consumer price and the world price of a good is the tax on consumers.

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This allows us to identify the customs duty with the producer subsidy and the customs duty–plus–sales tax with the consumer tax.

*Producer Prices and World Prices*

The classical justification of wedges between producer prices and world prices is the argument that infant industries need protecting (for a detailed account, see Corden 1974). A variant of that argument runs as follows. It is postulated that the volume of gross output confers benefits of "learning by doing." These eventually lower costs of production and allow the industry to become competitive. In other words, the economy incurs the costs of industrial promotion today in return for the benefits of higher productivity tomorrow. But this proposition does not necessarily translate into an argument for government intervention. If private firms can invest in high-cost production in the early years and appropriate the benefits of higher productivity in later years, no intervention is necessary. Institutional restrictions on appropriability and capital market imperfections may, however, preclude such arrangements. Economic theory would then argue for intervention in labor and capital markets to correct those distortions, without restricting trade in any way (for a careful statement of the appropriate qualifications, see Baldwin 1969). If developing countries lack the administrative capacity to intervene in factor markets in this way, they may resort to an inferior policy of subsidizing production, whether for domestic sale or for export. In practice an even worse policy is generally adopted: tariff protection, which encourages only domestic production and discriminates against exports. Tariff protection is an attractive recourse because it raises revenue and because it extends assistance to favored constituencies in a relatively inconspicuous way.

The infant industry argument has also encountered certain difficulties in practice. One report on trade policy reform (World Bank 1989a, p. 114) observed that "experience with protection policies and their general outcome in the majority of developing countries suggests that infant industry arguments are generally used as a rationale by politically powerful protection-seeking industries, without any serious consideration of whether and under what conditions the economic benefits of the protection will exceed its economic costs. Thus the policies seldom recognize that if the initial economic costs are to be offset, the learning-by-doing benefits (weighted for risks and discounted for the opportunity cost of the capital invested) must appear in a period of, say, five to seven years." Such reasoning weakens the case for protection of infant industries.

*Structure of Protection*

In practice, advisers on tariff design are typically faced with import tariffs that are justified with a combination of learning-by-doing arguments, effective
lobbying by special interest groups with no particular claim to infancy, and political imperatives to keep subsidies hidden (as is effectively done by tariffs) rather than transparent. Because evidence on learning by doing and related externalities across sectors is notoriously elusive, governments find it very hard to identify potentially successful sectors and products for special encouragement. Economists have then recommended that assistance be made uniform, on the grounds either that, in the absence of compelling evidence to the contrary, learning effects might as well be assumed to be roughly the same across sectors or that a uniform structure of assistance is less vulnerable to special pleading. (For a derivation of the relationship between learning by doing and production subsidies, see Mitra 1992. The relationship between structures of incentives and lobbying, however, remains to be demonstrated. For some possible formulations, see Mitra 1989.) Higher time-bound assistance may be provided for a few selected sectors in which there are demonstrable learning externalities.

Level of Protection

The arguments about the structure of protection can equally be applied to its level. One argument (Little, Scitovsky, and Scott 1970) holds that manufacturers need special assistance because the market wage exceeds the real cost of labor as a result of distortions in the labor market and constraints on saving. Thus, if wage costs as a proportion of gross value added were on average 15 percent and the real cost of labor were 50 percent of the market wage (a generous allowance), the extent to which value added should be assisted is on the order of 5 to 10 percent. The authors further argue that in the poorest countries, if the wages of unskilled labor were as high as 40 percent of value added, the justifiable level of assistance to value added could be 20 percent. These estimates are no more than illustrative, given the widely ranging circumstances that govern the relationship between market wages and the real cost of labor in different countries. They do, however, provide a rough range within which, in the absence of superior schemes for subsidizing production, the average level of protective tariffs might lie.

The discussion of protective tariffs may be summarized in the observation that a uniform tariff at a level not exceeding 10 to 15 percent could be adopted as an acceptable rule of thumb in countries where administrative and revenue constraints preclude extensive use of factor- or production-based subsidies. Such a structure of incentives discriminates against exports, but the 10 to 15 percent range is thought by development practitioners to be low enough to limit discrimination. The discrimination may be partly offset by granting exporters duty-free access to intermediate inputs. Both common sense and experience suggest that practical schemes that give effect to such proposals—duty drawbacks, exemptions, bonded warehouses, duty-free zones, and the like—are easier to administer when tariffs are set at low levels. This has two significant implications.
The Treatment of Intermediate Inputs

First, access to duty-free imported inputs for exporters implies that domestic producers of such inputs would not be able to compete if they were to charge duty-inclusive prices. If, for example, garment exporters can import fabrics free of customs duties, they have no incentive to purchase locally produced fabrics at duty-inclusive prices. So countries have instead allowed "indirect" exporters, such as the local producer of fabrics, to import input requirements free of customs duty. This helps the fabric producers but does not entirely protect them from the need to compete with imported fabrics in their sales to garment exporters. If successful, however, the policy could help develop both indirect and direct exporting industries and deepen the benefits flowing from outward orientation.

Second, the difficulty of granting duty-free access at high tariff levels implies that attempts to unify tariffs at levels higher than 10 to 15 percent cannot be part of the recommended design. This presents a problem. Consider a situation in which tariffs on final goods are 30 percent, possibly (although this is not necessary to the argument) as a result of previous reform. Tariffs on intermediate goods used in the production of such final goods are low and, for purposes of this argument, may be taken to be zero. Effective protection to import-substituting final goods is therefore much higher than may be justified on learning-by-doing or other grounds. It is assumed, for reasons not usually specified, that the tariff may not be reduced any further. In what indirect ways may protection then be reduced? Two kinds of solution have been offered. The first (Harberger 1988) is an increase in the tariff on intermediate goods (the selective review by Rajaram 1990 suggests that tariff increases on intermediate goods have been recommended in certain countries). In fact, if an intermediate good accounts for x percent of the value of the final good under free trade, a tariff on the intermediate good at a level \((100/x)\) times 30 percent would drive the effective protection on final goods to zero. Because \(x\) is less than 100, this level of tariff on the intermediate good would be higher than that on the final good. Harberger does not in fact recommend that tariffs on intermediate goods be set at that level. Instead he suggests, without further argument, that a uniform tariff on intermediate and final good imports is likely to be a satisfactory compromise. The second solution (Shalizi and Squire 1989) is to impose an additional domestic tax on the production of final goods without raising the tariff on intermediate goods.

Both solutions raise revenue and therefore do no budgetary damage. In fact, although neither Harberger nor Shalizi and Squire mention this, the extra revenue could be used to assist producers of final goods hurt by the reduced protection. The first solution offers considerable protection to domestic production of intermediate goods. But, by unifying the tariff structure at the unalterable level of 30 percent, it risks impeding administrators in developing countries from implementing schemes to allow exporters duty-free access to intermediate inputs: the inducements to leakage from bonded warehouses and the likelihood
of fraudulent claims for duty drawback are too great. In contrast, the second solution, by not raising tariffs on intermediate goods, does not complicate procedures to exempt exports from duties. But it offers no protection to intermediate goods and does not unify tariffs at a common level. Under the second scheme, there are two sets of tariffs: a higher uniform rate for final goods and a lower uniform rate (possibly zero) for intermediate goods, complemented by an additional levy on domestic production of final goods (this would be an excise tax intended to reduce protection for final goods).

In neither solution, apparently, is the protection of intermediate goods an issue. Harberger sees the tariff on intermediates principally as an instrument to adjust the effective protection of final goods; implicit in Shalizi and Squire's paper is the perception that the need to protect intermediates is not important in the Sub-Saharan African countries discussed in their paper. If it follows that there is no compelling reason to protect intermediate goods, and the only constraint is the presence of minimum unalterable tariffs on final goods, how is tariff design to be modified? It was mentioned earlier that the case for uniformity is based on the absence of compelling empirical evidence to support arguments for sectorally differentiated learning by doing or externalities. If protection of intermediates is not relevant, low protection for final goods and no protection for intermediates would be the preferred outcome. If this cannot be achieved by lowering tariffs on final goods, and if raising tariffs on intermediate goods would harm exporters (and the policy of outward orientation), an additional domestic tax would be desirable to forestall the high effective protection to final goods that would otherwise result. But if intermediates do deserve protection, their tariff rates should be increased to levels of 10 to 15 percent and an excise tax imposed if necessary on domestic production of final goods as well. The answer to whether intermediate tariffs should be raised from zero to 10 to 15 percent therefore turns on whether intermediates are to be protected in their own right.

Both Harberger and Shalizi and Squire without further discussion rule out the reduction of tariffs on final goods but allow the possibility of increasing tariffs on intermediate goods or levying additional domestic taxes on final goods. What exactly is the basis for this unalterability of the tariff on final goods? If, for example, tariff reduction is blocked by the desire of domestic producers of final goods to maintain a minimum level of protection, those producers may be equally successful in blocking either of the foregoing proposals to adopt indirect methods to reduce that level of protection. In that case, it may be no harder to press directly for the reduction of nominal tariff rates on final goods.

Consumer Prices and World Prices

We turn next to the wedge between consumer prices and world prices introduced by the customs duty-plus-sales tax. In the absence of the lump-sum taxes
of classical economic analysis, the purpose of the wedge is to raise revenue. The government’s needs for revenue thus determine the average size of this wedge, while standard considerations of efficiency and equity guide its structure.

In a one-consumer economy without lump-sum tax instruments it is desirable to raise revenue by taxing goods that are relatively complementary with leisure more heavily and goods that are relatively substitutable with leisure less heavily, where leisure is understood to represent an untaxed time endowment. Thus if all goods were equally substitutable for leisure, a uniform tax structure would be desirable. In the more realistic many-consumer economy, the desired structure of taxation is determined (a) as before, by substitution possibilities with leisure, and (b) by variations in consumption patterns among different consumers and income groups. The second determinant introduces crucial distributional considerations into the analysis. Thus uniform taxation would be desirable if all goods were equally substitutable for leisure and if there were no variation in consumption patterns across different households. These conditions are implausibly stringent. But they can be relaxed if other instruments are available to the government. If there is a well-functioning income support scheme and income taxation that can appropriately target the basis of differences among households, uniform taxation might under certain circumstances prove desirable even in a many-consumer economy (see Deaton and Stern 1986).

Literally interpreted, these prescriptions would call for a complicated structure of tax rates that could not be administered effectively. Analysis comparing optimal and uniform tax structures (see, for example, the calculations reported in Ebrahimi and Heady 1988; Dahl and Mitra 1991; and Mitra 1992), together with evidence from developing countries, suggests, however, that acceptable outcomes may be obtained by implementing the following set of recommendations.

**Structure of Consumption Taxes**

First, consumption should be taxed over as large a part of the economy as administrative constraints permit, and at a uniform rate. This policy does not discriminate on the basis of the relationship of complementarity and substitutability with leisure endowments, but because information on these is extremely difficult to obtain, it is not uncommon to assume that all goods are equally substitutable with leisure. (There are analogies with the earlier situation in which, in the absence of evidence on differentiated learning effects across infant industries, it was assumed that they are equally strong.) In practice, given the limited reach of taxation in developing countries, the uniform tax will not apply to all sectors at the same rate. Agriculture will be exempt from taxation except for its purchase of taxed inputs, as will be enterprises in the informal sector and many services. Once again, the situation varies across developing countries. The middle-income countries of Latin America generally administer a value added
tax on consumption that extends through the retail level to the point of final consumption. In contrast, the Asian countries (with the exception of the Republic of Korea and the Philippines) and the low-income countries of Sub-Saharan Africa administer a VAT that extends only to the manufacturers' level.

Second, because well-functioning income support mechanisms are lacking and income tax is undeveloped, especially in the lower-income countries, exemptions and some differentiation in the rate structure of indirect taxes are needed to accommodate goals related to the distribution of income. The exemption of nonmarketed food in particular ensures that the tax system has acceptable consequences for income distribution. But a proliferation of rates should be avoided so that the indirect tax system is not required to serve too many objectives or to become too cumbersome to administer.

Consumption can be taxed under the VAT by allowing firms credit for taxes paid not only on raw materials but on capital goods as well.\(^4\) This form of tax also allows exporters refunds on taxes paid on capital goods, a provision that enhances competitiveness and exploits more fully the advantages of outward orientation.

The ensuing discussion makes a distinction between exemption and zero-rating and requires a brief explanation. Exempted sectors, because they are not part of a VAT, do not pay taxes on their output. By the same token, they cannot claim credit for taxes paid on their inputs. Hence exempted sectors are taxed on their inputs rather than on their outputs, whereas sectors under the VAT are taxed on their outputs rather than on their inputs. Zero-rated sectors, by contrast, are exempted from taxation on both their inputs and their outputs. Zero-rating therefore offers a precise way of according relief from taxation.

In most countries the VAT applies either a zero rate or an exemption to necessities, a standard rate to the majority of sectors, and a higher rate to luxury items and goods whose consumption the authorities wish to discourage. Table 2 provides some examples. It shows the main rates of VAT and additional rates applying to a subset of goods in countries of the European Community (EC) (which have used a VAT the longest), other European countries, selected Latin American countries, and Indonesia, Korea, New Zealand, and Taiwan (China). The rates shown are those that apply to domestic sales; virtually all of the countries zero-rate exports. Belgium has the largest number of different rates—six; two or three rates are more common. In Asia, Indonesia has a single rate; Korea and Taiwan, which began with single rates, now have three rates.

All the countries listed in the table have additional taxes on particular commodities. These are separate from the VAT and are therefore not subject to refund. In the EC these additional taxes are excise taxes on tobacco, alcohol, gasoline, and diesel oil. The rates vary widely from one country to another but are often higher than the VAT levied at either 10 percent or 20 percent on goods that are regarded as luxuries. In Korea, there is a special excise tax that is levied at rates between 5 percent and 100 percent on selected goods.
Table 2. The Rate Structure of VAT in Selected Economies, January 1, 1988

<table>
<thead>
<tr>
<th>Economy</th>
<th>Main VAT rate</th>
<th>Other VAT rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Austria</td>
<td>20</td>
<td>10, 32</td>
</tr>
<tr>
<td>Belgium</td>
<td>19</td>
<td>1, 6, 17, 25, 33</td>
</tr>
<tr>
<td>Denmark</td>
<td>22</td>
<td>None</td>
</tr>
<tr>
<td>France</td>
<td>18.6</td>
<td>2.1, 4.5, 5.7, 33.3</td>
</tr>
<tr>
<td>Germany</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Greece</td>
<td>18</td>
<td>3, 6, 36</td>
</tr>
<tr>
<td>Hungary</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Indonesia</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>Ireland</td>
<td>25</td>
<td>2.2, 10</td>
</tr>
<tr>
<td>Israel</td>
<td>15</td>
<td>6.5</td>
</tr>
<tr>
<td>Italy</td>
<td>18</td>
<td>2, 9, 38</td>
</tr>
<tr>
<td>Korea</td>
<td>10</td>
<td>2, 3.5</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>12</td>
<td>3, 6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>New Zealand</td>
<td>10</td>
<td>None</td>
</tr>
<tr>
<td>Norway</td>
<td>20</td>
<td>11.11</td>
</tr>
<tr>
<td>Portugal</td>
<td>16</td>
<td>8, 30</td>
</tr>
<tr>
<td>Spain</td>
<td>12</td>
<td>6, 33</td>
</tr>
<tr>
<td>Sweden</td>
<td>23.46</td>
<td>3.95, 12.87</td>
</tr>
<tr>
<td>Taiwan (China)</td>
<td>5</td>
<td>15, 25</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>15</td>
<td>None</td>
</tr>
</tbody>
</table>

Note: Most countries use a zero rate for a few goods.

Thus distributional objectives may be accommodated through a second or luxury rate within the VAT or by imposing excises on luxuries entering final consumption, together with items such as cigarettes, alcohol, and petroleum products. Once again, the extent of differentiation in the rate structure must be chosen in the light of international experience and the country's administrative capabilities. The standard and luxury rates should, however, be applied symmetrically to domestic production and to imports, leaving the task of protection to customs duties.

In sum, the wedge between consumer prices and world prices should be set (a) at a single rate for all transactions that the tax administration is able to reach, with exemptions for items such as nonmarketed food that are consumed by the poorest, and (b) at higher rates for luxuries and other goods whose consumption the government wishes to discourage, with the extent of differentiation dictated by administrative capacity.

It has already been mentioned that the wedge between consumer prices and world prices is brought about through the operation of the customs duty plus
the sales tax or VAT. Recall the earlier example in which the c.i.f. price of an import in local currency is 100, the customs duty is 20 percent, and the sales tax 10 percent. Because the sales tax is levied on the customs duty-inclusive price (120) rather than the world price, consumer prices could be raised by a uniform proportion over world prices essentially only through a uniform rate of customs duty (which raises producer prices by an equal proportion over world prices) and a uniform rate of sales tax or VAT (which raises consumer prices by an equal proportion over world prices). That proportion would be given in this example by \((1.2 \times 1.1) - 1 = 0.32\). Luxury rates or sumptuary excises would be added to this price of 132 for selected commodities. This consideration accentuates the importance of integrating the design of a structure of customs duty and sales tax or VAT.

Exports

The tax and tariff recommendations proposed have so far paid little attention to the tax treatment of exports, except to suggest that inputs entering export production not be liable for customs duty or a VAT. In some circumstances, the taxation of exports is justified, but to the extent that exports are already implicitly taxed via import tariffs, arguments for further taxation should be carefully sifted.

First, a classical argument for export taxation is that world demand for a country’s exports is less than perfectly elastic. But the relevant elasticity, as the formulation above makes clear, is not that of world demand as a whole, but of the demand for the country’s exports, which, given competition among countries, will usually be much more elastic than world demand. The argument is further weakened by the consideration that long-run demand elasticities substantially exceed short-run demand elasticities. (The data in Imran and Duncan 1988 for cocoa, tea, coffee, and natural rubber confirm these observations.)

A quota on a country’s exports, or “voluntary” export restraints, provides a second argument for export taxation. The purpose is to tax quota profits, and the tax should be set at a level that makes exports equal the quota in question. The Multifibre Arrangement and various commodity agreements furnish examples.

A third argument can be made for export taxation when possibilities for domestic taxation are restricted. Thus constraints on the possibilities of taxing agricultural land or income can justify the taxation of agricultural exports (for a review of the comparison between export taxes and land taxes, see Skinner 1991). The taxes can either be explicit or work through agricultural marketing boards that set prices received by farmers below international prices.

World Development Report 1988 (World Bank 1988) notes that export taxes were used in at least fifty-three of the seventy-four countries singled out for a study of such taxes. The evidence also suggests that they are set at levels much higher than is justified by demand inelasticity or the need to substitute for
unavailable land or agricultural income taxes. In such cases, export taxes should be replaced by more trade-neutral tax instruments.

**Optimal Policies versus Rules of Thumb**

The prescriptions outlined here do not describe optimal policies. Instead, they are rules of thumb for policymaking that at once are feasible with the administrative resources available to developing countries and acceptably address concerns of efficiency, equity, and protection. Harberger (1988), in contrast, argues for the optimality of uniform tariffs.

Harberger's argument is based on the notion that uniform tariffs guarantee efficiency. His argument is hard to assess because, notwithstanding references to "the protectionist motive," the paper nowhere states in what form one should think about protection either as an objective or as a constraint. Harberger reasons that "the uniform tariff goes on to point out the absurdity (from an economic point of view) of paying a domestic resource cost (DRC) of 22 pesos per dollar in one place, of 16 pesos per dollar in another, and of 10 pesos per dollar in a third place—all being cases of import substitution.... A country gains by moving towards equalization of the domestic resource costs of different import substitute activities" (p. 15). Because the measure of the DRC used here—factor use in each activity evaluated at market prices compared with value added at international prices—is equal, in a standard trade model, to 1 plus the effective rate of protection (ERP), the observation is equivalent to arguing that unequal ERPs are undesirable, from which the optimality of uniform ERPs follows directly.

The difficulty with this argument is that DRCs evaluated at market prices of factors have no significance for welfare in a distorted economy (Srinivasan and Bhagwati 1978). With distortions, the real opportunity cost to the economy of employing or withdrawing a factor from a particular activity is given by its marginal product in that activity evaluated, in the case of tradables, at their world prices and not at their market prices. To make statements on welfare in such an economy, the real opportunity costs of factors must be used in calculating the DRCs. Because only DRCs calculated using the real opportunity costs of factors have any welfare significance, and because this is not the case for DRCs calculated at market prices (which equal 1 plus the ERP), Srinivasan and Bhagwati argue that it is best to drop the terminology and concept of ERPs altogether from cost-benefit analysis. This implies that unequal DRCs at market prices in different import substitution activities cannot be used as evidence of economic inefficiency.

A different line of argument that makes the protection constraint on economic policymaking explicit may be attempted in support of Harberger's claim that uniform ERPs are superior. If the objective is, first, to extend special treatment to a subset of sectors in the economy (for instance, manufacturing), and second, to preserve uniformity of treatment within that targeted subset, a
form of protection constraint formulated by Bertrand (1972), policy interventions clearly would discriminate in favor of the subset compared with those outside but not within it. If there were no economic cost to providing subsidies—that is, if subsidies could be costlessly raised through lump-sum taxation—the objective would be achieved by a uniform subsidy to producers within the targeted sector. Furthermore, this uniformity would lead to uniform effective rates of protection if the aim were to encourage value added (that is, gross output net of intermediate inputs) in the targeted sectors. The argument, however, does not refer to distortionary tariffs at all but to production subsidies financed by lump-sum taxation. In particular, as Mitra (1987) points out, the argument for uniformity is undermined by the need to consider the economic costs of subsidies raised through distortionary taxation. Furthermore, revenue and administrative constraints preclude most developing countries from subsidizing local production, and most tax administrators do not have access to lump-sum instruments to finance those subsidies. This special case of subsidies financed at no economic cost is therefore of virtually no interest for policymakers. But Harberger’s recommendations on uniform tariffs, though they cannot claim optimality on theoretical grounds, may serve as acceptable rules of thumb in a wider class of situations, together with uniform indirect taxes, if they are combined with exemption of nonmarketed food and supplementary taxes on luxuries. This is a conclusion reached also by Balassa (1989) in a paper that synthesizes disparate literatures into a consistent package for policymakers.

Uniformity, then, is not optimal except in very special cases. Analytical study of taxes-cum-tariffs for policymaking would therefore be considerably advanced by identifying circumstances under which the pursuit of uniformity of taxes-cum-tariffs, supplemented by higher taxes on domestically produced and imported luxuries, would be seriously inappropriate, rather than constructing empirically implausible special cases where they hold exactly. Thus, as discussed earlier, weak income support mechanisms and undeveloped income taxation predicate distributionally motivated differentiation in the VAT. Recent research (see Heady and Mitra 1992) suggests that uniform VAT structures may also be quite unsuitable in economies where the public sector, for example, is characterized by extensive price controls. Appropriate rules of thumb have thus been more successfully sought in the design of tax structures than in the design of tariffs simultaneously with taxes. (For an integrated treatment, see Mitra 1992.)

The Simultaneous Reform of Taxes with Tariffs

Policy advisers are rarely called on to design a country’s tax-cum-tariff structure de novo. Usually, they are faced with the need to reduce a considerable anti-export bias in the trade regime brought about by import tariffs and
quantitative restrictions. At the same time, revenue constraints are typically acute, so that accompanying fiscal adjustments are necessary to preserve macroeconomic stability. How might the ideas on desirable structures developed in the foregoing be used to guide the reform?

**Nontariff Import Restrictions**

Relaxing and ultimately removing quantitative restrictions and import licenses is a standard component of trade liberalization. Schemes range from replacing a positive list of permitted importables with a negative list that allows imports of all items not appearing on it, to auctioning quotas or licenses, to substituting tariffs for nontariff restrictions (see World Bank 1989a). The latter two options increase public revenue. On the replacement of nontariff restrictions by tariffs, two points deserve mention. First, because the object of quantitative restrictions is protection, the customs duty, not the sales tax or VAT on imports, should reflect their replacement by tariffs. Second, this replacement makes public revenue more dependent on tariffs until such time as the country reduces protection and switches from tariffs to more trade-neutral sources of revenue, such as the sales tax or VAT.

**Tariff Reduction**

An easy stage of “reform” is provided by lowering tariffs that are set so high as to be ineffective, in that collection rates are significantly lower than statutory rates. Reducing those tariffs would increase revenue and raise protection for domestic import-competing producers while reducing protection (in the case of intermediate goods) for domestic users of the product. Removing the numerous exemptions characteristic of tariff codes in many developing countries would have a similar effect.

**Matching Sales Tax or VAT**

In the subsequent stages of tariff reduction, integrated analysis of taxes and tariffs suggests that the sales tax or VAT on imports should be matched with that on domestic transactions, so that both are taxed at the same rate. This transfers the protective function to customs duties. Customs duties that are purely revenue raising—those levied on commodities for which there is no domestic production—should be brought under the sales tax or VAT. (Because there is no domestic production of these items, the domestic sales tax on them will afford no revenue; the rate applying to them under the sales tax should nonetheless be the same whether the source of supply is imports or possible future domestic production.)
Matching the sales tax or VAT with respect to rates does not necessarily imply that the collection rate, defined as the revenue collection divided by the base, will be the same for imports and domestic production. Domestic taxes generally cost more to collect than trade taxes. World Development Report 1988 (World Bank 1988) reports that the administrative costs of trade and excise taxes range from 1 to 3 percent of revenue collected, whereas the corresponding figure for VATs can be as high as 5 percent (for personal income taxes, it is 10 percent). It is not, however, the average administrative cost but the marginal administrative cost of collection that is relevant in switching from protective customs duties to a VAT; unfortunately, no evidence is available on the extent to which these differ across taxes. Nevertheless, in practice, satisfactory matching of the sales tax or VAT for imports and domestic production requires a concomitant strengthening in domestic tax administration.

Adjusting Trade-Neutral Taxes and the Exchange Rate

The numerical example used earlier conveniently illustrates the kinds of adjustments necessitated by tariff reform. Recall that the c.i.f. price of the imported good was 100, the customs duty 20 percent, and the sales tax 10 percent, so that the producer price was 120 and the consumer price was 132. Lowering the customs duty by, say, 50 percent reduces the producer price to 110. However, because sales taxes are levied on the customs duty-inclusive price, this also reduces the consumer price to 121 \[= 110(1 + 0.1)]\), so that reducing the customs duty lowers not only the relative producer prices of importable goods but their relative consumer prices as well. The result will usually be excess demand for those goods and a worsening of the current account deficit in the balance of payments unless it is offset by a policy of cutting absorption—that is, the sum of consumption and investment.

A disabsorption policy typically combines measures to restrain expenditure and to increase revenue. Our concern in this article is with the revenue-increasing portion of the policy. This should take the form of raising the sales tax or VAT symmetrically for domestic production and imports, a move in the direction of restoring the tax wedge between consumer prices and world prices. But although the disabsorption policy will help to redress a potential imbalance in supply and demand for tradable goods, it will also reduce demand for nontradables. If the prices of the latter are (realistically) assumed to be downwardly rigid, a situation of excess supply will replace the equilibrium in the market for nontradables that prevailed before the tariff reform. This can be corrected by a depreciation of the exchange rate, which, by raising the domestic prices of tradables relative to nontradables, reduces excess supply of nontradables. The new equilibrium will be characterized by the prereform current account deficit (external balance) and equilibrium in the market for nontradables (internal balance) brought about by two instruments: a trade-neutral sales tax or VAT and the exchange rate. (For a particularly lucid exposition of the basic

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balance of payments model, see Corden 1980, who does not, however, use that model to discuss tariff reform.) The trade-neutral tax is intended primarily to restore external balance, and the depreciation of the exchange rate to restore internal balance, but each of the two instruments contributes to both objectives of policy. The new sales tax or VAT rate and the exchange rate must therefore be set at levels that recognize their effects on those objectives (for a detailed application of this approach to one country, see Mitra and Go forthcoming). The resulting reformed equilibrium will generally be characterized by a higher dependence on a nondiscriminatory sales tax or VAT, a more depreciated exchange rate, and a lower relative price of traded to nontraded goods.

The estimate of revenue expected from increasing the sales tax or VAT rate structure must be adjusted downward by the increased cost that is incurred in collecting the extra revenue from the tax, net of the cost saving arising on the customs side. The marginal collection costs cannot be quantified, but it is worth bearing in mind that resources will have to be reallocated across the units entrusted with administration of the different taxes if the reform is to succeed.

**Revenue and Protection Constraints on Reform**

The extent to which revenue considerations limit the reduction of protective tariffs depends ultimately on administrative constraints on expansion of the domestic tax base. These will vary from country to country, but the following general point may be made. The evidence cited earlier shows that the importance of trade taxes in public revenue declines with per capita income, so that administrative impediments to finding revenue sources other than trade taxes can be expected to be most acute in the low-income countries. Would a reduction of protective tariffs therefore rapidly encounter revenue constraints in such countries? Not necessarily, for the low-income countries do not have a diversified manufacturing sector and therefore many of their import taxes are mainly revenue-raising rather than protective. Because liberalizing trade should aim to reduce protective rather than purely revenue-raising tariffs (the latter being absorbed within the sales tax or VAT), the extent of revenue lost from tariff reduction will in fact be much smaller than if tariffs had been predominantly protective, and the adjustment in domestic tax structures required to offset the loss will be correspondingly modest.

How much considerations of protection themselves limit the reduction of protective tariffs will be strongly influenced by the ability of import-competing producers to preserve the implicit subsidy that the tariffs provide. With existing tariff levels in many countries well in excess of the recommended range of 10 to 15 percent, a policy of outward orientation will clearly require a significant reduction in protection of import-substituting sectors. Producers will need time to adjust. Other time-bound forms of assistance could assist the transition (some possibilities are explored in the next section).
The literature on international trade discusses two paths to tariff reform (for an extended discussion, see Corden 1974). One is the concertina method, which collapses the structure by reducing the top rate at each step of the transition to the next-highest level, while leaving other rates the same. A second is the radial method, whereby at each stage all tariffs are reduced to a fraction of their previous levels. The conditions under which these methods improve matters are stringent. The concertina method, to improve welfare, essentially requires substitutability among commodities—a property almost certainly absent when intermediate and capital goods, as well as final goods, are imported. The radial method improves welfare only if there are no domestic taxes or, more generally, if those taxes are also reduced radially—conditions that would significantly erode the country's revenue base. Furthermore, both methods require the government to offset the revenue gains and losses at each stage through lump-sum taxes and subsidies, a feature that greatly limits their relevance for policy. As a practical alternative, it would be preferable at the outset to preannounce the desired tariff structure and to evolve a realistic timetable that takes into account the problems of adjustment in sectors most heavily affected by the reform.

**Toward Explicit Assistance**

The government can help producers adversely affected by tariff reduction as they adjust to the new regime. For instance, a tariff on a key intermediate good such as steel may have been imposed to protect one or two large and visible high-cost local producers, possibly but not necessarily in the public sector. Reduction of the tariff on steel is recommended in order to make downstream producers, say producers of light engineering goods, more competitive in export markets. The government agrees with that objective but is concerned that the reform would make local producers of steel uneconomic, threatening jobs and leading to other negative consequences. In such a situation, where the affected producers are few and visible and almost certainly registered with the domestic tax authorities, it would be administratively feasible to assist them with subsidies, with the required revenue coming from a further upward adjustment in the sales tax or VAT. Such a policy, unlike tariff protection, would have the advantage of being explicit, more open to periodic budgetary scrutiny, and hence more time-bound than assistance through tariffs.

**Conclusions**

Because lack of supportive macroeconomic policies can delay or reverse trade liberalization programs, it is important to prevent potential losses in public revenue arising from tariff reductions from exacerbating macroeconomic difficulties. The risk of pursuing tariff and tax studies independently is that the
implications of tariff reform for revenue and the implications of tax reform for protection may not be properly integrated, with negative consequences for the credibility of policy change.

The adoption of a more comprehensive public finance perspective on policy reform is made easier by the fact that even the poorest countries have essentially two sets of instruments for the taxation of imports—customs duties and sales taxes or VATs—that are usually levied on the customs duty–inclusive value of imports and that apply to domestic transactions as well. Because the customs duty raises the price facing producers of an import above the world price, it is a subsidy to domestic producers. Because the sales tax or VAT, together with the customs duty, raises the price facing users of the import above the world price, they constitute a tax on domestic users. The customs duty can then serve protection objectives, while the two together can be designed to meet revenue requirements.

An Integrated Structure of Taxes with Tariffs

The following prescriptions provide a point of reference toward which reforms may be directed:

- a basic customs duty at a uniform rate of no more than 10 to 15 percent
- a basic value added tax on consumption, applied at a uniform rate, depending on revenue requirements, to domestic production and imports and exempting agriculture, in particular nonmarketed food consumed by the poorest
- a luxury rate of excises applied at a common rate to domestic production and imports of selected items
- zero-rating of exports under the value added tax
- exemption of imported inputs entering export production from customs duty
- taxes on selected exports when world demand for the country’s exports is expected to remain less than perfectly elastic, or when the country is subject to export quotas, or when there are significant constraints on land or income taxes.

The article argues that these elements must be looked at as part of an interrelated package so that, for example, attempts to unify customs duties at levels higher than the recommended range would create administrative problems in implementing duty exemptions on inputs entering export production.

The prescriptions are rules of thumb that can generate broadly acceptable outcomes in terms of efficiency, equity, and protection and that should be flexibly applied in the light of country circumstances and administrative capability. They are not properties of optimal tariff and tax structures. Thus analytically oriented studies of taxes and tariffs would be more valuable to policy advisers.
if they were to identify circumstances in which pursuing such rules is likely to be inappropriate, rather than to construct empirically implausible special cases in which they hold exactly.

**Coordinated Reform of Tariffs and Indirect Taxes**

Coordinated reform of a distorted structure of tariffs and indirect taxes in accordance with the principles just enumerated will include the following components:

- Tariffs too high to be effective, for which collection rates are significantly lower than statutory rates, should be lowered. The numerous exemptions characteristic of tariff codes should be eliminated.
- The sales tax or VAT rates on domestic production and imports should be matched, so as to transfer the function of protection to customs duties. Customs duties on items for which there is no domestic production and which are therefore purely revenue-raising should be made part of the sales tax or VAT—that is, they should apply at the same rate to imports and possible future domestic production.
- The desired tariff structure should be preannounced and a realistic timetable developed that takes into account the problems of adjustment in sectors most heavily affected by the reform.
- To lower customs duties to reduce the excess of producer prices over world prices (the element of protection) would require an upward adjustment to the sales tax or VAT structure and—if nontradable goods prices are downwardly inflexible—a depreciation of the exchange rate, to maintain external and internal balance in the economy.
- Export taxes in excess of levels justified by less than perfect elasticity of world demand for the country’s exports, or quotas on the country’s exports, or voluntary export restraints, or restrictions on more targeted instruments such as taxation of land or income in the sector from which exports originate should be replaced by trade-neutral taxes.
- Demands for adjustment assistance arising from sectors adversely affected by tariff reductions may be met by an additional upward adjustment in the sales tax or VAT rate. Such assistance, if extended through the budgetary process, would have the advantage of being explicit and thus subject to periodic scrutiny.

**Notes**

Pradeep Mitra is a lead economist in the South Asia Region in the World Bank. An earlier version of this article—a product of the Public Economics Division in the Country Economics Department—was presented at the World Bank Conference on Tax Policy in Developing Countries, March 28–30, 1990.

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1. An agenda for the simultaneous reform of tariffs, quantitative restrictions, exchange rates, indirect taxes, and government expenditure is developed for a particular country in Mitra and Go (forthcoming).

2. We ignore here the departures from free trade that may be justified by the "new" trade theory. Their relevance for developing countries remains to be established. See, for example, Srinivasan (1989).

3. The result follows from a desire to tax the consumer's endowment. It is common to choose leisure as the endowment good. It could equally be interpreted as nonmarket time. For a careful statement of these conditions, see Stern 1987.

4. VAT systems that do not allow credit for taxes paid on capital goods—"income-type" VATs—are generally not used. Exceptions among developing countries are Argentina, Peru, and, to some extent, Turkey. Income-type VATs by definition credit taxes paid on purchases of capital goods only when the goods depreciate: depreciation accounts must therefore be maintained if such VATs are to be implemented. In practice, however, the depreciation provisions used in Argentina and Peru are very generous. In contrast, VATs of the gross product type, as practiced in Finland and Morocco, do not allow tax credit on depreciation.

5. International opinion is divided as to what framework is appropriate for the tax treatment of luxuries and other goods whose consumption the government wishes to discourage. One option is to incorporate luxury rates on income-elastic goods within the VAT, with additional sumptuary excises on selected items. A second option is to use a single-rate VAT with sumptuary excises outside the VAT.

6. This statement would need qualification if the government, which loses tariff revenue, has a pattern of consumption which, compared to that of the private sector, is more heavily oriented toward traded goods. That qualification does not, however, affect the conclusion of the next paragraph, namely, that two instruments are needed to achieve internal and external balance.

7. In a review of the World Bank's approach to subsidies, Myers and Brondolo (1986) take the view that explicit subsidies are preferable to implicit subsidies and that it is undesirable to finance subsidies through nonbudgetary instruments.

References

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Introducing an occasional series of articles and comment,
presenting differing views.
A SIMPLER CONSUMPTION-BASED ALTERNATIVE TO THE INCOME TAX FOR SOCIALIST ECONOMIES IN TRANSITION

Charles E. McLure, Jr.

The tax systems of socialist economies in transition will distort resource allocation, create inequities, and cause administrative headaches if not reformed. These countries have weak tax administrations, lack experience with mass taxes based on voluntary compliance, and need to encourage domestic saving and foreign investment. This article suggests an alternative to the conventional income tax that is more suited to these conditions.

Attempting to tax real economic income raises complicated timing issues (when to recognize income and allow deductions) and may require complex adjustments for inflation. The simplified alternative tax (SAT) avoids these complications and provides a general incentive for saving and investment less subject to abuse or distortions than tax holidays and other tax gimmicks in vogue in countries emerging from socialism.

The key elements of the SAT are separate taxes on income from labor and capital, immediate deduction for all business expenditures, no deduction for interest, and no taxation of interest or dividends. (Interest could be treated as under an income tax, at some cost.) Although the marginal effective tax rate is zero, the government shares in extraordinary returns to investment. The article discusses potential problems (including distributional implications, tax losses, and foreign tax credits) as well as advantages of the SAT.

Countries emerging from socialism need new tax systems that will not distort resource allocation, create inequities, or cause administrative overload. Most of these countries are adopting the tax models of...
advanced Western economies—a value added tax (VAT), income taxes on enterprises and individuals, and excises on a limited number of products (see Gray 1991 on Czechoslovakia, Hungary, Poland, and the former Soviet Union; McLure 1991 for Bulgaria). Some are rushing to adopt tax incentives, despite a worldwide movement away from that strategy.

This article suggests an alternative to the conventional income tax—one that is more suited to countries with weak tax administration and no experience with mass taxes based on voluntary compliance and self-assessment and also meets the need to encourage domestic saving and foreign investment. The simplified alternative tax (SAT) would substitute for corporate and individual income taxes and might replace the VAT and payroll taxes as well. This article contrasts the complexity of the income tax with the simplicity of the SAT and describes both the economic advantages and the potential problems of the SAT.

One legacy of socialism is lack of experience with tax administration and compliance. Under central planning, profits from state enterprises (“funds” with no other use) were transferred to the budget through bookkeeping entries. Defining or measuring income correctly was not important. The base of profits taxation, “balance sheet profits,” bears little resemblance to economic income. (It allows no deductions for depreciation or for some interest expenses.) The turnover taxes of the reforming economies, which are simply the difference between two controlled prices, require no real administrative or compliance effort. The situation will be quite different after the transition to a market economy.

In The Road to a Free Economy, Kornai (1990, pp. 118-19) notes another legacy of socialism, fear of the state and disrespect for its laws:

People in general consider it a laudable act, rather than something to be ashamed of, if someone defrauds the state, appropriates its wealth, or shuns his own obligations. Those who refrain from this kind of behavior are seen as dupes.... Consequently, when we contemplate budget revenues we should be prepared to face the fact that many citizens will try hard to dodge taxes.... In the Hungarian case, there is an additional factor: a considerable part of the private sector still belongs to the shadow economy, and it will voluntarily emerge from the shadow and into the light only after some time.

Kornai rightly fears a system in which tax collectors spy on taxpayers.

In short, every effort should be made both to upgrade tax administration and compliance and to design tax policies with the constraint posed by inadequate administration and compliance firmly in mind, using withholding whenever feasible. The SAT, unlike the conventional income tax, facilitates meeting the second goal. While the SAT promises similar advantages for developing countries (see McLure and others 1990), it deserves special attention in countries emerging from socialism. Their tax administration and compliance are especially weak, and they do not have the option, as developing countries do, of continuing to use their present tax systems; they must reform them.
Complexity of the Income Tax

For an income tax to be fair and neutral, its base must closely resemble real economic income. Meeting this objective is not easy. Timing issues are inevitably complicated, and complex adjustments for inflation may be necessary in measuring income.¹

Timing Issues

Taxable income understates economic income in present value terms if deductions are allowed "too soon" or income is recognized "too late." Depreciation is the best-known timing issue. Because it is hard to know precisely how rapidly assets lose value, depreciation for tax purposes is commonly based on arbitrary schedules. If these deviate too far from reality, equity, the perception of equity, and economic neutrality suffer. Administrative simplicity may also be a casualty of seemingly simple but overly generous depreciation allowances, as new limits and more complex rules are imposed to prevent perceived abuses.

Multiperiod production occurs when expenditures are incurred in more than one year for the production of income that may also be realized in more than one year. Classic examples are timber, other trees with long gestation periods and productive lives (such as coffee, rubber, and fruit trees), mine development costs, and large construction projects. The conceptually correct approach under an income tax is to recognize the annual increase in the value (of the mine, dam, or tree) as production occurs and to allow current deduction of expenditures. This method is often impractical, however, because of valuation and liquidity problems and political opposition. Imagine taxing the increase in the value of coffee trees or grape vines during their long gestation periods.

A conceptually inferior but more practical alternative is to postpone recognition of income until income-earning activity begins, to capitalize expenditures, and to allow depreciation over the productive life of the asset. This alternative is not without its own difficulties, from the amount of accounting required to the question of which costs should be capitalized and which deducted currently. These problems also arise in accounting for inventories. For long-term contracts, interim tax liabilities may be based on estimates of total income and the percentage of the contract completed each year, with retroactive adjustments at the end of the contract.

The conceptually correct treatment of capital gains—current accrual taxation—is administratively and politically difficult (valuation and liquidity problems). To avoid these difficulties, capital gains are commonly taxed when assets are sold. By postponing liability, this treatment undertaxes gains, undermines horizontal and vertical equity, and reduces the mobility of capital. Under a graduated tax rate schedule, the bunching of gains in the year of disposition can cause overtaxation. Averaging gains is complicated, and preferential treat-
ment of capital gains is not a satisfactory solution to this problem—or to inadequately capital formation or the need for inflation adjustment.

Original issue discount occurs when a bond is issued at less than its redemption value; interest is implicit in the increase in the bond's value as maturity approaches. Assuming that the increase occurs at maturity undertaxes this form of income. Because of compounding, assuming that interest is earned proportionately over the period from issue to maturity errs in the other direction. Interest is earned as indicated by a table of compound interest, and to assume otherwise produces an inaccurate measure of income.

This is a sample of timing issues. A complete list would include such knotty cases as installment sales, decommissioning of nuclear power plants, and reclamation of strip mines. Common factors among all timing issues are uncertainty about when income is earned or when a change in value occurs; complexity in accounting, compliance, and administration; and potential distortions and inequities.

Timing issues are inevitable in an income tax. Even if the esoteric problems can be avoided, many of the mundane ones will remain, and others will surface as taxpayers and economies become more sophisticated. If they are not handled satisfactorily, equity and neutrality suffer.

Problems arise if interest is not treated symmetrically, so that it is deductible by the debtor and taxable to the creditor in the same year. For example, if taxpayers can choose their fiscal years for tax purposes, they can manipulate loans between related parties (say, a partnership and its partners) to deduct interest before it is taxed. The result is inequity and revenue loss.

If deductions are sufficiently accelerated, the recognition of income is sufficiently postponed, capital gains are taxed preferentially, or important transactions are not treated symmetrically, taxpayers may report losses for tax purposes, even if they are making money. If business losses are used to offset or shelter income from other sources, the perception of inequity may create political problems. "Backstop" measures used to assure that wealthy individuals and large and profitable companies pay some tax can add greatly to complexity.

**Inflation Adjustment**

Most tax systems assume stable prices. They use historical costs to calculate capital gains, depreciation, and the cost of goods sold, and they do not distinguish between nominal and real interest payments. Even at modest levels of inflation, it is necessary to choose between the complexity of inflation adjustment and the inequities and distortions of an unindexed system. Several examples show the need for inflation adjustment. Consider capital gains. If the price level has doubled since an asset that sells for 160 was bought for 100, there is no real gain; there is a real loss of 40 \((160 - [100 \times 2])\). Yet taxation based on historical value reports a gain of 60 \((160 - 100)\). Inflation adjustment of the basis of assets produces the correct result.
Depreciation allowances create similar problems. If the price level has risen significantly since a depreciable asset was acquired, it is appropriate to base depreciation deductions on the inflation-adjusted value. Use of historical value understates the loss in real value and overstates taxable income. Depreciation is sometimes accelerated to offset inflation. But a given pattern of acceleration is appropriate for one inflation rate at most.

Inventories can also be indexed for inflation. Some countries allow last-in, first-out (LIFO) inventory accounting, which bases the cost of goods sold on the cost of the most recent purchases, as a substitute for inflation adjustment. This is not conceptually correct, for it confounds changes in relative prices of inventories and changes in price levels (the proper object of indexation; for further discussion, see McLure and others 1990, ch. 7).

Consider finally interest expense and interest income. Suppose the real interest rate is 5 percent, inflation is 20 percent, and the nominal interest rate is 25 percent. (Fisher's Law says that in the absence of inflation, the nominal interest rate is approximately equal to the sum of the inflation rate and the real interest rate. Modification for taxation would not change the basic argument.) A deduction for (and tax on) only the real interest payment of 5 percent is appropriate; the rest of the nominal interest rate represents compensation for loss in the value of principal. This example shows that failure to adjust for inflation as low as 20 percent can have a major impact on tax equity and neutrality.

The examples suggest one form of inflation adjustment: independent adjustments of the four affected income flows (capital gains, depreciation, inventories, and interest). An alternative integrated approach is more accurate; it adjusts nonmonetary elements of the balance sheet and then reflects the adjustments in the income statement. Adjustment of interest is an implicit result of the process. (McLure and others 1990, ch. 7, present a full discussion.) Both types of inflation adjustment are complicated. Either would be a major burden for any country—doubly so for a country with rudimentary accounting, weak tax administration, unreliable price indexes, and no experience with taxpayer compliance. Socialist economies in transition should not undertake inflation adjustment gladly or lightly.

Whether these countries need inflation adjustment is unclear. Historical experience provides no guidance; it reveals only the artificial price stability of suppressed inflation. Inflation may be fairly high in the years following tax reform. If so, reliance on an unindexed tax system would be risky.

Incentives for Saving and Investment

To encourage domestic saving and investment by residents and foreigners, many countries emerging from socialism are adopting a “Swiss cheese” strategy of targeted investment incentives, tax holidays, and other fiscal inducements, rather than adopting a comprehensive definition of taxable income and relying...
on low tax rates and market forces, as many western industrial countries have recently done (see Boskin and McLure 1990).

This strategy is undesirable. Its equity is questionable, and it creates a strong impression of inequity. Higher tax rates are required than under a comprehensive income tax. Opportunities for abuse strain the ability of weak tax administrations. These include manipulation of transfer prices on sales between affiliated firms, and the "yo-yo" tactic of sending money out of the country so it can return as tax-preferred foreign investment.

The strategy implies an unjustified faith in bureaucrats and politicians to pick winners and losers. The results of central planning do not justify this faith. If the wrong sectors are chosen—or choose themselves, via abuses—scarce resources are wasted. Generalized and neutral incentives are more appropriate.

**Dividend Relief**

Under classical systems, the equity income that companies distribute to shareholders is taxed twice. The company pays tax on the income and then individuals pay tax on the dividends. Since interest is deductible and dividends are not, such systems encourage debt finance and recharacterization of dividends as interest. There may be an incentive for businesses to avoid the corporate form (see McLure 1979). Most Western European countries allow relief from double taxation of dividends, commonly by granting shareholders a tax credit for company tax that is attributable to distributed income. A deduction for dividends paid appears simpler, since it lodges compliance problems at the enterprise level. But if there is a withholding tax on dividends, the two are administratively equivalent. Exemption of dividends from shareholder taxation, while not conceptually sound, may be appropriate for socialist economies in transition (see McLure forthcoming).

Deviations of taxable from economic income complicate dividend relief. Most countries limit relief to company taxes paid. Such provisions are complicated and can distort decisionmaking (McLure 1979, ch. 4). Intercorporate dividends are another source of complexity that could be especially important in transitional economies. Holding companies may be established during privatization, intercompany holdings will probably be common, and there are likely to be many joint ventures. In sum, avoiding double taxation of dividends is complicated. It is not something that countries emerging from socialism will soon be prepared to handle.

**Global Taxation and Withholding**

One of the widely accepted tenets of income tax policy is that global taxation (taxing aggregate income under a single rate schedule) is conceptually preferable to schedular taxation (taxing specific types of income under separate...
schedules) on grounds of both equity and neutrality. But schedular taxation can be attractive for reforming socialist economies. It can prevent the offsetting of artificial tax losses against other income and can simplify withholding and reduce the number of taxpayers who file returns.

Under a global income tax with graduated rates, a taxpayer's tax liability depends on aggregate income. Withholding or informational returns may be necessary to prevent evasion of tax on interest and dividends. If schedular taxes are applied to interest and dividends (or if they are exempt), withholding is simplified. Allowing deductions for interest payments of individuals, including mortgage interest, also complicates matters.

The Simplified Alternative Tax

The SAT, though resembling a standard income tax, differs in ways that have both administrative and economic importance.²

How It Works

The SAT consists of two schedular levies: one on labor income and one on business and capital income. The tax on the labor income of individuals, including pensions, can be collected almost entirely through source withholding if it is simple enough. The individual SAT can allow personal exemptions and graduated rates, but it need not. It can accommodate itemized deductions and joint filing, but to facilitate withholding, these complications should be avoided initially. (Most planned economies have no tradition of joint filing and itemized deductions.) Gifts and inheritances could be subject to the individual tax.

The novelty of the SAT is its treatment of income from business and capital. All such income (except pensions) is excluded from the base of the individual tax. Business income is subject to a separate, flat-rate tax, whether earned by a corporation, state enterprise, joint venture, collective, partnership, or proprietorship; the business tax rate is usually assumed to equal the top individual rate. Business losses cannot offset individual income, but owners of small businesses (including cooperatives and corporations) can pay salaries to themselves to achieve “do-it-yourself integration.” Expensing (deduction in the year of expenditure) is allowed for all investments, including depreciable assets and inventories. Interest and dividends are not deductible expenses, and they are tax-exempt, whether received by individuals or businesses. Borrowing and lending have no tax implications.³ Capital gains on financial assets are exempt. Gains on nonfinancial assets are exempt from the individual tax but subject to the business tax. Individuals buying or selling nonfinancial assets would file business returns. In simple cases these could be schedules filed with the individual tax.

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Most authorities would treat owner-occupied housing like financial investment. Purchase or sale of a home would have no tax implications; home mortgage interest would not be deductible.

**Its Simplicity**

The SAT avoids problems of timing and inflation adjustment. Interest payments have no tax consequences, and business tax is based on cash flow rather than accrual. Expensing replaces depreciation and inventory accounting; there is no need (for tax purposes) for depreciation or inventory accounting or for inflation adjustment of depreciation allowances or inventories.4 (These may be addressed in financial accounting, discussed below.)

With expensing, the basis of capital assets is zero. All proceeds from the sale of assets are taxable. There is no need to account for the (depreciated) basis of assets or to index it for inflation. This feature facilitates cross-checking income tax returns of buyers and sellers. Deductions for the purchase of assets and inventories are contemporaneous with the reporting of receipts, rather than spread over time, as in the case of depreciation allowances and deductions for the cost of goods sold.

Interest is tax-exempt and nondeductible, so timing problems such as original issue discount and inflation adjustment of interest payments do not arise. Neither postponing the recognition of income nor accelerating deductions can undermine neutrality or fairness. Because interest and dividends are treated identically, the SAT avoids differential treatment of debt and equity, without complicated provisions for integration.

There is no need for withholding or informational returns on interest and dividends. Liability for the individual tax depends only on labor income and family circumstances (working spouse, personal exemptions, itemized deductions), not on nonlabor income. Thus withholding can more accurately reflect final tax liability under an SAT than under a global income tax. This minimizes the number of individual returns that must be filed.

Because the SAT is schedular, tax shelters based on pass-through of losses cannot exist; sheltering can occur only within a single business filing one return. This benefit is bought at the expense of implicitly taxing all business income (except that paid to owners as wages) at the business tax rate rather than the marginal rates of the owners.

It is important not to claim too much for the SAT. There is no suggestion that the tax return could fit on a postcard, as in the flat tax proposal of Hall and Rabushka (1983, 1985), but most taxpayers would not need to file returns. Taxation of individual income resembles the taxation of labor income under a standard income tax; it involves no major simplification, relative to a sensible income tax. The big differences are the schedular nature of the system, expensing, and the exemption and nondeductibility of interest and dividends.
The SAT facilitates compliance for (and administration of the tax on) honest taxpayers. It does little directly to curb certain abuses or to facilitate taxation of hard-to-tax groups. But it helps indirectly by freeing administrative resources for enforcement of the tax laws.

Economic Effects of the Simplified Alternative Tax

Several of the economic effects of the SAT have particular relevance to socialist economies in transition.\textsuperscript{5}

Exemption of the Return to Invested Capital

Under certain conditions, the SAT is equivalent to a tax that exempts the return to investment. This is clear for interest and dividends, which are explicitly exempt. A simple example shows that other capital income is also in effect exempt. Consider an equity-financed investment of $1,000 that yields $200, or 20 percent, one year later. If the company tax rate is 30 percent, the company invests only $700 of its own money, since the deduction of $1,000 results in a tax saving of $300 (assuming the company can fully utilize the deduction, which is addressed below). Tax of $360 must be paid on "taxable income" (which actually includes the return of principal) of $1,200 in the second year, leaving net after-tax income of $140 ($1,200 less $700 less $360), or 20 percent of the initial investment of $700 of company funds. Since the net rate of return on company funds is the same as in the absence of tax, the marginal effective tax rate (METR)—the percentage by which taxation reduces the before-tax rate of return—is zero (see King and Fullerton 1984; McLure and others 1990).

The effective exemption of the return to investment under the SAT is a powerful incentive for saving and investment—one that avoids the problems of targeted incentives: the difficulty of picking winners, the risk of economic distortions, the complexity, the opportunities for abuse, and the real and perceived inequities.

Taxation of Extraordinary Returns

Although the return to capital is exempt, the government shares in extraordinary returns to investments. In the example presented above, the state earns 20 percent on its investment of $300 in foregone tax revenues; this is true even if the competitive return is only 10 percent. The government is a silent partner in all investments.

This feature could be important in socialist economies in transition. Consider the potential for extraordinary returns from trademarks such as Coca Cola and McDonald's, from enterprises that are privatized on too-generous terms,
from inefficient but viable state enterprises that become efficient, and from the exploitation of natural resources.

**Parity of Taxable and Tax-Exempt Sectors**

Interest and dividends paid to the state are inherently exempt, and those paid to nonprofit organizations are commonly exempt. Besides lacking neutrality, this selective exemption invites abuse. Parity requires that interest and dividends paid to private investors also be exempt. This implies nondeductibility of interest and dividends at the enterprise level. (Otherwise, the METR will be highly negative, considering taxes levied at both enterprise and shareholder/bondholder levels.) This describes the SAT.

Some countries exempt interest on government debt. This is an inequitable and inefficient subsidy. By exempting all interest income, the SAT eliminates the advantage of public borrowing.

If business income of nonprofit organizations is exempt, discrimination is less under the SAT (which effectively exempts the return to for-profit investment) than under the income tax.

**Potential Problem Areas**

When recommended in market economies, SAT proposals encounter predictable and potentially valid objections. These objections generally appear to be less telling in the case of socialist economies in transition.

**Distributional Equity**

The effective exclusion of the return to capital under the SAT can be appraised in several ways. That the SAT is less progressive than an income tax levied at the same rates may be less important in economies moving away from socialism than in market economies, despite the greater weight given distributional considerations under socialism. The concentration of wealth will depend on how privatization is achieved, whether through vouchers distributed to all citizens, enterprise shares distributed only to workers and managers, asset sales, or “spontaneous privatization” (“taking the enterprise private,” often by means of questionable legality).

A society raised to believe that profits are bad may have difficulty accepting the effective exemption of income from capital. Many enterprises with large economic incomes would pay little or no tax. Because interest income is exempt and interest expense is not deductible, the profit margin of financial intermediaries would be exempt. A special tax might be imposed on this sector (see Kay 1988).
Losses

Because of expensing, tax losses are more common under the SAT than under an income tax. New companies are especially likely to incur tax losses. Simple carrying forward of losses (without interest) is not satisfactory. If deductions for investments cannot be used immediately, the SAT’s incentives for investment and risk taking would not be fully realized, and some simplicity would be lost. Some firms, especially rapidly growing ones, may never have the income to absorb losses. (If the rate of growth of investment is as great as the rate of return, an equity-financed firm will never incur tax liability.) Carrying tax losses forward with interest is superior to carrying them forward without interest, but it is more complex and does not deal with perpetual tax losses.

The economic benefits of the SAT could be retained if refunds (equal to the product of the tax rate and the losses) were paid currently. Refunds are commonly opposed, however, because of the risk of fraud and the administrative burden of preventing abuse.

The Cost of Debt Capital

Nondeductibility of interest would raise the cost of foreign-source debt capital and might be politically infeasible. Allowing deductions for interest (and presumably for dividends, to maintain financial neutrality) would, in turn, call for taxation of interest of residents (collected largely through withholding) and perhaps withholding on interest paid to foreigners. The tax would be creditable in capital-exporting countries (see discussion of international issues below; see also Sinn 1987).

Such a compromise has many disadvantages. It would destroy parity in the tax treatment of state enterprises, private firms, and nonprofit organizations, and it would make tax losses more prevalent. It would also reintroduce the complexities related to timing (when to recognize interest income and the deduction of interest expense), and it would render the tax vulnerable to inflation, unless interest payments were indexed, creating further complexity.

Accounting

Countries in transition from socialism have no experience with generally accepted accounting practices (GAAP). The absence of GAAP hampers development and implementation of a modern income tax, as well as development of business more generally. Small businesses lack the ability to implement sophisticated accounting systems. The SAT provides cash-flow treatment of receipts and expenditures and ignores interest income and expense. This simplification advantage is partially offset by the need to keep dual records, one based on GAAP and one on SAT conventions. By comparison, the income tax model would encourage more rapid development of GAAP. 8

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This problem of nonconformity of SAT and GAAP is easily overstated. SAT returns would be based on the same information as income tax returns, but without the complexity of timing issues and inflation adjustment. A far greater problem in many countries is the divergence between GAAP and the calculation of income for tax purposes, often reflecting deliberate policy. On balance, SAT's nonconformity with GAAP is not a matter for major concern.

**Manipulation of Transactions**

Some economically similar transactions are treated differently under the SAT (see Sunley 1988; McLure and others 1990; McLure and Zodrow 1990; Zodrow and McLure forthcoming). For example, lease payments are deductible and taxable, whereas interest is nondeductible and nontaxable. This opens the door to manipulation of transactions between two persons, one subject to the business tax and the other not. (There is generally no advantage to such manipulation if both parties are either taxable or nontaxable.) A taxpayer might simultaneously lease a building to a tax-exempt organization at below-market rent and borrow from the organization at a below-market rate of interest. Alternatively, the taxpayer might make an installment sale to such an organization—or to an individual—at an understated price and an overstated rate of interest.

Solutions might involve floors and ceilings on interest rates or the taxation of certain business activities of tax-exempt organizations. Though the problem deserves further scrutiny, it does not appear to be important. A related and potentially more serious problem is overstatement of the purchase price of imported assets, an abuse that also is possible, though in attenuated form, under an income tax. Since an SAT allows assets to be written off in the first year, there may be an incentive to overstate their value. If substantial customs duties are applied to such imports, this abuse is unlikely—but one hopes that economies emerging from socialism will employ only low and uniform tariffs.

**International Issues**

The United States might not allow foreign tax credits for the business SAT because interest expense is not deductible. If that happens, a country adopting the SAT might forfeit the opportunity to have part of its taxes paid by the U.S. government. A noncreditable SAT might discourage investment by U.S. multinationals.

This issue is easily overstated. First, creditability is an issue only for repatriated earnings (see Hartman 1985). Second, a tax with a METR of zero, even combined with the U.S. tax on repatriated earnings, is unlikely to discourage investment. Third, since the 1986 U.S. tax reform, many U.S. multinationals have paid more foreign taxes than they can credit against U.S. liability, and so
they generally would not be able to take a credit even if the tax were a creditable income tax.\textsuperscript{10}

There is, however, more to the story than this. First, not all U.S. firms have excess foreign tax credits. Second, similar questions arise for other countries employing worldwide taxation and offering foreign tax credits for source-based income taxes. Third, if the United States raised its corporate tax rates, any country adopting a noncreditable tax could be in a worse position than if it had a creditable tax. Finally, creditability may have symbolic importance. In this it may resemble treaties on double taxation. Developing countries do not appear to benefit, on balance, from such tax treaties with industrial countries, but the treaties, by providing evidence of a stable investment environment, may bestow intangible benefits. Much the same may be said of creditability.

Transition Issues

The shift from an income tax to the SAT would pose difficult transition problems for a market economy. Introducing such a tax would involve “radical reforms of the present tax system and...cannot be implemented without a great upheaval” (Sinn 1987, pp. 348–49; see also Aaron and Galper 1985; McLure and others 1990). For countries emerging from socialism, the transition would be much easier.

Take the issue of how to treat the undepreciated basis of assets and interest on outstanding debt to avoid windfall gains and losses. Shifting to nondeductibility of interest is not a major change for socialist economies in transition, because some interest is already nondeductible under enterprise taxation based on “balance sheet” profits. In addition, interest rates have been exceptionally low. Because there has been no deduction for depreciation, there is no issue of how rapidly to allow the remaining basis to be written off.

If the SAT were introduced before privatization, windfalls would be experienced by state-owned enterprises, rather than by individuals and privately owned companies. Windfalls would also be less troubling under some forms of privatization—for example, if the SAT were introduced just after all citizens received equal shares (or vouchers) in all enterprises and no private investment had yet occurred. The longer that introduction of a new tax system is delayed, the more transition issues resemble those in the West.

The status quo is not a viable option for socialist economies in transition; they must abandon their present tax systems. Transition problems will occur whether the shift is to an SAT or an income tax. Transition to an income tax may be more problematical, because of timing issues and inflation adjustment. At high rates of inflation, most nominal interest payments should be disallowed as deductions or excluded from income; disregarding all such payments involves only a minor difference. The administrative and compliance
effort needed for a tax on real economic income is far greater than that needed for the SAT.

Any problems in introducing the SAT pale beside the transition effects of moving from a command economy, with state ownership and controlled prices, to a market economy with private ownership and market-determined prices. The transition period offers unparalleled freedom to choose the most appropriate tax system, relatively unencumbered by past choices.

"No One Does It"

No country has wanted to be the first to introduce the SAT. This argument is less telling in countries emerging from socialism: no country has ever made the transition from a command economy to free markets, either. Still, these countries do not want to be guinea pigs in a fiscal experiment. In assessing the thesis presented here that the SAT is appropriate for socialist economies in transition, it is important to realize that for most persons the two systems would be virtually indistinguishable; only the treatment of income from business and capital is different. The primary potential costs of choosing the SAT are the up-front revenue loss of expensing and the subsequent transition problems of shifting to an income tax and making interest taxable and deductible (and the related problems of changing the tax treatment of dividends). Debtors would not object to deductibility of interest on existing indebtedness (or for dividends); the main problem would be revenue loss. Creditors would object to taxation of interest income from existing debt, and shareholders would object to taxation of dividends on existing stock. It would be undesirable to allow interest deductions without taxing interest income. Since the marginal tax rates of most borrowers are probably higher than those of most lenders, borrowers and lenders would probably voluntarily restructure debt.

Relation to the Value Added Tax

Although the SAT is commonly (as here) seen as a substitute for the income taxes, it resembles a subtraction-method VAT (see McLure forthcoming). But because the SAT can accommodate personal exemptions and graduated rates on labor income, it has distributional advantages not shared by VATs. This raises the question: should a country have both a VAT and the SAT? One can imagine substituting the SAT for the VAT, individual and company income taxes, and payroll taxes. The answer depends in part on whether the country aspires to join the European Community (EC). If so, it must adopt an EC-type VAT, and its only choice is between the SAT and an income tax. For other countries the question is more complicated. Administrative resources would be saved by concentrating them on one tax, but at the risk of putting "all the eggs in one basket."
Concluding Remarks

Countries emerging from socialism must quickly implement tax systems that will finance the proper functions of government in a noninflationary manner. Yet they are ill-prepared to cope with the intricacies of a standard income tax. They lack the requisite accounting practices, tax administration, and experience with compliance. Tax policy must address these limitations. Indeed, administrative considerations are almost as important as economic effects in the choice of a tax system for reforming socialist economies.

The SAT encourages saving and investment, is economically neutral, and avoids many administrative problems of an income tax, especially timing issues and the need for inflation adjustment. The SAT is not a panacea. But it deserves consideration.

Notes

Charles E. McLure, Jr., is a Senior Fellow of the Hoover Institution, Stanford University. This article is based on McLure (forthcoming), prepared for the Socialist Economies Unit of the World Bank's Country Economics Department. The author has benefited from comments by Richard Bird, Cheryl Gray, Janos Kornai, Stephen Langlois, John Litwack, and George Zodrow (whom he credits with teaching him most of what he knows about the SAT). Other helpful comments came from participants in a seminar organized by the Fiscal Affairs Department of the International Monetary Fund, including Milka Casanegra, Ved Ghandi, Leif Muten, Abdul Rahman, Vito Tanzi, and Christine Wallich.

1. This section draws on McLure 1988 and 1989.

2. This section draws on earlier work with George Zodrow reported in Zodrow and McLure (forthcoming), McLure and others (1990), and McLure and Zodrow (1990). See also Hall and Rubushka (1983 and 1985); Bradford (1986); U.S. Department of the Treasury (1977); Mintz and Seade (1991).

3. This differs from the treatment of interest and debt under the expenditure tax (the "R plus F" base of Institute for Fiscal Studies 1978), under which the proceeds of borrowing and interest income are included in the tax base, and repayment of debt and interest expense are deductible.

4. If inflation is extremely high it may be desirable to adjust nominal amounts of transactions occurring within a given year to make them comparable; this possibility is ignored. The payment of interest on losses carried forward is more problematic if the inflation rate—and thus the interest rate—is high and variable.

5. McLure (forthcoming) discusses other economic effects of the SAT, including incentives for investment, tax holidays, investment hunger, and countercyclical effects.

6. Progressivity can be altered by adjusting the rate structure. A more highly graduated rate structure would produce disincentives that could retard economic development. Moreover, graduated rates in the SAT are not as effective as those in the income tax in dealing with concentration in the distribution of income from capital, since the METR is zero under the SAT.

7. Sinn (1987, p. 349) offers the following pessimistic observation: "A reform that leaves the rentier’s return untaxed cannot be made palatable to any of the world’s parliaments."

8. SAT rules should not be adopted for financial accounting. They are not appropriate for judging business performance.

9. McIntyre (1990) argues that the "R plus F" type of consumption-based tax (Institute for Fiscal Studies 1978) would not be creditable and should not be. His arguments appear to be applicable to the SAT (see also Sunley 1988; Kay 1988). McLure (1990) argues that the SAT should be creditable. The SAT is less burdensome than a tax on real net economic income, as indicated

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by METRS of zero under the SAT and the statutory tax rate under the income tax. Also, the tax base is likely to be smaller under the SAT. The SAT has economic and administrative advantages; it is not a gross receipts tax levied to soak up foreign tax credits. For extraordinary profits, the portion of the income tax base that is common to the base of the SAT, the two taxes are identical.

The case for creditability should be presented carefully, to avoid dooming the SAT to the ranks of noncreditable taxes.

10. In effect, the United States allows credit only to the extent that foreign taxes do not exceed the amount implied by application of the average U.S. tax rate of the company to foreign-source income. Under the “overall limitation” on the credit, foreign-source income and foreign taxes for all countries (but not all types of income and income taxes) are lumped together in calculating the limitation. For a thorough discussion see Slemrod (1991). Goodspeed and Frisch (1989) estimate that the fraction of foreign-source income subject to excess credits would increase from 50 percent to 78 percent (from 32 percent to 82 percent in manufacturing) as a result of the 1986 changes in U.S. tax rates.

11. Border tax adjustments (compensating taxes on imports and tax rebates on exports) might not be allowed for the SAT as VAT, on the grounds that the SAT is not an indirect tax, the only type for which border tax adjustments are allowed under the General Agreement on Tariffs and Trade.

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A Not-So-Simple Alternative to the Income Tax for Socialist Economies in Transition

A Comment on McLure

Alan A. Tait

When Keynes was asked in 1940 to refute the propaganda proposals of Dr. Funk (President of the Reichsbank) elaborating a German post-war World Monetary New Order, he refused because he said that on the whole, he agreed with the arguments. I have some sympathy with this attitude for, in like manner, I agree with many of McLure’s arguments in favor of cash flow taxation (CFT). However, in the cause of “brighter cricket,” or even “brighter economics,” some questions should be raised. Many of these points have been debated before and I touch on them only lightly; readers who would like to pursue them in more detail are referred to the bibliography.

Let us grant McLure all his statements on the complexity of the income tax. If William Pitt, the British prime minister in 1799, had any inkling of the monster lurking in his original income tax, he would never have proposed it, much less been able to sell it to Parliament. But we should be careful not to compare a perfect CFT to a highly imperfect income tax. What is certain is that no matter how simple the original proposal, the simplified alternative tax (SAT) would become more complex and, given politicians’ inclination to interfere, would gain many of the bells and whistles of the present income taxes.
McLure’s Arguments and Discussions

One of the engaging qualities of McLure’s writings is his willingness to admit and discuss the weaknesses of the proposals he advocates. Even so, perhaps, some should be rehearsed and amplified.

Will the Public Accept It?

Interest and dividends received by businesses or individuals are to be tax-exempt under the SAT. Capital gains on financial assets are tax-exempt. A country adopting such a proposal could well become a tax haven for rentiers fleeing (at least on paper) more conventional income tax regimes.

Given the current controversy in the United States over reducing capital gains taxation, what are the prospects that politicians in reforming socialist economies can sell this to their electorates? Remember that many in these economies suspect, rightly or wrongly, that those who have capital to invest and who will enjoy income from capital and capital gains are those who under the previous regimes were the “apparatchiks” or “nomenclatura.” To make such people tax-exempt to encourage savings and investment is a courageous political platform. Sinn’s remark “A reform that leaves the rentier’s returns untaxed cannot be made palatable to any of the world’s parliaments” should be taken from McLure’s note 7 (p. 235) and placed forthrightly in the text, particularly in the context of Central and Eastern Europe.

What about Nonfinancial Assets?

Gains on nonfinancial assets are also exempt from the individual income tax but are taxed under the business SAT. Capital gains as such are not taxed under the SAT; what is done is to include the full sales proceeds of business assets in accountable cash flow. McLure (p. 227) does in passing alert us to some complications: “Individuals buying or selling nonfinancial assets would file business returns.” So the law would have to define nonfinancial assets, and individuals purchasing land, houses, second homes, farms, yachts, and so on would file under the business SAT. Of course, given the infrequency of many such purchases and sales, records would have to be kept over many years, and presumably, depending on what this portfolio included, many capital losses might be established. It seems likely that little revenue would accrue and administrative and compliance costs would be substantial.

McLure (p. 228) states that “most authorities would treat owner-occupied housing like financial investment.” But since the logic of the tax suggests that housing should be treated like any other nonfinancial asset, every householder would be obliged to file under the business SAT, and the capital gain on the house would be liable to the corporate SAT rate “assumed to equal the top individual rate” (McLure, p. 227). And if owner-occupied housing were treated
like other nonfinancial assets, a householder who sold his or her home to move to rented quarters or to emigrate would face a big tax liability. None of these are happy propositions, and no doubt that accounts for the suggestion to break the logic of the SAT.

Even more difficult is the appropriate treatment of land. To prevent capital gains on land from escaping taxation, the activity of holding land would have to be treated as a business. Any country adopting a CFT would have to cope with the "enormous transitional problems, due to the substantial current value of land" (McLure 1988, p. 23). In countries emerging from socialism, where most land has been state-owned, requiring its holding in corporate form may not be the best publicity for privatization. And might it not be politically controversial to give a tax advantage (expensing) for land purchases, which are not even depreciable under the income tax? Realistically, the SAT will need to be substantially modified to accommodate peasant and small agricultural holdings and to deal with housing and the value of the land on which housing sits.

Is This the Way To Deal with Inflation?

McLure's SAT more or less takes the view that if inflation is inevitable, you might as well take the easy way out. All capital purchases are expensed. There are no problems of depreciation, stock valuation, or inflation accounting. This, undoubtedly, is the most attractive aspect of the business SAT. Of course, such accounts are of little use for company financial management; a consideration elaborated below. Even so, there are some points to be made.

If inflation is below, say, 10 percent a year, the problems or distortions due to inflation fade in importance. An indication is the flurry of activity over inflation accounting in Europe in the 1970s and its disappearance from debate now. If inflation is high, the SAT still does not cure the problem, because within the annual accounts, asset valuations will not be comparable and some inflation adjustment will be needed. McLure recognizes this in note 4 (p. 235) and says "this possibility is ignored."

If inflation is neither low nor high, then expensing removes many problems. It does not, however, remove the problem of inflation. As we all know, the effective way to tackle the difficulties caused to accounting and taxation by inflation is to get rid of inflation. When you consider all the advantages of low or zero inflation, you wonder whether we should be designing tax systems to validate inflation.

What about Losses?

Under the SAT, many firms will make capital purchases that outstrip their sales. If the government were to be a complete partner in risk taking, it
should compensate the firm for the tax element in the loss. Gordon (1988, p. 16) asks: "Should a tax refund be made...? To preserve the desired incentive effects, the answer is clearly yes." What would happen in practice is that losses would be carried forward until absorbed by sales. Of course, if inflation is high, these carryforward losses will be reduced by inflation. Firms will not get the “true” credit for their old losses set off against current inflated value sales. Should such losses be adjusted for this inflation erosion? If so, what index should be used? Not all the problems of inflation are necessarily solved by the SAT.

In addition, tax deferral can lead to tax exhaustion when profitability is low in comparison with the reliefs claimed—an unattractive outcome because the tax system is being administered with all its associated costs simply to spin wheels. Furthermore, unused reliefs are of value to other companies and can be exploited by ingenious methods, such as leasing; even though “such mechanisms constitute the ‘market’ solution, they reduce tax yield and make a parasitic tax based industry” (Weeden 1988, p. 7).

**Revenue, Equal Yield Tax Rates, and Stabilization**

The more firms expand and invest, the lower will be SAT revenues. This suggests that with equal rates, a CFT would yield less than a conventional income tax. “The main conclusions... are therefore fairly clear. Introducing a company cash-flow tax... would lead to high tax rates on a revenue-neutral basis” (Weeden 1988, p. 6, commenting on the effects of introducing cash flow taxation in the United Kingdom). Proponents of CFT have argued that there would be a revenue gain, on the grounds that although no revenue would be obtained from marginal investments, revenue gained from intramarginal investments would exceed that lost from other investments. It is suggested that this follows because investors are risk-averse. I, like Goode (1992, p. 1), “don’t find this a compelling argument.” The proponents of CFT judge revenue in present value terms and assume that the government discount rate equals the opportunity cost of capital in the private sector. “But,” as Goode continues, “politicians—rightly in my opinion—do not evaluate revenue in present value terms over long periods of time.”

A further point is that SAT revenue would tend to fall during boom expansions and to rise during recessions—not exactly the ideal countercyclical fiscal policy. Taxpayers would resent an increase in their tax bills associated with sensible commercial policy, such as running down inventories in a recession. Undoubtedly in such circumstances there would be lobbying for concessions (just as happens with conventional income taxes). But “with a CFT, quite apart from the loss of tax revenue, such compromise is more damaging than with a conventional income tax, because the inevitable result is a subsidy to the activity” (Weeden 1988, p. 11).
What Happens to the Financial Sector?

As McLure points out, because interest income is exempt and interest expense nondeductible, the profit margin of financial intermediaries under an SAT is exempt. It is, of course, always difficult to tax the financial sector which can, chameleon-like, alter its bundle of charges to reflect a myriad of circumstances. As Kay (1988, p. 17) says, “the central issue is that what is properly a charge for services is disguised as an interest cost, and hence treated inappropriately in any system which distinguishes between operating and financing costs.”

The ingenuity of the financial sector, with interest rate swaps, futures, options, and deep discount bonds, creates a very slippery animal for tax purposes. This is especially so in the tax treatment of across-the-border flows (see OECD 1991, p. 15). For example, instead of borrowing in its local currency, a company may borrow in a currency with a higher interest rate and make a swap that gives it swap receipts based on the higher interest rate and allows it to make payment on the lower interest rate in its local currency. Under the SAT the interest is not deductible, so it pays a company to enter into swaps that minimize its local interest payments. Similarly, the counter party in a futures contract can be a clearinghouse or bank. If the tax treatment of these financial intermediaries is different from that of other commercial companies, returns can be represented as interest payments and receipts that can yield substantial advantages under the SAT.

All these sophisticated instruments complicate conventional income taxation, but the point is that they would not disappear under the SAT; indeed, the SAT’s treatment of interest and dividends could open up new avenues for avoidance. (See the references on “Gaming the System” for transfer pricing, seller financing, defaults, and forgiveness of indebtedness, employer loans, long-term leases, and different accounting years in Sunley 1988, pp. 16–20, and Mintz and Seade 1991.) Some economic commentators tend to underestimate the importance of such financial transactions and the problems they pose for tax administrators. I would be loath to imply that the capacity for sophisticated financial manipulation is any less in reforming socialist economies than it is in other countries.

U.S. Foreign Tax Credits and Corporate Mobility

Whether or not the CFT can qualify for foreign tax credits has been presented as a major problem for any variant of CFT. “Neither the regular CFT (which does not purport to measure income) nor the dividends tax would qualify as an income tax because the predominant character is not that of an income tax in the U.S. sense.... The dividends tax associated with the CFT would not qualify as an ‘in lieu’ tax because it would not be imposed in substitution for an income tax, otherwise generally imposed.... For multinational companies, a dividend tax may eliminate most of the simplicity aspects of a CFT” (Sunley...
In other words, to know whether the distribution to a foreign shareholder is a dividend or a return on capital, income still has to be measured, so you might as well have an income tax.

McLure states that "the case for creditability should be presented carefully, to avoid dooming the SAT to the ranks of noncreditable taxes" (note 9, p. 235). I agree, and reading McLure's competent treatment of the subject, I am willing to leave the presentation in his hands.

Under a CFT, there must be an incentive to organize activities to minimize tax and then migrate when tax may be payable on future tax flows. A tax would have to be imposed before companies would be allowed to move, but under a CFT, the tax charge would be based "on the full value of the company's assets. This would undoubtedly be regarded as inconsistent with the free movement of capital in an increasingly integrated worldwide capital market" (Weeden 1988, p. 11).

An associated problem mentioned by McLure (p. 232) is that imported asset prices may be overstated to maximize the tax advantages of expensing under the SAT. McLure suggests "substantial customs duties" to curb this abuse. This seems a heavy weapon, and one open to abuse, to protect a weak flank of a tax experiment.

**Transitional Problems**

Transitional problems are considerable and are finessed by McLure when he concentrates only on the case for a CFT in reforming socialist economies. The U.S. Treasury suggested that a transitional period of ten years might be needed during which taxpayers would compute tax liabilities under both CFTs and the old income tax and pay whichever was higher (U.S. Treasury Department 1977). Obviously, this would nullify most of the immediate simplicity of the CFT. The problems concentrate around companies that make investments before the introduction of the CFT. The advantage for most countries emerging from socialism would be that such investments would be trivial and the transition could be made "cold turkey" (Sunley 1988, pp. 22-24; Gordon 1988, p. 17). Basically, the transitional problems are a major difficulty for introducing a CFT in an environment with a longstanding corporate income tax. I am willing to grant McLure the argument that these problems will be much less severe in socialist economies in transition, and that this is a substantial advantage.

However, if eventually these countries wanted to join the European Community (EC) and the EC has not adopted a CFT by that time—and given the glacial speed of corporate tax reform in the EC, that appears unlikely—then the emerging economies would have to reform their corporate taxes yet again. That is, the SAT would be seen as a transitional measure in itself. Is the advantage worth the cost as a transitional measure? This leads us to consider the position of emerging economies and whether or not their peculiarities are such that they should be treated as a laboratory for tax experiments.

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The Circumstances of Socialist Economies in Transition

Currently, the two overwhelming preoccupations of economies emerging from socialism are the need to secure revenues and to control government expenditure. Although defense expenditures, subsidies, and many transfer payments can be reduced quickly, many demands on the state are likely not only to remain large but, during a prolonged transition, to grow. Unemployment will increase, and with it unemployment benefits. The huge restructuring of industry will involve large retraining payments. Neglected housing, transport, communications, and environmental hazards demand government expenditure. The whole social security system is a time bomb that will be enormously expensive to defuse. In short, the governments of these nations need revenues.

This need occurs at a time when revenue itself is threatened. For all intents and purposes, personal income taxation has to be invented afresh in economies emerging from socialism. It will be some years before it will yield a substantial revenue to the treasury. State enterprise profits used to be securely transferred directly between accounts at the central bank. Now, state enterprises will be able to bank commercially, and the central bank loses its control. State enterprises should find their profits squeezed by competition, reduced output, and restructuring. Liquidity squeezes will likely make them delay payments, including taxes. Generally agreed accounting principles are also likely to reduce sharply their so-called profits. Private sector enterprises should grow rapidly and ought to provide a source of tax revenue from profits. Of course, there will be problems of registration, assessment, and collection, in addition to the usual lags in corporate tax, liability, and payment. All this suggests that even conventional income taxes may not be a buoyant source of revenue.

This is hardly the time to propose innovative taxes that will yield even less revenue—or taxes that, to yield revenue equivalent to the conventional profits tax, would require a much higher corporate tax rate; such a measure would presumably create its own problems of avoidance and evasion.

It is acknowledged that the corporate SAT levied when firms are restructuring and investing in new buildings, plant, and equipment is not going to yield revenue. If the answer is that all this investment is desirable and revenue should be sacrificed, then it would be much easier not to tax the corporate sector at all. But we recognize this as impractical and so acknowledge that there must be a corporate tax administration, compliance costs, and, we should expect, revenue. Given that a western-style corporate tax will secure a conventional corporate revenue base, it seems reasonable to support it.

McLure argues that the corporate profits tax will impose unreasonable costs in socialist economies in transition with inadequate administration and compliance. We have already seen that a corporate tax administration is necessary, and quite complex audits would be needed even under an SAT, given the potential complexities (especially in the financial sector).
On the question of compliance, we should be clear that no economy is offered by using an SAT. As McLure mentions in note 8 (p. 235), SAT rules are inappropriate for judging business performance. Therefore, all businesses will have to keep conventional accounts to monitor their own performance and to report to their owners. Foreign-controlled companies and joint ventures (presumably common in economies emerging from socialism) must measure income to report to their foreign shareholders and satisfy foreign taxation authorities. In fact, having to recast their accounts to accommodate SAT rules represents an additional compliance cost, although a relatively minor one. A tax paid in any particular year might be quite different from the tax that auditors would wish to set against profits in that year to report to management and shareholders. Presumably, under the CFT the tax deferred would have to be allowed for under conventional reporting. As a result, “introduction of CFT could lead to increased difficulties for accountants and the uses of company accounts for establishing proper measures of future tax liabilities and the level of post tax profits or earnings attributable to a particular accounting period” (Weeden 1988, p. 14).

Three Suggestions on Accounting and Value Added Tax

The way to tackle this accounting problem (for all countries and not just socialist economies in transition) is to face up to the options and to choose the most sensible. In France, Germany, Italy, and Norway, the tax authorities “accept as taxable income the profits shown in the company’s accounts usually with some minor modification” (OECD 1991, p. 172). In Denmark, the Netherlands, the United Kingdom, and the United States, for example, accounting and tax standards are for the most part independent. All the post-socialist economies are now introducing corporate accounting standards. It is this opportunity that should be seized, rather than the SAT, to reduce administrative and compliance costs. If accounting practices could be legislated sufficiently carefully to be relied upon for tax purposes, major economies in administration and compliance could be made. Of course, it is no use having official accounting rules that are so malleable that they undermine the tax system. “Germany’s gloriously flexible accounting rules let firms bury earnings in reserves for accelerated depreciation and the like, which results in less revealed profits and a lower tax bill” (The Economist 1992, p. 53). Clearly, if countries could legislate the accounting rules to be followed to represent profit and loss and the balance sheet entries for both shareholders and the tax authorities, this would be a major simplification. In addition, tax advisors and tax preparers should, in my opinion, have a fiduciary responsibility to the state, in much the same way that accountants have a fiduciary responsibility to stockholders in their auditing function. Given the powerful position of accountants and auditors, their present authority to
sign off on accounts should be countered by the risk of having their licenses yanked, should the relevant tax authorities find these accounts ill prepared for tax liabilities. (And in view of recent questions about accounting standards raised in connection with the Bank of Credit and Commerce International and with the Robert Maxwell case, who could deny that some tightening is needed?) If the accounting rules were accepted for tax purposes and policed through government-monitored professional standards for accounting firms backed up by sanctions, then tax administration might also be simplified.

A further opportunity for simplification other than the SAT suggests itself. A problem of all fiscal systems, but particularly those in the reforming socialist economies, is that the number of tax handles is limited. When governments tax profits at, say, 30 percent and wages under a withholding tax also at 30 percent, they are taxing value added at 30 percent and tripling the value added tax (VAT) already applied at, say, 15 percent. Clearly it would be simpler to rely on one tax. A VAT levied on corporate profits and wages (collected monthly on wages and quarterly on profits) would provide a secure, buoyant source of revenue.

McLure (p. 234) puts the question, “Should the country have both a VAT and the SAT?” His answer is that “one can imagine substituting the SAT for the VAT, individual income taxes, and payroll taxes.” We could equally well imagine the VAT replacing the company income and payroll taxes (and the VAT is a much more familiar tax). Moreover, a VAT levied on a direct basis (wages and profits) can be equitably applied to the financial sector (as happens in Israel, for example) and may get around the impenetrable difficulties of being unable to apply a CFT to financial intermediaries. Personal income taxes under any system will remain a more complex administrative problem if we wish to use progressive personal income tax rates.

In the long run, only households pay taxes. No matter how corporate and sales taxes are levied, they end up being paid by households. But we need some variety of tax handles to capture revenues equitably. The SAT is certainly an alternative that “deserves consideration” (McLure, p. 235). But I question whether its case has been proved beyond reasonable doubt; the expanded VAT deserves, perhaps, a better and more favorable consideration.

Notes

Alan Tait is a deputy director in the Fiscal Affairs Department of the International Monetary Fund. Richard Bird, Richard Goode, and Emil Sunley commented on a draft of the article.

1. “In my opinion, about three quarters of the passages quoted from the German broadcasts would be quite excellent if the name of Great Britain were substituted for Germany and the Axis” (Keynes, in Moggridge 1980, p. 2).

2. Charles E. McLure’s article, “A Simpler Consumption-Based Alternative to the Income Tax for Socialist Economies in Transition,” appears on pages 221–37. Where I refer to “McLure” only, with no date, that reference is to the article in this journal.

Alan A. Tait

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