

PRINCETON STUDIES IN INTERNATIONAL FINANCE NO. 30

The Cost of Tying Aid:
A Method and
Some Colombian Estimates

Thomas L. Hutcheson

and

Richard C. Porter

INTERNATIONAL FINANCE SECTION
DEPARTMENT OF ECONOMICS
PRINCETON UNIVERSITY · 1972

PRINCETON STUDIES
IN INTERNATIONAL FINANCE

This is the thirtieth number in the series **PRINCETON STUDIES IN INTERNATIONAL FINANCE**, published from time to time by the International Finance Section of the Department of Economics at Princeton University.

Both authors, Thomas L. Hutcheson and Richard C. Porter, are affiliated with the Department of Economics and the Center for Research on Economic Development of the University of Michigan. Professor Porter is an Associate Director of the Center. Both have worked as economic advisors to the National Planning Department of the Government of Colombia.

This series is intended to be restricted to meritorious research studies in the general field of international financial problems which are too technical, too specialized, or too long to qualify as **ESSAYS**. The Section welcomes the submission of manuscripts for this series.

While the Section sponsors the studies, the writers are free to develop their topics as they will. Their ideas and treatment may or may not be shared by the editorial committee of the Section or the members of the Department.

PETER B. KENEN

Director

Princeton University

PRINCETON STUDIES IN INTERNATIONAL FINANCE NO. 30

The Cost of Tying Aid:
A Method and
Some Colombian Estimates

Thomas L. Hutcheson
and
Richard C. Porter

INTERNATIONAL FINANCE SECTION
DEPARTMENT OF ECONOMICS
PRINCETON UNIVERSITY
PRINCETON, NEW JERSEY
MARCH 1972

*Copyright © 1972, by International Finance Section
Department of Economics
Princeton University
L.C. Card No. 79-37963*

*Printed in the United States of America by Princeton University Press
at Princeton, New Jersey*

CONTENTS

	<i>Page</i>
I. INTRODUCTION	1
II. TYING: ENDS AND MEANS OF THE UNITED STATES	8
III. TYING: REACTIONS AND ADJUSTMENTS BY COLOMBIA	17
IV. THEORY AND METHOD	20
V. EMPIRICAL EVIDENCE	29
VI. THE COST OF TYING	34
APPENDIX A: Samples, Data, and Regressions	40
APPENDIX B: The Formula for Variety-Distortion Cost	45

LIST OF TABLES

	<i>Page</i>
1. Findings on Excess Cost of Tied Aid	5
2. Share of Aid-Financed Commodity Expenditures Purchased in the United States	9
3. Variety-Ratio Differences in the Five Cases	27
4. Percentage Share of Colombian Imports from the United States	30
5. Estimates of the Critical Variable	32
6. Distribution of Variety-Distortion Costs	38
A1. Distribution of Relative Price Coefficients (a_{i2})	43
A2. Distribution of the Trend Coefficients (a_{i1})	43
A3. Comparisons of PL-Eligible and Non-PL-Eligible Products	44

LIST OF FIGURES

1. Allocation of Aid When Varieties Are Perfect Substitutes	3
2. Ratio of Net Additional Exports from the United States to Total Amount of Aid	13
3. Variety-Distortion Cost	35

THE COST OF TYING AID: A METHOD AND SOME COLOMBIAN ESTIMATES

Leave out my name from the gift
if it be a burden,
but keep my song.

Tagore, *Fireflies*

I. INTRODUCTION

The tying of aid is one of the means by which a country may avoid or postpone a devaluation when suffering a deficit in its balance of payments. In its efforts to prevent foreign economic aid from hurting the balance of payments, the United States placed increasing restrictions during the 1960's on the manner in which its aid could be spent. Although the tying techniques are rarely precise and the results are difficult to measure, it is now generally conceded that aid no longer has any substantial impact on the balance of payments.¹ Inevitably, however, the very success of policies directed at changing the preferred expenditure patterns of the less developed countries (LDCs) receiving aid has imposed costs on them. It is toward the identification and measurement of these costs that this paper is directed.² It should be noted that the point of comparison, for the costs identified below, is the undervalued dollar. No attempt is made to estimate

A preliminary version of this paper was presented to the Harvard Development Advisory Service conference in Dubrovnik. While some of the work on this study was done in Colombia, it represents neither an official output nor an official position of the Government of Colombia. The authors wish to acknowledge the help provided by many officials of the Government of Colombia and of the U.S. Agency for International Development.

¹"... in 1963-1964, the substitution of AID goods for commercial imports was about 10 percent. In 1966-67, the last year for which we have satisfactory figures, substitution seems to have fallen to about 2 percent." Statement of W. S. Gaud, AID Administrator, in *Hearings before the Subcommittee on International Exchange and Payments of the Joint Economic Committee* (Jan. 13, 14, and 15, 1969), p. 87.

²For a general analysis of these distortions and welfare losses, see Jagdish N. Bhagwati, *The Theory and Practice of Commercial Policy: Departures from Unified Exchange Rates*, Princeton Special Papers in International Economics, No. 8 (January 1968), pp. 41-46. The model to be developed here is more specific, being aimed at empirical implementation.

the differential costs imposed by the tying of aid in relation to untied aid and an openly devalued dollar.

By "cost" we mean the fraction by which the aid could be reduced, and the recipient left just as well-off, if restrictions on the use of the aid were completely removed. Measurement of the cost, so defined, permits us to make statements like the following: a dollar of aid tied in such-and-such a way is the equivalent (to the recipient) of so many cents of untied aid. Unfortunately, this measurement is not easy. It requires knowledge not only of how the tied aid was actually used but also of how different amounts of untied aid would have been used.

Our method differs from previous efforts in that it does not require the assumption that the varieties of a product supplied from different sources are homogeneous. Nevertheless, it is convenient to begin the exposition by assuming that varieties of a product supplied by the United States and by the least expensive producer in the rest of the world are indeed perfect substitutes to the recipient of the aid.

Consider the use of a given volume of aid on two products, x and y . Because of the assumption of perfect substitutability, we may choose the units for quantities such that one unit of the variety (of either product) from the United States always equals, in worth to the recipient of the aid, one unit of the least expensive variety (of that product) from the rest of the world. Good y is assumed to be cheaper in the United States, good x to be cheaper in some other country. If the LDC's importers have (and/or its import-licensing authorities reflect) a convex preference function between goods x and y , completely unrestricted aid would be allocated at some such point as A in Figure 1, where the axes represent the quantities of x and y purchased³ and the line BAC is budget constraint.⁴

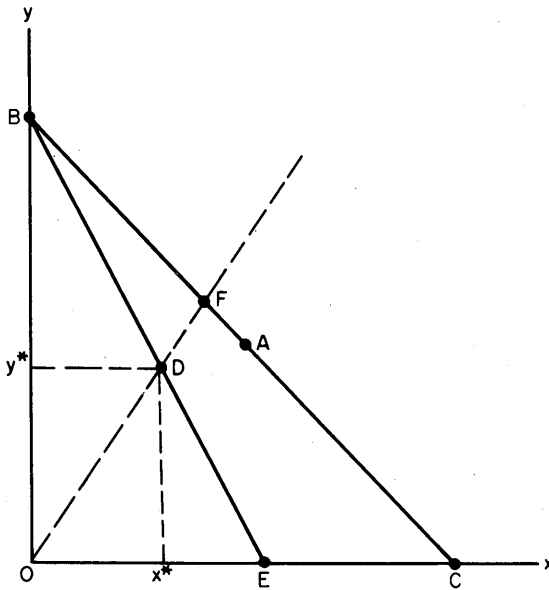
The costs of tying are now readily identified. If the United States required that this same amount of aid be used only to purchase its varieties of products, the LDC would allocate the aid at some such point as D , on a different budget constraint, BDE .⁵ On the other hand, the LDC might be constrained not as to the source but as to the product on which it can utilize the aid. If only good y could be purchased, the LDC would move to

³ For simplicity, we neglect any quantities of x or y that would have been purchased in the absence of aid.

⁴ The slope of the budget constraint, BAC , is $-P_{xy}/P_{yu}$, where P_{yu} is the price of product y in the United States (i.e., u for United States) and P_{xr} is the price of product x in the least expensive third country (i.e., r for rest of world). The intercepts are the amount of aid divided by the relevant price of the product on that axis.

⁵ With a slope of $-P_{xu}/P_{yu}$, BDE is steeper than (and lies within) BAC , since $P_{xu} > P_{xr}$.

FIGURE 1
ALLOCATION OF AID WHEN VARIETIES ARE PERFECT SUBSTITUTES



point B , which would be inferior to A , but the additional restriction—that good y be bought from the United States—would impose no further loss in welfare (since the United States is already the least expensive source for good y). Similarly, if the aid were tied to use on good x , purchases would occur at point C , also inferior to A . Now, however, if it were also required that good x be purchased from the United States, there would be a further loss of welfare as purchases were deflected to point E . Thus, source tying without product tying moves the LDC from point A to point D . Product tying without source tying moves it from A to B or C . Source tying and product tying force it to B or E . When the United States limits a recipient of its aid to purchase from the United States of particular products (of which the United States is not the least expensive source), it imposes double costs on the LDC, what we shall call the *variety-distortion cost* (i.e., the movement from A to D) and, in addition, the *product-distortion cost* (i.e., the movement from D to E).

The product-distortion cost of tied aid is not susceptible to measurement without knowledge of the indifference curves of the LDC between

goods x and y .⁶ But the variety-distortion cost requires no such elusive information. In terms of Figure 1, the LDC would be just as well-off as at point D with a fraction, DF/OF , less aid if that reduced amount of aid was not tied to purchase from the United States.⁷ This variety-distortion cost (i.e., the fraction DF/OF) can also be seen as the excess cost (over least expensive sources) of purchasing from the United States the actual bundle represented by point D .

Viewed in this way, the variety-distortion cost (hereafter VDC) is

$$(1) \quad VDC = \frac{(P_{xu} - P_{xr})x^*}{P_{xu}x^* + P_{yu}y^*},$$

or

$$(2) \quad VDC = \frac{P_{xu} - P_{xr}}{P_{xu}} \cdot \frac{P_{xu}x^*}{P_{xu}x^* + P_{yu}y^*}.$$

Formula (2) is easily generalized to the case where many of the products purchased are tied by source:

$$(3) \quad VDC = \sum_i \frac{P_{iu} - P_{ir}}{P_{iu}} c_i,$$

where P_{iu} is written equal to P_{ir} when the United States is the least expensive source, and c_i is the fraction of the total (source-tied) aid spent on the i^{th} product.⁸

It is essentially this formula (3) that was developed by Haq in his pioneering effort to measure (for Pakistan) the cost of tied aid,⁹ and it is this same formula that has been since used in various other studies. The results of such investigations suggest an excess cost in the range of 12 to

⁶ More precisely, knowledge is needed about the shape of the indifference curve through point E in Figure 1.

⁷ The statement is not quite accurate. Untied aid reduced by the fraction DF/OF would permit the LDC to purchase the same bundle of goods (i.e., x^* and y^* , at point D in Figure 1) as it did previously when the aid was source-tied. It is able to become better off by adjusting the bundle (see Jagdish Bhagwati, "The Tying of Aid," United Nations Conference on Trade and Development [UNCTAD], mimeographed [Nov. 1, 1967], Annex III). We ignore for now this difference on the grounds that, for generally small price differentials (between the United States and least expensive sources), the size of the overcompensation implied by the statement of the text is small. Our treatment in Section IV is precise.

⁸ Note the denominator of formula (3). If P_{ir} is mistakenly used, the result will be a slight overestimate of the excess cost (unless the weights are also adjusted).

⁹ Mahbub Haq, "Tied Credits—A Quantitative Analysis," in John H. Adler, ed., *Capital Movements and Economic Development* (New York: Macmillan, 1967).

TABLE 1
FINDINGS ON EXCESS COST OF TIED AID

<i>Nation</i>	<i>Source</i>	<i>Estimate of Excess Cost^a</i>
Pakistan	Mahbub Haq, "Tied Credits—A Quantitative Analysis," 1967.	12 %
Chile	"Report on Tied Credits: Chile" (Dec. 8, 1967). ^b	12.4
India	Deepak Lal, "A Quantitative Analysis of Aid—Financial Imports of Certain Chemicals into India" (Dec. 3, 1968). ^b	14.9
Iran	Eprime Eshag, "Study on the Excess Cost of Tied Economic Aid Given to Iran in 1966/67" (Dec. 13, 1967). ^b	15
Tunisia	Eprime Eshag, "Study of Tied Economic Aid Given to Tunisia in 1965 (Nov. 30, 1967). ^b	20
Various Latin-American	V. E. Tokman, "An Evaluation of Foreign Aid: The Chilean Case" (May 1969). ^c	24

^a Methods vary somewhat among these studies, but the general procedure is described in "The Costs of Aid-Tying to Recipient Countries," UNCTAD, mimeographed (Nov. 21, 1967).

^b UNCTAD, mimeographed.

^c In *Bulletin of Oxford University Institute of Economics and Statistics*, p. 93. This article reports results of an OAS study that includes excess costs due to freight and project preparation.

24 per cent (see Table 1).¹⁰ Unfortunately, studies of this kind suffer from serious inadequacies. To begin with, it is necessary to assume that the same product is delivered by all potential sources. By "same," it is of course not necessary to imply identical, but the varieties delivered by different countries are assumed to be equally satisfactory to the LDC. In short, they are assumed to be perfect substitutes. The researcher has leeway; in the case of machinery, for example, he may choose (if the data permit) the more sensible unit among number of machines, tons of

¹⁰ Other sources have estimated the percentage excess of most expensive over least expensive source where international bidding has occurred. Such estimates are of course higher (see, for example, Bhagwati, "The Tying of Aid," pp. 33-34) but represent only upper limits to potential excess cost as defined above.

machinery, horsepower potential of machinery, and so forth. But, in the end, only the crudest kind of adjustment can be made for differences in the quality of the various varieties. Moreover, quality is not always even potentially measurable on a linear scale; for a particular "product," the variety delivered by a particular country may be better for some purposes and worse for others. The dilemma is clear, given the necessary assumption of perfect substitutability. In order to avoid the risk of being embarrassed to discover that he has attributed excess cost to the very imports that are being preferred, partly or totally, under free commercial license, the researcher must take care "to compare only such items of equipment as have similar specifications, capacity and quality."¹¹

Since there are but a limited number of products for which it can be reasonably claimed that the varieties available from different sources are indeed perfect substitutes to the user, studies such as those in Table 1 give a meaningful estimate of the *overall* excess cost of tied aid only if heterogeneous products are comparable to homogeneous products insofar as costs of tied aid are concerned. The method we will develop instead treats different varieties of a particular "product" as heterogeneous—in essence, more as if they were different products.¹² As a result, we are unable to calculate the excess cost of the truly homogeneous product, but there are few of these under our definition of "product";¹³ in any case, our results offer a useful complement to earlier findings. The reader should note that the technique developed here is a general method for measuring the costs of distortions in relative prices and is especially superior to the measurement of "little triangles" when a particular product (or variety) has an obvious alternative.

The organization of the remaining sections is as follows. An historical review of aid-tying measures from the viewpoint of the United States is first presented (Section II). There follows a description of the aid negotiations between the Governments of the United States and Colombia and of the administrative reactions of the Colombian Government—especially of its import-licensing agency—to restrictions on the use of aid (Section III). Constraints by the donor on the use of aid and the reactions of the donee to them are then examined theoretically within a model allowing heterogeneity of varieties (Section IV). In the final two sections (V and VI), the data of actual Colombian imports over 1955–68 are analyzed in an effort to assess the nature, extent, and costs of the variety distortion

¹¹ Haq, *op. cit.*, p. 327.

¹² The phrase "more as if" will be made clear later.

¹³ Defined in this study from detailed tariff classifications.

imposed on Colombia in 1967 and 1968 as a result of the tying of aid from the United States and suboptimal Colombian responses to these restrictions.¹⁴

The most important empirical findings—although no more than suggestive—indicate that (1) the typical variety-distortion costs to Colombia were far from negligible, and (2) the Colombian administrative reaction to the restrictions on the use of aid may have been suboptimal. For a sample from all products eligible for purchase from the United States under the program loan of the United States, the variety-distortion costs averaged above 10 per cent in 1967 and above 30 per cent in 1968.¹⁵ Furthermore, the absence of such costs in another sample (of similar Colombian imports that were not eligible for purchase under aid from the United States) suggests that the Colombian import-licensing procedures failed completely to adapt to the restrictions and thereby may have contributed to these 10 and 30 per cent estimates.

¹⁴ There are two appendixes: In the first (A), the samples, data, and statistical operations are detailed; in the second (B), the exact formula for variety-distortion cost is developed.

¹⁵ The median is the measure of average (for reasons that will later become clear). Since the variety-distortion costs of the major Colombian imports were much smaller, a weighted average would be lower than these 10 and 30 per cent figures.

II. TYING: ENDS AND MEANS OF THE UNITED STATES

There are many reasons for the practice of tying aid by source, such as internal politics in the donor country, reduction of the resource cost (to the donor) of aid, and the desire for increased leverage over the direction of the recipient's use;¹ the issue is indeed not simple. But the very date of the initiation of such tying of United States aid, 1959, reflects the fact that it was primarily directed at the balance of payments and its concomitant, the promotion of exports.² Before the discovery, in 1959, that the "dollar gap" had been closed, there had been little concern for the effect of the aid of the United States on its balance of payments. On those few occasions when the question had been raised, reassuring answers had been offered; even the now staunch proponent of tying, the Department of Commerce, had then estimated that:

of more than \$5,000 million in gross grants and credits extended by the United States Government in 1958 all but \$300 million "consisted of equivalent transfers from the United States."³

Once tying was introduced, the method of calculating the impact of aid on the balance of payments of the United States changed. Where the Department of Commerce estimate for 1958 had been 94 per cent, the official figure for 1960 was only 41 per cent (see Table 2). The percentage rose throughout the 1960's as tighter tying was implemented. But as nominal source tying became ever more (and by 1969 almost completely) effective, it was increasingly recognized that the share of aid spent in the

¹ For fuller lists, see Raymond F. Mikesell, *The Economics of Foreign Aid* (Chicago: Aldine, 1968), pp. 246-251, and Jagdish Bhagwati, "The Tying of Aid," UNCTAD, mimeographed (Nov. 1, 1967), pp. 17-19.

² The two are not quite the same even for the United States, and for other countries where aid is tied despite a balance-of-payments surplus, the export-promotion reason can exist quite independently. The Agency for International Development (AID) likes to separate the two reasons, especially before Congress (e.g., see *Proposed Foreign Aid Program, FY1968* [Washington: AID, 1967], pp. 72-76), and the Department of Commerce appears to visualize tying as a device to "provide current and prospective exporters with opportunities to demonstrate the quality of U.S. products . . ." (*International Commerce* [Jan. 18, 1965], p. 47). Nevertheless, for present purposes, the two aspects can be viewed as essentially identical, as concerns the United States in the 1960's.

³ Robert E. Asher, *Grants, Loans, and Local Currencies* (Washington: The Brookings Institution, 1961), p. 43. The internal quotation is from a U.S. Dept. of Commerce publication.

TABLE 2
 SHARE OF AID-FINANCED COMMODITY
 EXPENDITURES PURCHASED IN THE
 UNITED STATES

<i>Fiscal Year</i>	<i>Per Cent Purchased in the United States</i>
1960	41
1961	44
1962	66
1963	79
1964	87
1965	92
1966	90
1967	96
1968	98
1969	99

SOURCE: *The Foreign Assistance Program, Annual Report to Congress* (Washington: Government Printing Office, 1968), p. 75; *ibid.* (1969), p. 23.

United States was not necessarily a measure of, or even related to, the impact of aid on the balance of payments.

Although we are not here concerned with this impact on the balance of payments, we must nevertheless glance over the various difficulties of measurement in order to recognize the extent of the uncertainty and ignorance in which the tying policy of the United States was being made and carried out during the 1960's. Only this ignorance and uncertainty (together with the strong and growing concern for the balance of payments) can explain the frenetic pace of tying activity in the U.S. Treasury, AID, and the Department of Commerce during the late 1960's. Aside from any macroeconomic issues involved,⁴ it was soon recognized that aid that was not returned directly to the United States through a purchase was not irrevocably lost. This meant, first, that the AID contributions to international organizations could not be treated automatically as a balance-of-payments drain but required calculations about the probable ultimate

⁴ That is, that the balance-of-payments deficit must be viewed as the obverse side of an excess of investment over saving.

destination of the dollars (in advanced countries).⁵ Furthermore, even untied bilateral aid from the United States could return by way of third countries. The use of an average (and implicitly assumed equal to marginal) propensity-to-import matrix permitted the estimation of "feedback" or "reflection" effects and hence the ultimate impact of untied bilateral aid on the balance of payments.⁶ In short, feedback considerations reduce the perceived contribution of aid to the deficit but require some tenuous estimation procedures.

It has also been increasingly recognized that aid that *does* return directly to the United States may nevertheless contribute to the deficit. If the recipient of the aid would have purchased that product in the United States even in the absence of aid, then the aid has freed some of its own foreign exchange. To the extent that this freed exchange is not spent in the United States, "substitution" or "switching" occurs, and the aid indeed contributes to the deficit. Here, too, calculations are tenuous, essentially requiring an extrapolation, estimate, or assumption about the "normal" share of the United States products in the recipient's commercial imports.⁷

Finally, it has also become fashionable to calculate the United States exports to LDCs that are attributable to the aid-induced growth of these countries.⁸ In addition to being conceptually suspect, the resulting estimates are again tenuous. Thus, Congressmen, economists, bureaucrats; AID, Treasury, Commerce; each has been able to pursue his instincts—

⁵ The traditional example of the failure of this "accounting" approach was the treatment of the contributions of the United States to the Indus Basin Development Fund as a drain. While the United States was providing an untied 44 per cent of the foreign exchange, firms based in the United States were receiving 54 per cent of the foreign exchange component of the contracts. See *Maintaining the Strength of the United States Dollar in a Strong Free World Economy* (Washington: U.S. Treasury Department, January 1968), pp. 150-151.

⁶ See Walter S. Salant *et al.*, *The U.S. Balance of Payments in 1968* (Washington: The Brookings Institution, 1963) and W. Whitney Hicks, "Estimating the Foreign Exchange Cost of Untied Aid," *Southern Economic Journal* (October 1963).

⁷ By "commercial imports" we mean those not financed by aid. Many of the estimates of switching are found only in internal AID memoranda, but the interested reader should see Lawrence Lynn, Jr., "An Empirical Analysis of U.S. Foreign Economic Aid and the U.S. Balance of Payments, 1954-1963," Ph.D. thesis (New Haven: Yale University, 1966) and Charles D. Hyson and Alan M. Strout, "Impact of Foreign Aid on U.S. Exports," *Harvard Business Review* (January-February 1968).

⁸ W. S. Gaud, in *Hearings before the Subcommittee on International Exchange and Payments of the Joint Economic Committee*, Jan. 13, 14, and 15, 1969, pp. 95-96. See also Hyson and Strout, *op. cit.*

about the "need" for and efficacy of measures to increase the tying of aid—largely unfettered by indisputable facts.⁹

The history of tying in the 1960's can be divided into two stages. Up to 1965 AID was chiefly concerned with getting its aid tied tightly to use on products from the United States.¹⁰ By 1965 this goal had been essentially achieved (see Table 2), but government officials were beginning to worry publicly about the substitution, or switching, issue. The question was raised in terms of "additionality": to what extent does aid result in a net addition to exports from the United States? This concern for additionality was almost entirely directed at those LDCs which received program (or, more generally, nonproject) aid from the United States, although substitution is, in theory at least, as much a possibility with project aid,¹¹ and internal research in AID was strongly suggesting that, among recipients of aid, failure to achieve additionality was unrelated to the project-versus-program composition of the assistance. Nevertheless, after 1965 new aid restrictions were concerned entirely with the nonproject component of United States aid.

In order to understand the policies of the United States, it is important to understand the extent to which normal economic factors and/or nominal source tying can bring about additionality. If an aid recipient's imports from the United States are normally a fraction, Ψ , of its total imports,¹² then the United States can expect, without any tying restrictions, that a fraction, Ψ , of its aid will return directly to the United States.¹³ Thus, the larger the normal import share of the United States (Ψ) is, the more nearly is full additionality achieved.

Nominal source tying, on the other hand, is more effective the lower the normal share of imports from the United States. In the extreme, where goods are never purchased from the United States through normal com-

⁹ Though one of these necessarily tenuous estimates by AID, that all the tying efforts beyond nominal source tying "only save us about \$35 million a year" (Gaud, *op. cit.*, p. 94) was in the end influential in the 1969 announcement of an easing of Latin-American restrictions.

¹⁰ The meaning of "from the United States" inevitably caused some difficulty; also (after 1963), aid could no longer be used on products of which the United States was a net importer.

¹¹ Some substitution will occur whenever the donor finances a project (1) that would have been undertaken in the absence of the aid and (2) some of the foreign exchange components of which would have been bought from the donor. The irony should not be overlooked: the additionality of project aid is best ensured by funding low-priority projects that are most economically contracted in third countries.

¹² For simplicity, we here assume identity between the average and the marginal.

¹³ We are here ignoring indirect feedback and growth-induced imports.

mercial channels, the recipient of the aid must develop new incentives or import-licensing procedures to fulfill the aid restrictions—and will, in the process, automatically achieve full additionality. If the ratio of the aid from the United States to total normal commercial imports is Φ , it can be readily deduced that nominal source tying will raise the total import share of the United States above its expected normal level (Ψ) as long as $\Psi < \Phi/(1 + \Phi)$. Thus, the larger the aid contribution to the recipient's imports (Φ) and/or the smaller its normal share from the United States (Ψ), the more effective is nominal source tying in achieving additionality.¹⁴

These two factors are shown in Figure 2, where the vertical axis represents the ratio to the total aid of additional (*net*) exports from the United States to the aid recipient. If this ratio is 1, full additionality has been achieved; if it is 0, complete substitution has occurred (i.e., zero additionality). The shaded region of Figure 2 indicates the extent to which additionality is less than full when normal economic factors and nominal source tying are relied upon. It is on this shaded region that AID, Treasury, and Commerce intensified their attention between 1965 and 1968.

Unfortunately—from the viewpoint of those trying to impose it—additionality is no easy matter to ensure. While nominal source tying is generally accepted by donors and recipients of aid, further steps are not. "Additionality teams" were sent to the major recipients of nonproject aid in search of means to raise "additionality factors." While a number of jawbone devices were developed,¹⁵ the principal new restriction applied was the "positive list." AID had always, under its broadest and most permissive program loans, insisted on a "negative list"—namely, goods on the import of which (from any source) the aid could not be used. Usually, consumer goods, and especially luxury items, were on the negative list in order to encourage the use of the aid for development purposes.¹⁶

¹⁴ Provided the recipient can and does adequately alter its import incentives and/or licensing procedures. If not, nominal source tying will result only in a slow utilization of the program loan. The classic example of this is Morocco in the mid-1960's. With a normal share of imports from the United States below 10 per cent and strong traditional trading ties to France (reinforced by an exemption—later withdrawn—of French imports from the need for prior license), the Moroccan Government was simply unable to utilize its aid from the United States. We return in Section III to this problem as it affected Colombia.

¹⁵ Including the implied threat that an aid recipient's share of the pie might be reduced if it was unable to raise its additionality. For example, "discussions have been held with assisted countries concerning difficulty of maintaining current assistance levels in the face of the U.S. balance of payments of deficit" (*The Foreign Assistance Program, Annual Report to Congress* [Washington: Government Printing Office, 1967], p. 19).

¹⁶ And to prevent subsequent embarrassment before Congress.