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To: Members of the Executive Board

From: The Acting Secretary

Subject: Compensatory Financing Facility - Treatment of Import
          Content of Exports

          Attached for consideration by the Executive Directors is a
paper on treatment of import content of exports under the compensatory
financing facility. This subject will be brought to the agenda for
discussion on a date to be announced.

          If Executive Directors have technical or factual questions
relating to this paper prior to the Board discussion, they should
contact Mr. Kaibni, ext. (5)7721.

Att: (1)

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INTERNATIONAL MONETARY FUND

Compensatory Financing Facility--
Treatment of Import Content of Exports

Prepared by the Research Department

(In consultation with other Departments)

Approved by Wm. C. Hood

December 23, 1983

This paper examines the treatment of the import content of exports
in the calculation of export shortfalls under the compensatory financing
decision. The issue of the import content in the CF calculations arose
at EBM/83/91 (6/24/83) in connection with Board consideration of Panama's
request for a CF purchase (EBS/83/103. 5/24/83). Specifically, the staff
was requested to explore the possibility of devising rules to adjust the
compensable amount of a shortfall to take account of the import content of
exports when such content represents a large share of the value of a country's
exports. Although the issue was raised with reference to the specific case
of refined petroleum exports from imported crude, this paper analyzes the
issue in a broader context in view of the fact that the issue is not unique
to one product and because of considerations regarding the uniform treatment
of members.

The paper contains four sections and two annexes. The first section
provides background information on the issue under consideration; the second
discusses the extent of the problem in CF requests made since 1976; the third
explores possible approaches; and the fourth section contains a summary and
recommendation. The first annex discusses technical features and marketing
of certain products with relatively large import content; the second is a
table that details the shortfall calculations for 40 drawings involving
products with a high import content.

1.   Background

    a.   General observations

    The purpose of the compensatory financing facility, as stated in
successive decisions since 1963, is "the financing of deficits arising out
of export shortfalls." To the extent that fluctuations in export products
with a high import content are likely to be matched with similar fluctua-
tions in the associated imports, the export shortfalls in respect of these
products will not contribute to the overall payments deficits. Implicitly,

therefore, a case could be made that exclusion of the import content of these exports from the shortfall calculations would be in keeping with the purposes of the facility.

Successive CF decisions have not, however, provided a specific definition of the type of export statistics to be used for the purpose of calculating the amount of a compensable shortfall. The few references to data made in the decisions relate to the timing and quality of the export statistics needed for the calculations, as follows:

> The existence and amount of an export shortfall for the purpose of any drawing under this Decision shall be determined with respect to the latest 12-month period preceding the drawing request for which the Fund has sufficient statistical data.... 1/

Beyond these references, the decisions have included statements to the effect that the facility is mainly designed to assist the primary exporting member countries. This has given rise to occasional questions by individual Executive Directors regarding the intended scope of the facility, both with respect to the countries and to the commodity composition of exports that qualify for use of the facility. Mention should be made, however, that the coverage of the facility was expanded in 1979 to include workers' remittances and receipts from travel, and in 1981 to include excesses in the cost of cereal imports.

b. Practice

The above observations suggest that the CF decision does not enjoin the use of a specific definition of exports, and accordingly the procedures applied in the CF calculations have evolved out of Board consideration of individual requests, and of staff proposals on the application of the CF decision.

The standard practice since 1963 has been to base the shortfall calculations on a concept of total exports that includes all domestic exports but excludes re-exports. Identification of the latter has been straightforward because of the widespread adherence in the compilation of national data to the UN definition of re-exports, which refers to goods whose physical characteristics are not changed while in the country of transit. As such, re-exports represent an extreme example of products where the import content is virtually total, and these products have been systematically excluded from the shortfall calculations. On the other hand, exports of such products as refined petroleum from imported crude are not considered re-exports and are, therefore, included in the shortfall calculations. It should be noted that in addition to some other individual products with a high import content, such as polished diamonds from imported rough diamonds, most export products, including primary products and manufactured goods produced domestically, contain imported inputs in varying degrees.

1/ Paragraph 5, Decision No. 6224-(79/135), adopted August 2, 1979.

The procedures discussed above have been applied in a rather straight-foward way that has given rise to no particular difficulties of implementa-tion and at the same time have accorded uniform treatment to all the members concerned.

c.   Previous Board discussion of the import content of exports

The issue of treatment of the import content of exports was raised twice, both in connection with Board consideration of requests for CF drawings by Panama. The issue was first raised in 1976 (EBM/76/167, 12/22/76), and again in 1983 (EBM/83/91, 8/2/83). On both occasions, concern was expressed whether the requests conformed to the spirit of the CF decision because a relatively large part of the total shortfall was attributable to refined petroleum of which the import content represented a substantial share of the total value of exports. It was suggested at EBM/76/167 that the staff should review the treatment of the import content of exports on the occasion of the next review of the facility. Accordingly, the 1977 review of the facility (SM/77/38, 2/16/77) discussed the matter as follows:

> The possibility of deducting the import content of exports was raised in the Executive Board in connection with Panama's compensatory request (EBS/76/503). The overall shortfall was largely due to a decline in the exports of petroleum products. Panama imports its crude oil and, because the value added by refining is small, the balance of payments effect of the decline in earnings from petroleum products was mitigated by reduced imports of crude oil. Since the imported crude oil was transformed in Panama, exports of petroleum products could not be treated as re-exports and, consequently, could not be excluded from the calculation. Although exclusion of the (direct and indirect) import content of exports might be con-sidered as desirable, it was recognized that the full import content could not be subtracted in all cases. Moreover, several Executive Directors considered that the simultaneity of an export shortfall and of balance of payments need should be a sufficient condition for access to the facility.

> The staff recognizes that the definition of export earnings presently applied may have led, in very few cases, to consequences which might not be considered as being fully compatible with the spirit of the facility. The staff believes, however, that borderline cases cannot be avoided and that it would probably be wise not to modify the present coverage of export earnings. 1/

In the discussion of that paper, one Executive Director commented that he agreed that it would not be reasonable to make deductions for the import content of exports in all cases, but provision should be made for special

1/ Page 14.

treatment in cases "of obvious relevance and importance." The staff responded that it would be possible in individual cases to deduct the import content of exports without changing the decision on the facility. The staff added, however, that unless the Executive Board decided on a rule, too much discretion would be vested in the staff if it had to determine on a case-by-case basis when to make adjustments.

In the course of Board consideration of Panama's last CF request (in June 1983), the staff response reiterated the substance of previous discussions and referred to a further development in the case of Panama which has added another complication to any possible consideration of a rule by which the shortfall could be adjusted to take into account the import content of exports: in recent years, the bulk of petroleum products refined in Panama had been used to satisfy domestic demand, leaving for export only residual quantities that are surplus to Panama's needs. In other words, if the value of imported crude oil was subtracted from the value of refined petroleum exports, the resulting figure would be negative.

2.   Extent of the problem

At one extreme, there exists in one category of products, re-exports, a one-to-one relationship between exports and their import content; because the re-exported products are not transformed in the transit country, no value is added to the products. As noted above, the present practice excludes re-exports from shortfall calculations. At the other extreme, there are conceivably some export products (possibly certain primary commodities and some manufactured exports) that contain no imported inputs. In this case, the total value of exports can be regarded as domestically added, and hence the question of special treatment does not arise. Between the two extremes, however, most export products contain an element of imported inputs, either directly or indirectly. 1/

The staff has examined the 195 CF requests made since January 1976 for instances where the shortfall calculations included products that are commonly perceived to contain a relatively large import component. The results, which are detailed in Annex B, reveal that in 40 drawings there were 45 instances where shortfalls or excesses were calculated for one or more of four such products—refined petroleum, polished diamonds, in-bond industries, and petrochemicals. This list is not exhaustive in the sense that it includes only those instances where the product shortfalls or excesses were specifically calculated in the CF papers. The total amount of the 40 drawings, at SDR 3.8 billion, accounted for one third of the aggregate of the 195 drawings of SDR 11.3 billion made since 1976; the corresponding total shortfalls for the 40 drawings (SDR 6.2 billion) also represented about one third of the aggregate shortfalls.

1/   Indirect import content refers to the import content of domestically produced goods used as inputs to manufacture the final good which is exported. Direct import content refers to imports of such products as crude oil required to export refined petroleum.

Of the four products identified in this study, refined petroleum exerted the greatest influence on the calculation of the overall shortfalls of the cases concerned. It appeared explicitly in more instances (27 of 45) than did any of the other three products, and its effect on the overall shortfalls far exceeded the effects of the other products (Table 1). Shortfalls on account of refined petroleum occurred in 11 instances for a total amount of SDR 179 million, but these figures were far exceeded by 16 instances of excesses amounting to SDR 855 million. The net effect of including refined petroleum has been to reduce the overall shortfalls for the 27 instances by some SDR 676 million, which represents 14 percent of the overall shortfalls for the same 27 cases. Similarly, for petrochemicals, though on a much smaller scale than for petroleum products, excesses were calculated more frequently, and for larger amounts, than shortfalls.

For the remaining two products, diamonds and in-bond industries, shortfalls and excesses were calculated on five occasions each, with shortfalls exceeding excesses in each product; the net contribution to the aggregate shortfalls, however, was relatively small (SDR 39 million in the case of diamonds and SDR 80 million for in-bond exports).

The combined share of the four products in total export earnings of the countries concerned averaged 8 percent, ranging from 4 percent for petrochemicals to 26 percent for diamond exports. As can be expected, the share of individual products in the total earnings of individual countries varied considerably, not only from the averages cited, but also over time for the same country. For example, refined petroleum exports accounted for nearly 80 percent of Panama's exports in 1976, but for only about 37 percent in 1983.

Examination of the individual drawings listed in Annex B reveals that one or more of the four products have contributed positively to the overall shortfalls in 17 of the 40 drawings examined. In six of these drawings, the ratio of the product shortfall to the overall shortfall was substantially in excess of 10 percent; the rest were either close to, or below, 10 percent. The six drawings were made by five countries (one each by Israel, Mexico, Romania, and Belize, and two by Panama). Table 2 shows these six drawings (marked by an asterisk), as well as four other drawings made by the five countries since 1976; the 10 drawings shown in the table consist of two each by Israel and Panama, one each by Belize and Mexico, and four drawings by Romania. The table reveals the following: first, of the six drawings where the product shortfall accounted for a substantial share of the overall shortfall, three drawings (Belize, Mexico, and Romania) were not affected by the relevant product shortfalls, because the shortfalls in other products were sufficiently large to accommodate each drawing; the other three drawings (one by Israel and two by Panama) would have been reduced without the relevant product. Second, for the countries that have made more than one drawing since 1976, only Panama is shown to have benefited from inclusion of the product in both drawings; in the other cases (one by Israel and two by Romania), excesses in the relevant products had the effect of reducing the amounts of the drawings. In short, the inclusion of products with high import content has had a consistently positive effect on the amount of drawings made by only one country, Panama.

Table 1. Share in Total Earnings and Contributions of
Selected Export Products to Overall Shortfalls 1/

	Average Value Share	Frequency			Amount			Average Ratio of Net Shortfalls to Overall Shortfalls	
		Total	Shortfalls	Excess	Net Shortfall	Shortfall	Excess	Ratio to Total for 45 Cases	Ratio to Total for Subgroups
	(Percent)	- - (Number of Cases) - -			- - (In millions of SDRs) - -			- - - (Percent) - - -	
Total	8	45	20	25	−579	381	−960	−9.3	−9.4
Refined petroleum	8	27	11	16	−676	179	−855	−10.9	−14.2
Polished diamonds	26	3	2	1	39	64	−25	0.6	11.6
In bond	24	6	3	3	80	81	−1	1.3	25.3
Petro-chemicals	4	9	4	5	−22	57	−79	−0.4	−1.2

1/ Source: Annex B.

Table 2. Contribution of Selected Export Products to
Overall Shortfalls: Selected Countries

	1976	1977	1978	1979	1980	1981	1982	1983	Total
				(In millions of SDRs)					
Belize									
Drawing Shortfall	--	--	--	--	--	--	--	4	4
Overall	--	--	--	--	--	--	--	6	6
Product	--	--	--	--	--	--	--	2*	2
Israel									
Drawing Shortfall	65	--	72	--	--	--	--	--	137
Overall	82	--	72	--	--	--	--	--	154
Product	48*	--	-25	--	--	--	--	--	23
Mexico									
Drawing Shortfall	185	--	--	--	--	--	--	--	185
Overall	284	--	--	--	--	--	--	--	284
Product	78*	--	--	--	--	--	--	--	78
Panama									
Drawing Shortfall	18	--	--	--	--	--	--	59	77
Overall	20	--	--	--	--	--	--	59	79
Product	16*	--	--	--	--	--	--	41*	57
Romania									
Drawing Shortfall		48	--	41	121	169	--	--	379
Overall		80	--	170	160	429	--	--	839
Product		-4	--	41*	-279	-159	--	--	-401

Source: Annex B.

* Product shortfall is substantially in excess of 10 percent of overall shortfall.

3. Alternative approaches

The advantages of the current practice are that it has been imple-
mented without difficulty and has allowed uniform treatment of member
countries, while eliminating the most extreme cases of import content in
exports, namely, re-exports. This section explores two other definitions
of exports that exclude the import content, namely net exports and value
added.

a. Net export approach

Under this approach the shortfall calculation would be based on export
data net of direct imports of the principal raw material input for the same
time period. For example, net petroleum exports would consist of the value
of refined petroleum exports during a given period less the value of crude
oil imports for the same period; similarly, net diamond exports would be
the value of polished diamond exports less the value of rough diamond
imports for the same period. Although this procedure appears to be rela-
tively straightforward for products such as refined petroleum and polished
diamonds, it would become progressively more difficult with products that
require more stages of processing, more imported inputs, and more end uses
of the major imported inputs. Serious problems of establishing arbitrary
cutoff points and working definitions would then arise.

Even in the case of seemingly straightforward products like refined
petroleum and polished diamonds, serious conceptual and implementation
problems would arise. These difficulties are examined in detail in Annex A;
the following is a summary of the most important ones. First, differences
in the timing between the import of the raw material and the export of the
processed good can result in serious misstatements of the import content
of exports for given periods of time. Second, difficulties could arise in
allocating the value of an imported raw material for a given year to more
than one end product in which it is used, some of which might be for export
and others for domestic use. In situations where domestic consumption of
the finished product is substantial, netting out the total import content
could result in negative values. 1/ Third, a net export procedure would
only give a rough approximation of domestic value added, as it does not take
into account indirect import content. Fourth, implementation would require
the establishment of arbitrary rules regarding the precise percentage of
the import content or the share of the product in total exports that would
trigger the adjustment. The mere identification of all products with a
high import content would be difficult, and precise measurement of its
extent would not be feasible in all relevant cases.

1/ For example, Panama's imports of crude petroleum have consistently
exceeded its exports of refined products since the mid-1970s, and in 1982
the value of imported crude was 2.3 times greater than the value of petro-
leum product exports (see page 97 of "Panama--Recent Economic Developments,"
SM/83/121, 6/10/83).

b. Domestic value-added approach

Even if a value-added approach were restricted to cases in which the import content is large and the export product accounts for a significant share of total exports, it would be more difficult to implement than the net export approach. 1/ In addition to many of the problems associated with a net export approach, a value-added approach would also entail other serious difficulties, such as the following: first, domestic value-added data become progressively more difficult to compile as the stages of processing become greater, the more end-uses are obtained from given imported inputs, and the more indirect imported inputs are used; second, the few countries that might have adequate data would be penalized vis-a-vis countries with inadequate data; and finally, value-added data compiled from accounting statements can often be misleading, as the allocation of costs and transfer pricing between affiliates of multinational firms are often influenced by factors such as tax laws and foreign exchange regulations. In summary, the difficulties involved in applying a domestic value-added approach, even for restricted cases, would be so substantial that most countries would not be able to present adequate statistical information for the purpose of the compensatory financing facility.

4. Summary and recommendation

a. Summary

This paper has examined the treatment of the import content of exports in the calculation of export shortfalls under the compensatory financing facility and has explored possible alternative approaches to the current practice.

Under the current practice, the extreme cases of import content, namely re-exported products, are excluded from the shortfall calculations. The calculations, however, do include all other products, and these products contain, directly or indirectly, imported inputs in varying degrees. The practice has given rise to no particular difficulty of implementation and at the same time has accorded uniformity of treatment to members.

An analysis of the historical record based on nearly 200 CF drawings made since January 1976 suggests the following conclusions:

(i) The inclusion of products with a high import content in the calculation of export shortfalls has had the effect of reducing substantially the amount of the overall shortfalls calculated in respect of the relevant drawings; the reduction in the aggregate shortfalls was largely attributable to the inclusion of refined petroleum, one of four products examined.

1/ In principle, it would be possible to compile value-added data in countries that administer a VAT (value-added tax) system. The VAT, however, is administered in only some developing countries, but even in those countries, the system is applied almost exclusively on products for domestic consumption and not on export products.

(ii) For the six countries where inclusion of the relevant product contributed significantly to the overall shortfall in respect of a particular request, the inclusion of the product did not always cause the drawing to be larger than otherwise. Without the products, drawings would not have been affected in three of the six cases examined; they would have been reduced in the other three. For those of the six countries that have made multiple drawings, inclusion of the relevant products has worked both ways in all the cases, except Panama, where the shortfall in refined petroleum accounted for the major part of the two drawings made by that country.

This paper has examined two possible approaches to a definition of export data for products with a high import content: a net export concept and a value-added concept. Both these approaches have been found to entail serious practical or conceptual difficulties. In addition, the establishment of rules to trigger adjustment would not provide a clear-cut definition, and borderline cases are likely to occur, which would carry the risk of violating the principle of uniform treatment. Although the net export approach might seem an attractive alternative because of its apparent simplicity, there are serious drawbacks associated with it, including the following: (i) stocking patterns and timing differences between the import of the raw material and its export in processed form can result in serious misstatements of the import content of the export product; (ii) difficulties would arise in allocating the value of an imported raw material to more than one end product, some for export and some for domestic use; because of the variety of end uses of imported inputs and their use for domestic consumption, the value of a given imported input could exceed the value of the exported product (for example, Panama's exports of refined petroleum products currently represent only 43 percent of the import value of crude petroleum); and (iii) the indirect import content, which may be substantial in some cases, could not be taken into account.

b. Staff recommendation

The staff considers that the procedures that have been applied in connection with the treatment of the import content of exports have worked effectively to eliminate the most extreme cases of import content by excluding re-exports from the coverage of the compensatory financing facility. The staff recognizes that in very few cases the current practice has led to consequences that might be considered by some as not being fully compatible with the spirit of the compensatory financing facility. The alternative approaches examined by the staff entail serious drawbacks.

Accordingly, the staff recommends that the current practice of basing the shortfall calculations on the gross value of domestic exports, net of re-exports, be maintained. In dealing with future CF requests, where the import content is an important feature of the case, the staff will bring to the attention of the Executive Directors an analysis of the facts relevant to the issues discussed in this paper.

Examples of Products with High Import Content

Three types of products with high import content are examined in this annex in order to delineate the specific issues that could arise in attempting to make adjustments that take into account the import content of exports. The three products are refined petroleum, polished diamonds, and exports from in-bond industries. For each product, the extent of the problem is presented, followed by a description of the technical features of processing and marketing as they relate to import content, and a discussion of possible solutions.

1.   Refined petroleum products

a.   Extent of problem

The question of the import content of exports arose in connection with exports of refined petroleum by Panama. In both the 1976 and 1983 CF requests by Panama, over two thirds of the total export shortfall was due to a shortfall in earnings from exports of refined petroleum products. Panama, like several other countries that export petroleum products, does not produce crude petroleum, but refines imported crude oil both to meet domestic energy requirements and for export. Apart from variations in domestic use, a decline in petroleum exports would be expected to be accompanied by a fall in imports of crude oil, and to that extent, the balance of payments need of the member would be ameliorated. It was suggested that appropriate treatment of such exports in the calculation of export shortfalls might be to use the value of refined exports net of the value of crude oil imports or, alternatively, to use the domestic value added of petroleum exports.

Besides the two requests by Panama, 25 other CF requests by 15 members since 1976 have included exports of refined petroleum products (Annex A Table 2). Excesses were experienced in 16 of the 27 cases, and a total excess of SDR 676 million was experienced for the 27 cases as a whole. This is not surprising, since petroleum prices were rising over most of this period.

The average share of petroleum product exports in total exports for the 27 cases was 8 percent. The average contribution of petroleum product exports to the total export shortfall was a negative 9.4 percent, indicating the predominance of excesses in petroleum products for these cases. The only country that depended heavily on shortfalls in refined petroleum for its CF requests was Panama. Thus, although petroleum product exports were included in 27 cases, their average share in total exports was small and they tended to offset rather than augment the total shortfall in most cases.

b.   Technical features of processing and marketing

A barrel of crude oil, once refined, yields a wide variety of energy products (e.g., aviation gasoline, motor gasoline, jet fuels, kerosene, diesel oil, residual fuel oils, and liquified petroleum gas) and non-energy

products (e.g., naphtha, white spirits, lubricants, asphalt, petroleum waxes, and petroleum coke). The proportion of each of these products that can be obtained from a given barrel of crude petroleum depends on lightness of the crude, 1/ the distillation process, and the refining technology. The share of gasoline, even in the most advanced refining plants which can upgrade heavier crudes to produce a higher proportion of light products, rarely exceeds 50 percent of total refined products, and this may fall as low as 35 percent in the case of heavier crude oil (Table 1). In less sophisticated refineries, gasoline output from light crude normally repre- sents less than 25 per cent of total refined products. Generally, small- scale refining plants have little flexibility to vary product yield through shifts in crude oil composition. However, even this limited flexibility may be precluded by the existence of bilateral trade agreements, 2/ refinery location (i.e., close to a source of heavier crude), and relative prices for light and heavy crude.

Thus, the mix of products that a given refinery produces is likely to match domestic needs only in countries that have sufficiently large and/or diversified domestic markets. In many cases, refining of imported oil for the purpose of producing light products for domestic consumption, like gaso- line, results in excess supplies of middle and heavy distillates, like resid- ual fuel oil. This is particularly true for countries which do not have large energy-intensive industrial sectors that can use the heavy fuel oils. The result is that these products can be disposed of only through export sales. Annex A Table 2 provides a selected listing of countries which are net importers of crude, and which also export refined products; in most cases, the volume of refined product sales is significantly less than the volume of imports.

c.   Possible solutions

(1)   Net export approach

The use of imported crude oil to process petroleum products for both domestic use and for export means that a simple net export approach could often result in negative net exports. Furthermore, if only a propor- tion (possibly determined by the ratio of refined product exports to domes- tically consumed products) of crude oil imports were subtracted from petro- leum product exports, the net value of exports could still conceivably be negative, as illustrated in Annex A Table 3. This table provides the official and spot prices for three different crude types and their combined product value. Recently, because of the lag in the downward adjustment of crude price, the overall value of refined products is less than the value of

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1/ As measured by the API gravity. The higher the API gravity, the higher the refinery yield of light products.

2/ For example, the San Jose agreement under which certain Central American and Caribbean countries can obtain concessional loans only in proportion to their crude oil imports from Venezuela and Mexico, which produce relatively heavier crude oils.

Table 1. Representative Yields from Different
Types of Crude Oil 1/

Type	Crude Oil		Products				
	API	Sulphur Content	Total	Gasoline	Diesel Gas Oil	Fuel Oil	Other 2/
			- - - - (Percent of total) - - - -				
Arabian light	34	2.8	100	45.7	25.0	25.7	3.6
Arabian heavy	27	2.8	100	35.2	--	62.3	2.5
Iran light	34	2.8	100	47.0	28.7	21.2	3.1
Kuwait	31	2.8	100	41.8	7.2	48.4	2.6
Nigeria light	37	.6	100	51.1	40.5	6.0	2.4
Algeria Saharan	44	.6	100	53.8	37.2	5.2	3.8
Libya Zueitina	41	.7	100	51.6	37.2	8.0	3.2
Tijuana light	31	2.8	100	43.1	30.4	23.4	3.1
North Sea Ekofisk	42	.6	100	48.9	31.4	16.5	3.2

Source: Petroleum Intelligence Weekly, March 1982.

1/ Based on U.S. refining systems which are designed to upgrade heavier crudes to produce more light refined products. Comparable figures for a normal European refinery processing Arabian light would be: gasoline, 20.2 percent; gas oil, 36.6 percent; fuel oil, 38.5 percent; and other, 4.7 percent.

2/ Includes refining fuel and loss.

Table 2.   Trade in Petroleum by Selected Non-Crude
Oil Producing Countries in 1981

(In thousands of metric tons)

| Country | Crude Oil Imports | Refined Products Exports 1/ | | | | |
		Total	Gasoline	Diesel	Residual Fuel Oil	Other 2/
Ghana	1,000	250	—	50	200	—
Ivory Coast 3/	1,343	458	80	100	250	28
Kenya	2,611	1,115	95	164	700	156
Madagascar	380	83	—	2	80	1
Senegal	750	98	10	40	40	8
Tanzania	750	35	5	5	25	—
Togo 4/	200	309	40	100	84	85
Zambia	600	50	10	40	—	—
Bahamas	8,600	5,465	—	1,400	3,000	1,065
Jamaica	1,000	52	30	15	2	5
Panama	1,950	279 5/	40	80	150	9
Yemen Arab Rep.	15,552	645	55	195	190	205
Korea	25,000	73	—	8	50	15
Singapore	35,969	19,099	1,630	5,043	9,131	3,295
Sri Lanka	1,522	157	—	—	157	—
Belgium	28,917	14,961	3,500	5,350	4,500	1,611
Finland	10,774	1,710	651	735	324	—
Greece 3/	18,497	6,736	775	2,531	2,162	1,266
Portugal	7,600	801	390	60	40	311
Sweden 3/	14,628	4,046	407	1,331	2,304	4

Source: United Nations, Department of International Economics and Social
Affairs, Statistical Office, 1981 Yearbook of World Energy Statistics
(New York, 1983).

1/ Excludes bunker oil and non-energy products (e.g., naphthas, white
spirits, lubricants, asphalt).
2/ Includes aviation gasoline, jet fuels, LPG, and refining gas.
3/ A small quantity (less than 200 thousand tons) of crude oil also
produced.
4/ Exports of refined products exceeded imports of crude in that year
because of substantial destocking.
5/ Excludes exports of bunker oil.

Table 3.   Selected Petroleum Prices

(U.S. dollars per barrel)

	December				
	1979	1980	1981	1982	1983 1/
Mideast light-34 API					
Spot crude	39.00	39.35	34.12	30.10	28.60
Official crude	24.97	32.00	34.00	33.00	28.75
Spot product 2/	35.68	34.55	32.10	29.51	27.97
Mideast heavy-31 API					
Spot crude	35.50	38.35	32.30	29.20	27.50
Official crude	25.62	31.50	33.00	30.40	27.10
Spot product 2/	32.57	33.84	29.82	27.73	26.98
African light-37/44 API					
Spot crude	40.50	40.15	36.70	31.75	29.85
Official crude	28.06	36.90	37.00	34.10	30.20
Spot product 2/	40.49	34.97	35.72	32.06	29.44
Regular gasoline 3/	47.04	37.78	39.06	36.00 4/	33.43
Fuel oil 3/					
1 percent sulphur	23.00	29.50	27.25	28.75 4/	26.75
2-3 percent sulphur	18.00	28.50	24.00	25.25	25.85

Source: Petroleum Intelligence Weekly.

1/ As of October 1983.
2/ Weighted average of refined product prices less transportation
costs; weights determined by proportion of each type of product that can
be obtained from a barrel of crude oil.
3/ U.S. Gulf coast price.
4/ As of October 1982.

crude. In addition, as a result of declining consumption of petroleum
worldwide since 1979, owing in particular to the world recession, energy
conservation, and the substitution of coal and natural gas, the residual
fuel oil market has been more strongly affected than that of other products.
Thus, the differential between the fuel oil price and the combined product
price has been growing. In this case, if the spot value of a barrel of oil
were subtracted from the value of the residual product (note in Annex A
Table 2 that in most cases fuel oil accounts for half of product exports),
the net value of exports would again be negative.

In addition to the problem of negative net exports of petroleum pro-
ducts, the homogeneity of a barrel of fuel oil would generally preclude
any meaningful disaggregation of these imports between their use in by-pro-
ducts processed for domestic consumption and those processed for export.
In the extreme case where all of the refinery's output is exported, timing
problems could still complicate the use of a net export approach. Crude
oil imports will ordinarily not coincide with exports of refined products
because of lags due to processing and stocking patterns. The time lags
between the import of crude petroleum and its export in processed form
could lead to a serious misrepresentation of the pattern of net exports
over time. A change in stocking behavior during the relevant period could
result in further misrepresentation.

(2)   Domestic value-added approach

A domestic value-added approach would be even more difficult to
implement. In most countries, value-added data are not available, at least
on the timely basis required for CF cases. Even when these data are avail-
able, they may not accurately reflect real domestic value added. For
example, if a refinery is part of a vertically integrated multinational
company, cost allocation procedures and intracompany pricing policies may
distort the distribution of company profits among countries. In addition,
value added from crude oil refining can vary widely among countries depend-
ing on factors such as relative wages, exchange rate fluctuations, differen-
tial tax provisions, and the age of a plant and its rate of depreciation. 1/

2.   Processing of diamonds

a.   Extent of problem

Polished diamond exports have been included as identifiable major
exports in only three CF requests since 1976, two by Israel and one by
Portugal. Requests by India and South Africa did not specifically identify

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1/ For example, in Panama's case, the domestic value added was estimated
at 20 percent of the value of exports, while Portugal's refineries are
estimated to have added less than 5 percent. These two cases illustrate
the disparity of treatment that can arise in determining a cutoff: Panama's
refinery is owned by a vertically integrated transnational and wages are
paid in U.S. dollars; Portugal's refineries are public sector enterprises
and wages are paid in escudos.

polished diamond exports as a major export, but polished diamonds were included in "gems and jewelry" for India and in "other exports" for South Africa.

Shortfalls in polished diamond exports of SDR 47.6 million and SDR 16 million were experienced respectively by Israel in 1976 and Portugal in 1977, and an excess of SDR 25 million by Israel in 1978. Polished diamonds accounted for about 34 percent of total exports in Israel and about 2 percent in Portugal. The average contribution to the total shortfall accounted for by polished diamonds was 15 percent for Israel and 9 percent for Portugal.

b.   Technical factors of processing and marketing

The cutting and polishing of diamonds are performed in a relatively small number of countries, mostly other than where the diamonds are mined. The major processing centers are located in Belgium, Israel, India, the United States, Germany, South Africa, the Netherlands, and the United Kingdom, three of which (Israel, India, and South Africa) have purchased under the compensatory financing facility.

The Central Selling Organization (CSO) controls approximately 80 percent of the world marketing of rough diamonds. The CSO purchases and brings together all of the rough gem diamonds and sorts them into more than 5,000 categories by size, shape, color, and quality. These diamonds are then sold to the major cutting centers at ten "sights" held during each year. The diamonds are offered to the cutting centers in boxes which contain a variety of categories of diamonds, never exactly what the buyers would want because all buyers would want the same categories--those that are currently in demand. The buyer must accept or reject the whole box, for which there is an overall price, and wait until the next sight if he rejects it. The cutting centers, therefore, will process the diamonds currently in high demand, but may stockpile the other diamonds until market conditions improve.

Time lags between the import of rough diamonds and their export in polished form also occur because months of study and planning often precede the cutting of the larger and more valuable diamonds. In addition, the stockpiling of diamonds is relatively easy.

c.   Possible solutions

(1)   Net export approach

The main difficulty in attempting to apply a net export approach to polished diamonds is the timing problem. The ease in stocking diamonds results in widely varying time lags between the import of rough diamonds and their eventual export in polished form depending on the value of the diamond and price expectations. A net export approach, therefore, can seriously misrepresent import content for a given year and could possibly result in negative net exports for some years.

(2)   Domestic value-added approach

A serious complication in the derivation of value added is that each individual diamond has its own intrinsic value. A carat has greatly varying values depending on the particular diamond in which it is embodied, in contrast to an ounce of gold which has a standardized market value. In order to derive value added from processing in the economic sense, each individual stone would have to be unit costed through its various processing stages so as to yield a true measure of value added. Needless to say, this procedure is not performed,and is, in fact, rendered impossible at the point of purchase of the rough diamond by CSO practices requiring sales in bulk.

In addition, the substantial government subsidies which are frequently accorded to the diamond processing industry make it more difficult to measure the true value added. For example, the diamond cutting industry in Israel benefits from subsidized tax treatment, export bonuses, and low-interest credit. The main purpose of these subsidies is to encourage the importation and exportation of diamonds through legal rather than illegal channels.

3.   In-bond industries

a.   Extent of problem

Exports from in-bond industries were identified in six CF requests by four members since 1976. Excesses were experienced in three of the six requests, but the total net shortfall of SDR 79.7 million was dominated by the SDR 78.4 million shortfall of Mexico in 1976. 1/ The average share of in-bond exports in total exports for the six requests was 24 percent, and the average share of the shortfall of this product group in the total shortfall was 1.3 percent.

b.   Technical features of processing and marketing

A type of export in which the domestic value added is typically low is the export of imported goods that have undergone a degree of processing under special arrangements such as offshore or border processing zones. This type of export often occurs as part of an intra-industry arrangement of inter-national production-sharing (not infrequently intrafirm), which takes advan-tage of favorable cost factors in certain countries (e.g., low labor costs, tax concessions, and location of raw materials). The processed or assembled inputs may then be exported back to their source for further processing or final sale, or they may be exported to a third country.

This type of intra-industry trade increased rapidly during the 1960s and 1970s, with the assembly or processing operations typically located in developing countries. As a result, these exports have become important

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1/ In one request (Haiti, EBS/81/235, 12/8/81), value added data for exports of in-bond products were used. In that case, the export valuation was only available on a value-added basis.

sources of foreign exchange earnings for some countries (e.g., Mexico, Haiti, Dominican Republic, Barbados, Belize, Malaysia, and the Philippines).

Business arrangements vary greatly in this trade, but they most often involve subcontracting between the source of the inputs and the assembly or processing operation. The host governments usually have customs and tax regulations that provide attractive incentives to facilitate the import of goods to be processed for export. These arrangements can take various forms, including export processing zones and in-bond industrial parks.

Offshore processing and assembly operations have also been encouraged by most of the industrial countries through items in their tariff legislation which provide duty-free re-entry of domestically produced components which have been further processed or assembled abroad. That is, the tariff on a product that has been processed or assembled abroad is applied only to the value added in the assembly process. This has encouraged multinational firms to locate parts of their production processes abroad and has resulted in these firms playing a large role in the international subcontracting trade.

Examples of some of the most important items produced from international production-sharing arrangements are semiconductors, clothing, motor vehicles and parts, and television receivers and parts. Domestic value added from the processing and assembly of these products is typically well below 50 percent, although at times the 50 percent range is reached. Other less important items (although perhaps important for individual countries) are sporting goods, office machines, watches and clocks, radios, and electrical equipment.

c. Possible solutions

(1) Net export approach

A simple net export approach to estimating import content is generally not feasible for assembly and processing operations. Besides the timing problem, a wide variety of products are generally exported through these arrangements by any one country, and each product may embody a number of imported inputs.

(2) Domestic value-added approach

Apart from the data differences that characterize most products insofar as value added, a problem arises in the accurate measurement of value added by assembly and processing operations because of the dominance of vertically integrated multinational firms in this trade. Since the processed inputs are often re-exported after processing back to their source as intrafirm transfers, there may be an incentive for these firms to under-report the value added abroad through various pricing and cost allocation procedures in order to minimize the dutiable share of the product. For example, transfer pricing is a well-known procedure whereby firms control to some degree the allocation of profits for a single good to various

stages of production. In the area of cost allocation, costs such as depreciation and other capital costs, as well as research, development, and design costs, can easily be allocated to various stages of production in order to minimize taxable income. Even when independent contracting occurs, contracting firms often supply inputs that are highly subsidized, which further complicates the measurement of real value added.

In recognition of these measurement problems, the U.S. Customs Service assigns a constructed value to offshore production exported back to the United States. By statute, the constructed value is defined as the cost of materials and fabrication overseas, plus a markup for general expenses and profit equal to that usual (not actual) in sales of goods of that particular kind exported from that particular country. Not surprisingly, the interpretation and implementation of this statute by U.S. Customs is not uniform and has resulted in varied procedures even within the same port of entry, depending on type of product and country of origin. In addition, data and duties are commonly revised later as more accurate information is received by the Customs officials.

Table. CF Drawings and Shortfalls:
The Cases Involving Selected Products with Import Content 1/

Country	EBS No.	Drawings (1)	Total 2/ (2)	Petroleum Products (3)	Polished Diamonds (4)	In-Bond (5)	Petro-chemical (6)	Subtotal (7)= Sum of (3)-(6)	Earnings 3/ (8)	Shortfall (9)
					Shortfalls Selected Products				Share of Group Total to Total	
				- - - - - - - - - - (In millions of SDRs) - - - - - - - - - - -					- (In percent) -	
1976										
1. Egypt	76/257	94.0	121.0	9.0	--	--	--	9.0	10.2	7.4
2. Kenya	76/305	24.0	28.4	-6.2	--	--	--	-6.2	17.2	-21.8
3. Israel	76/333	65.0	82.4	--	47.6	--	--	47.6	31.2	57.8
4. Mexico	76/423	185.0	284.0	--	--	78.4	--	78.4	25.3	27.6
5. Sri Lanka	76/469	15.8	15.8	0.3	--	--	--	0.3	9.7	1.9
6. Panama	76/503	18.0	19.6	15.6	--	--	--	15.6	79.6	56.6
7. Barbados	76/523	3.5	3.5	--	--	-0.8	--	-0.8	20.8	-22.9
1977										
8. Portugal	77/264	29.3	178.6	--	16.0	--	--	16.0	1.6	9.0
9. Romania	77/313	47.5	80.0	-32.3	--	--	28.5	-3.8	11.7	-4.8
10. Barbados	77/358	3.0	4.3	--	--	-0.3	--	-0.3	25.1	-7.0
1978										
11. Spain	78/39	98.8	99.0	12.0	--	--	--	12.0	3.7	12.1
12. Turkey	78/175	74.5	223.7	12.5	--	--	--	12.5	0	5.6
13. Morocco	78/271	56.0	93.4	--	--	--	-2.9	-2.9	5.7	-3.1
14. Israel	78/475	72.4	72.4	--	-25.0	--	--	-25.0	36.5	-34.5
15. Senegal	78/565	21.0	100.5	3.5	--	--	--	3.5	6.7	3.5
1979										
16. Romania	79/172	41.3	170.0	49.2	--	--	-8.1	41.1	13.5	24.2
17. Kenya	79/453	69.0	99.8	-5.8	--	--	--	-5.8	21.4	-5.8
18. Ethiopia	79/630	18.0	35.6	3.6	--	--	--	3.6	3.6	10.1
1980										
19. Romania	80/99	121.3	159.6	-256.8	--	--	-21.8	-278.6	22.4	-174.6
20. Korea	80/140	160.0	210.0	-24.0	--	--	--	-24.0	3.6	-11.4
21. India	80/171	266.0	266.0	--	--	--	3.0	3.0	2.6	1.1
1981										
22. St. Lucia	81/53	2.7	4.0	--	--	0.2	--	0.2	8.2	5.0
23. Ethiopia	81/96	18.0	36.5	-1.9	--	--	--	-1.9	7.1	-5.2
24. Sri Lanka	81/107	25.3	25.3	-29.7	--	--	--	-29.7	17.1	-117.4
25. Tanzania	81/112	15.9	15.9	-2.8	--	--	--	-2.8	5.0	-17.6
26. Romania	81/121	169.5	428.6	-183.6	--	--	24.4	-159.2	26.5	-13.3
27. Senegal	81/185	42.0	50.8	-7.7	--	--	--	-7.7	18.7	-15.2
28. Ivory Coast	81/187	114.0	358.7	31.8	--	--	--	31.8	9.7	8.9
1982										
29. Morocco	82/58	236.4	236.4	1.1	--	--	-3.8	-2.7	19.4	-1.1
30. Kenya	82/84	60.4	65.8	-33.7	--	--	--	-33.7	30.2	-51.2
31. Madagascar	82/109	21.8	30.9	-0.4	--	--	--	-0.4	3.3	-1.3
32. Pakistan	82/119	180.2	180.2	-17.3	--	--	--	-17.3	12.2	-9.6
33. Uruguay	82/124	55.3	55.3	--	--	--	0.7	0.7	1.1	1.3
34. Sri Lanka	82/141	39.2	39.2	-6.0	--	--	--	-6.0	17.1	-15.3
35. Barbados	82/171	12.6	12.6	--	--	-0.3	--	-0.3	6.5	-2.4
36. Brazil	82/215	498.8	920.0	-113.0	--	--	--	-113.0	2.5	-12.1
1983										
37. Brazil	83/38	466.3	965.0	-134.0	--	--	--	-134.0	2.8	-13.9
38. Panama	83/103	58.9	58.9	40.6	--	--	--	40.6	36.6	68.9
39. Belize	83/107	3.6	6.0	--	--	2.5	--	2.5	9.4	41.7
40. Portugal	83/197	258.0	359.0	--	--	--	-42.0	-42.0	3.7	-11.7
Total		3,762.3	6,196.7	-676.0	38.6	79.7	-22.0	-579	7.9	-5.8
Shortfalls				179.2	63.6	81.1	56.6	381		
Excesses (-)				-855.2	-25.0	-1.4	-78.6	-960		

1/ CF cases for which export products with relatively large import contents were identified in CF papers.
2/ The overall shortfalls.
3/ The share of earnings from the products listed in columns (3)-(7) in total exports in the shortfall year.