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Protection and Export Performance in Sub-Saharan Africa

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Abstract

This paper examines the extent and structure of nominal protection in a large sample of Sub-Saharan countries, and provides estimates of the effects of this protection on the exports of these countries. Both tariff rates and the frequency of nontariff barriers are found to be appreciably higher on average in the Sub-Saharan countries than in other developing countries. The empirical estimates, based on simulations of a simple model of trade and real exchange rate adjustment, suggest that protection reduces the value of the sample countries' exports (relative to baseline levels) by between 15 and 33 percent per annum, and inhibits export diversification.

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Summary

This paper examines the extent and structure of nominal protection in a sample of 23 Sub-Saharan countries and estimates the effects of this protection on these countries' exports. The analysis follows the precepts of the so-called Lerner symmetry theorem, which holds that barriers to imports are effectively a tax on exports because they raise domestic resource costs and appreciate the real exchange rate, thereby reducing international competitiveness and the incentive to export. The data are drawn mainly from information about import control measures in developing countries compiled by the United Nations Conference on Trade and Development. The estimates of the effects of protection are based on simulations of a simple multi-sector model that describes the effects of protection on the real exchange rate, economic welfare, and tariff revenues.

Protection in the Sub-Saharan countries is found to be appreciably higher than in other countries. Whereas the average level of tariff rates is about 20 percent in developing countries as a group and only about 5 percent in the major industrial countries, Sub-African countries enforce an average tariff rate of about 30 percent. More important, these countries apply nontariff barriers at an average frequency ratio of about 80 percent, which is high for most countries, including other low-income developing countries. With regard to the structure of nominal protection, like most other countries, the Sub-Saharan countries maintain escalating tariff rates against increasingly labor-intensive processed commodities and goods. On a more selective basis, they also tend to restrict imports of maize, rice, and wheat (for food security reasons) and imports of textiles and apparel.

The multi-sector model simulations gauge the effects of simultaneously reducing import duties to a uniform rate of 10 percent and increasing the volume of administered imports by alternative "upper" and "lower-bound" measures of the extent to which nontariff barriers restrict imports. The results suggest that protection leads to an appreciation of the real exchange rate in the sample countries, reducing the total value of their exports in proportional terms by between about 33 and 15 percent a year. The simulation results also suggest that protection inhibits export diversification, because nontraditional exports are frequently more responsive to exchange rate changes than are traditional exports. By comparison, the estimated effects of protection on economic welfare, measured in terms of consumer and producer surplus, are smaller, mirroring the findings of other studies of the "static" costs of protection. Finally, the results indicate that many (but not all) Sub-Saharan countries would experience significant losses in fiscal revenues from reducing tariff rates to 10 percent. This fiscal impact, however, must be weighed against the expected benefits of trade liberalization arising from improved export performance and economic growth.



I. Introduction

Economic growth on a per capita basis during the past two decades has been appreciably lower in Sub-Saharan Africa than in the developing regions of Latin America and Asia. While countries in the latter two regions have achieved average rates of growth of per capita income of about 2 and 5 percent per annum, respectively, since the mid-1960s, the predominantly low-income countries of Sub-Saharan Africa have experienced average rates of per capita economic growth of less than 1 percent per annum. It is also now widely recognized that the region is increasingly suffering from low productivity of investment, losses in international competitiveness, and mounting external debt obligations. As a consequence, many Sub-Saharan countries are taking steps towards reforming their economies as a means of attaining greater economic efficiency and fostering sustainable economic growth.

In broad terms, among the many objectives of structural adjustment and other reform programs, such as those supported in recent years by bilateral and multilateral development agencies and by the Fund, is that countries make their economies more "open." Specifically, this involves adopting more realistic exchange rate policies to avoid overvaluation of national currencies, liberalizing exchange and trade regimes, and allowing domestic relative prices to adjust to levels matching more closely those prevailing in the world economy. In this way, it is argued, international competitiveness and greater productivity of investment will be restored, and countries will be able to achieve higher economic growth led in particular by a more robust and dynamic export sector following each country's comparative advantage. 1/

While there is general acceptance of the need for instituting economic reforms in Sub-Saharan Africa, concern has been expressed in some quarters against the notion that the region's exports, especially of nontraditional goods, would be increased substantially by structural adjustment measures to liberalize their economies. 2/ That African countries should follow the outward-oriented development strategies of the newly industrializing countries of East and Southeast Asia is a recommendation that is particularly resisted. Critics of liberalization point especially to the weak world market conditions facing primary commodities, which comprise the largest share of the exports of Sub-Saharan countries, and to the heightened level of protectionism in the major industrial countries. Furthermore, the liberalization of imports is thought to lead to increased trade deficits,

1/ An extensive overview of the economic policies and experiences of Sub-Saharan countries during the past two decades is provided by a recent volume prepared by the World Bank (World Bank (1989)). Among other recent studies, see Salvatore (1989).

2/ See, for instance, United Nations Economic Commission for Africa (1989).

making the external payments positions of African countries even more precarious.

As seen in Table 1, the commodity terms of trade of Sub-Saharan exports did fall substantially in the 1980s (about 15 percent by 1987), indicating some support for export pessimism. However, the terms of trade of Latin American exports were even more severely affected during the same period (falling nearly 25 percent), yet appreciable growth of exports and, to a lesser extent, per capita output was achieved. ^{1/} Even more remarkably, the East and Southeast Asian countries experienced declines in the terms of trade of their exports of a magnitude similar to that recorded for the African countries and, even so, still outpaced the economic performance of all developing regions and the major industrial countries.

With regard to protectionism, a large number of developing countries have encountered problems with import restrictions in the major industrial countries, including those enforced on a highly discriminatory basis as part of the so-called New Protectionism. ^{2/} Nonetheless, the exports of developing countries in general and the Sub-Saharan countries in particular still enjoy considerable freedom of access to markets in the major industrial countries. The access of exports from Sub-Saharan Africa is especially favorable because of the predominance of primary commodities in the region's exports, which typically face low tariff rates and few quantitative restrictions. In addition, because they are predominantly low-income countries, the Sub-Saharan countries are frequently eligible for preferential treatment of their exports under the import duty schemes of most industrial countries. ^{3/}

Thus, during the past decade external conditions facing the exports of African countries have not been more adverse than for other developing countries. Moreover, it appears that prospects for the success of structural adjustment programs involving the adoption of more open economic policies have been too heavily discounted by the critics of market-oriented reforms. Most often these critics overlook the potential for strong supply-side responses by domestic producers to the increased profitability of exports following the adoption of more liberal trade arrangements, and to concomitant changes in domestic relative prices and the real exchange rate that ensure improvement in, or at least no worsening of, the trade balance.

^{1/} Although, as Table 1 indicates, per capita income in Latin America grew appreciably during 1965-87, domestic output relative to population actually fell in many Latin American countries during the 1980s. The average rate of decline in these countries, however, was substantially lower than in the Sub-Saharan countries (World Bank (1989b)).

^{2/} See, for instance, Baldwin (1986).

^{3/} A detailed examination of the extent of protection in industrial countries facing exports from Sub-Saharan countries is provided in Erzan and Svedberg (1989). More generally with regard to the recent export performance of the African countries, a comprehensive review, including a consideration of the contribution of external versus domestic factors to export growth, is provided by Svedberg (1988).

Table 1. Output Per Capita, Inflation and Trade in Developing and Industrial Countries, 1965-87

	GNP Per Capita		Inflation		Value		Merchandise Trade				Terms of Trade	
	U. S. Dollars	Avg. Annual Growth Rate (Percent)	Average Annual Rate of Inflation (Percent)		(Millions of U.S. Dollars)		Average Annual Growth Rate (Percent)				(1980-100)	
		1987	1965-87	1965-80	1980-87	Exports	Imports	Exports		Imports		1985
					1987	1987	1965-80	1980-87	1965-80	1980-87		
Developing Countries	700 w	2.7 w	16.5 w	43.9 w	465,780 t	469,736 t	3.1 w	5.0 w	5.5 w	0.1 w	92 m	83 m
Sub-Saharan Africa	330	0.6	12.3	15.2	28,471	32,516	6.6	-1.0	5.0	-5.8	91	84
East, S.E. Asia	470	5.1	8.8	5.4	193,993	170,740	9.7	10.1	8.6	6.1	94	84
South Asia	290	1.8	8.4	7.8	19,616	30,871	1.7	4.8	0.6	3.7	95	94
Europe, M.East, & N.Africa	1,940	2.5	13.1	23.7	113,691	146,301	..	..	..	0.4	92	93
Latin America & Caribbean	1,790	2.1	29.3	109.1	89,943	74,679	-2.1	3.0	4.4	-5.6	90	76
Industrial Countries	14,430	2.3	7.9	5.2	1,924,470	2,007,404	7.0	3.3	4.4	4.8	94	97

Source: World Bank, World Development Report, 1989 (New York: Oxford University Press for the World Bank, 1989).

Notes: Symbols denote weighted averages (w), totals (t), and median values (m) for items in columns.

In this vein, the present paper attempts to provide greater understanding of the relationship between trade policy regimes and export performance in the Sub-Saharan countries. More specifically, the paper examines the extent and structure of nominal protection in the Sub-Saharan countries themselves, and estimates the effects of this protection on the exports of these countries.

The linkage between import policies and export performance is widely understood at the theoretical level. In particular, the theory of international trade and commercial policy has long recognized that restrictions on imports are effectively a tax on exports because tariffs and other barriers to imports, by raising domestic resource costs and thereby reducing international competitiveness, limit opportunities for trade between countries. Thus, countries that are more inward-oriented often foreclose possibilities for expanding their own exports -- possibilities that can be exploited without special administered systems of incentives to promote exports. In simple terms, providing freedom to import creates its own incentives for expanding exports.

This approach to analyzing the recent trade performance of the Sub-Saharan countries is pursued in the remainder of the paper. In Section II, the recent structure of nominal protection in a large sample of Sub-Saharan countries is examined using information about import control measures in developing countries compiled by the United Nations Conference on Trade and Development (UNCTAD). Such information is not readily available for Sub-Saharan African countries. In Section III, a simple trade and exchange rate model is specified to gauge empirically the effect of restrictive import policies in Sub-Saharan countries on their exports. Finally, based on the paper's review of protection in Sub-Saharan Africa and the estimates of the effect of protection on export performance, some final conclusions and observations are offered in Section IV, emphasizing the contribution that trade liberalization can make to restoring economic growth to the Sub-Saharan countries.

II. Protection in Sub-Saharan Africa

In this section, the recent extent and structure of protection in a large sample of Sub-Saharan countries are surveyed. Although economists often emphasize the importance of "effective" protection, which measures the effects of protection on the allocation of primary resources between sectors of an economy, only nominal protection is examined here. Beyond the well-known difficulties of accurately estimating effective rates of protection, nominal protection is emphasized because it is more directly related to the effects of protection on export performance. ^{1/} Moreover, discussions of possibilities for liberalizing trade regimes through bilateral or multilateral negotiations usually focus on reciprocal reductions in nominal levels of protection.

^{1/} The relationship of nominal protection to export performance and, more broadly, to economic welfare is treated formally below in Section III.

1. Trade Control Measure Inventories

In recent years, the Secretariat of the General Agreement on Tariffs and Trade (GATT), the United Nations Conference on Trade and Development (UNCTAD), and other international organizations have compiled inventories of "trade control measures" enforced by industrial and developing countries. These inventories provide information about the application of import restrictions by highly disaggregated categories of traded goods, most often following the Standard International Trade Classifications (SITC) system.

Such vast amounts of information present numerous analytical and presentational problems. The relative economic implications of different types of protection measures are particularly difficult to assess. Customs taxes in the form of ad valorem tariff duties, on the one hand, are readily measured, and, given their direct effects on import prices, their economic implications are mostly straightforward. Nontariff barriers (NTBs), on the other hand, are more difficult to quantify and tend to affect prices more indirectly. As a consequence, their economic implications, relative both to tariffs and to one another, are more difficult to assess. 1/

Nonetheless, NTBs have been regarded traditionally as particularly trade-distorting and hence very costly in economic terms, both to individual countries and to the global trading system. 2/ To individual countries, they are costly because they limit the extent to which the price system operates to allocate resources for production and consumption in the economy. They are also costly because they tend to be associated with highly discretionary administrative systems that encourage rent-seeking activities. 3/ From a multilateral perspective, the economic costs of nontariff barriers are magnified when large numbers of countries adopt administered protection systems, either in retaliation or through imitation.

The overview of protection in Sub-Saharan Africa presented here draws information entirely from the UNCTAD Trade Information System (TIS), which is an inventory of import control measures in developing countries established to support negotiations to expand South-South trade. 4/ Only tariffs, "para-tariffs" (that is, other fiscal charges applied to imports), and major forms of nontariff barriers are considered. While tariffs and para-tariffs are presented in familiar ad valorem terms, nontariff barriers are examined in terms of frequency ratios, which measure the percentage of tariff-line items within an aggregate trade category affected by a given import regulation.

1/ An extensive analytical survey of the economic implications of various forms of nontariff restrictions is provided by Deardorff and Stern (1985).

2/ See, for instance, Baldwin (1970).

3/ On the economics of rent-seeking and so-called directly unproductive profit-seeking activities, see Tullock (1967 and 1980), Krueger (1974), and Bhagwati (1982).

4/ Tymowski (1987) and UNCTAD (1985 and 1988).

The TIS inventory includes information about import restrictions in 23 Sub-Saharan countries, which together accounted for nearly 60 percent of the region's total exports and imports in 1987. The data refer to trade policies and practices enforced during 1987. Although this information still describes the trade regimes of most of the sample countries, it should be recognized that in recent years several Sub-Saharan countries have begun to undertake important structural reforms, including to their trade policies and practices. 1/

2. Protection in Sub-Saharan Countries -- Overview

Based on detailed data presented in the Appendix, Table 2 summarizes the average rates of nominal protection enforced in the sample group of countries by means of tariffs, total fiscal charges (inclusive of tariff duties), and nontariff barriers in the form of quantitative restrictions, decreed customs values, foreign exchange restrictions and state trading monopolies. 2/ The table also reports summary statistics for the sample countries by income group, using 1987 population levels as weights in the computation of the group averages. The middle-income Sub-Saharan countries are those with per capita income levels greater than US\$ 500. The low-income countries, on the other hand, are sub-divided into two groups, with the dividing line being a per capita income level of US\$ 300. The distinction between the two groups of low-income countries, termed here lowest-income countries and upper-low-income countries, is somewhat artificial given that considerable margins of error surround the income estimates. 3/ Nonetheless, as the tables accompanying this section demonstrate, this division of the low-income countries reveals some interesting and notable differences in protection between the three groups of Sub-Saharan countries.

The low-income countries typically enforce the highest rates of protection. The frequency of nontariff measures is especially high. Because of widespread use of discretionary licensing of imports and monetary

1/ As of December 1989, 23 Sub-Saharan countries had structural adjustment arrangements with the Fund and World Bank (International Monetary Fund (1989b)). These arrangements typically require liberalization of restrictive trade practices.

2/ Only restrictive barriers to imports are tabulated for the sample countries. Thus, for instance, in the case of import licensing arrangements only arrangements classified as "discretionary" under the TIS classification system are considered. So-called open general licensing arrangements, which have recently been adopted by a number of African countries, are classified as import surveillance measures in the TIS system, and are not included in the protection statistics reported in the table. It is also notable that import barriers in the form of health and product standards are not considered, because they may be enforced equally against commodities and goods produced domestically.

3/ The per capita income estimates are those reported by the World Bank. For a discussion of the methodology underlying the estimates, and its limitations, see the technical notes to World Bank (1989b).

Table 2. Import Restrictions in Sub-Saharan Countries, 1987

	Tariff and Para-Tariffs		Frequency of Non-tariff Barriers 1/						
	Mean Tariff	Total Charges 2/	All NTBs	Quantitative Restrictions			Foreign Exchange Restr. 3/	Decreed Customs Value	State Trading Monopolies
				License	Quota	Prohib.			
.....Percent 4/.....									
Low-Income Countries	30	34	89	51	3	3	40	...	14
Lowest-Income	24	29	95	64	--	2	39	...	21
Zaire	22	22	100	3	--	--	100	--	--
Malawi	17	22	96	96	--	--	--	--	--
Mozambique	16	26	100	100	--	--	--	--	57
Tanzania	32	32	100	100	--	--	--	--	62
Burkina Faso	61	77	81	80	--	1	--	X	X
Madagascar	6	42	100	38	--	19	100	--	--
Burundi	37	37	100	100	--	--	17	--	--
Zambia	30	30	100	100	--	--	100	--	--
Uganda	20	20	100	100	--	--	--	--	14
Guinea	9	9	38	--	--	--	--	--	38
Upper-Low-Income	41	43	77	28	9	6	43	...	...
Somalia	31	31	100	5	--	1	100	--	--
Sierra Leone	26	26	100	100	--	--	100	--	--
Benin	37	49	100	100	5	4	--	X	X
C. African Rep.	32	39	5	2	--	1	--	X	X
Kenya	39	40	67	37	31	--	--	--	--
Sudan	57	57	100	9	--	1	100	--	--
Ghana	30	33	48	17	--	28	X	--	X
Middle-Income Countries	22	30	48	29	1	1	18	...	...
Senegal	34	34	7	4	1	1	--	X	X
Zimbabwe	9	26	100	100	--	--	100	--	X
Cote d'Ivoire	23	25	7	6	3	1	--	X	--
Congo	32	33	100	100	1	1	--	X	X
Cameroon	32	42	21	19	--	1	--	X	--
Angola	12	21	100	1	--	--	--	--	100
All Countries	29	33	81	47	3	3	36	...	14

Source: UNCTAD Secretariat, *Handbook of Trade Control Measures of Developing Countries, 1987* and *Handbook Supplement, 1987* (Geneva: UN Conference on Trade and Development, 1988).

1/ Percentage of tariff lines affected by NTBs, excluding restrictions on imports of alcohol and tobacco. Positive-valued NTB frequency ratios whose precise values are not possible to compute from the source document are denoted by "X".

2/ Customs duties plus customs surcharges and surtaxes, stamp taxes, certain other fiscal charges, and tax on foreign exchange transactions.

3/ Advance import deposits, multiple exchange rates, and licensing or other restrictions on the acquisition and use of foreign exchange.

4/ Statistics by country are simple averages of rates of protections across trade categories. Averages for country groups are computed using 1987 population levels as weights. Frequency ratios of NTBs denoted by Xs are assumed equal to zero in computations of weighted averages.

exchange controls (mainly advanced import deposit schemes and restrictive foreign exchange practices), the average frequency of NTBs is over 90 percent in the lowest-income countries and over 75 percent in the upper-low-income countries. The frequency of NTBs is substantially lower in the middle-income countries by comparison, about 50 percent.

Both tariff protection and the frequency of foreign exchange controls are highest in the upper-low-income countries. Whereas the middle and lowest-income countries enforce rates of tariff and total fiscal charges in the range of 20 to 30 percent, the group of upper-low-income countries enforces an average protection rate of about 40 percent, owing mainly to the high rates enforced in the two most populous countries in the group -- Kenya, and particularly Sudan. A similar pattern of protection is seen with respect to the application of foreign exchange controls. Among the seven upper-low-income countries, Somalia, Sierra Leone and Sudan impose exchange controls on all imports, while only Madagascar and Zambia among the larger sample of ten lowest-income countries and Zimbabwe among the sample of six middle-income countries impose exchange controls against imports so extensively.

Discretionary licensing of imports is by far the most widely applied quantitative restriction. Some countries, however, rely importantly on quotas (Kenya) and prohibitions (Madagascar and Ghana) to restrict imports. Other frequently encountered forms of nontariff barriers include minimum import prices (decreed customs value) and state trading monopolies. Administered pricing of imports is most commonly practiced in the higher-income African countries, whereas state trading is widely practiced in the Sub-Saharan countries examined. Except in Angola, Mozambique and Tanzania where state monopolies controlled imports of nearly all goods in 1987, regulation of import prices and state trading generally occurs at appreciably lower frequency than either quantitative restrictions or foreign exchange controls. Moreover, as discussed further below, these nontariff barriers are employed more selectively across categories of imported goods than other trade control measures.

3. Structure of Nominal Protection

The structure of nominal protection, presented in Table 3, provides a view of what categories of primary commodities and manufactured goods are subject to the highest rates of protection. The information in the table is organized according to broad groups of commodities and manufactured goods. The categories of commodities are foods, agricultural raw materials, fuels, and minerals and non-ferrous metal ores. The categories of manufactured goods, on the other hand, include chemicals, iron and steel products, machinery and equipment, and a residual category of other manufactures.

The "factor content" of manufactures is, of course, typically more capital-intensive than that of primary commodities. Notably, the residual category of "other manufactures," which consists chiefly of wood products, textiles and apparel, and footwear and leather products, contains the highest proportion of relatively labor-intensive manufactures.

Table 3. Import Restrictions in Sub-Saharan Countries by Traded Goods Category, 1987

	Tariffs,		Frequency of Nontariff Barriers 1/						State Trading Monopoly 3/
	Para-Tariffs		All NtAs	Quantitative Restrictions			Exchange Restr.	Decreed Import Value 2/	
	Mean Tariff	Total Charges		License	Quota	Prohb.				Percent 4/
Lowest-Income Countries									
Primary Commodities	26	31	94	61	--	2	39	...	19
Food	34	41	94	59	--	4	39	BF	22
Agr. Raw Materials	21	26	95	64	--	1	38	--	12
Mineral Fuels	18	22	94	61	--	--	39	BF	18
Mineral, Metal Ores	17	21	92	62	--	--	38	--	19
Manufactures	23	28	96	66	--	1	39	...	22
Chemicals	16	21	95	62	--	--	38	--	25
Iron and Steel	17	20	96	70	--	--	38	--	30
Mach. and Equip.	19	23	97	68	--	--	38	--	24
Oth. Manufactures	30	36	97	66	--	2	39	...	21
All Goods	24	29	95	64	--	2	39	...	21
Upper-Low-Income Countries									
Primary Commodities	39	41	80	26	12	10	43	...	...
Food	46	47	89	34	17	10	43	BE,CF(s)	BE,GH(r,s)
Agr. Raw Materials	38	43	75	12	13	11	43	CF(t)	--
Mineral Fuels	25	26	64	22	2	5	43	--	--
Mineral, Metal Ores	32	34	72	24	4	8	43	--	--
Manufactures	42	43	76	28	8	4	43	...	...
Chemicals	29	30	56	15	1	1	43	CF(p)	--
Iron and Steel	35	36	81	25	5	9	43	--	--
Mach. and Equip.	32	34	72	31	2	2	43	--	BE(26)
Oth. Manufactures	52	55	80	33	15	6	43	BE,CF(c)	CF(t),GH
All Goods	41	43	77	28	9	6	43	...	...
Middle-Income Countries									
Primary Commodities	20	27	48	28	1	1	18	...	...
Food	23	29	49	29	2	1	18	SE,CI,CG(s),CM(s)	AG*,SE(r),ZW(m,w),CG(s)
Agr. Raw Materials	18	25	49	29	2	1	18	SE	AG*,CG(t)
Mineral Fuels	16	23	49	29	6	--	18	SE,CI	AG*
Minerals, Ores, Metals	19	26	43	24	1	--	18	--	AG*
Manufactures	23	31	48	28	1	--	18	...	...
Chemicals	16	23	46	27	1	--	18	CG(d),CM(p)	AG*
Iron and Steel	20	28	44	24	2	--	18	CI	AG*
Mach. and Equip.	17	24	44	26	1	--	18	--	AG*,CG
Oth. Manufactures	30	39	51	31	--	1	18	SE(t),CI(t),CG(t),CM(t)	AG*,SE,CG
All Goods	22	29	48	29	1	1	18	...	...

Sources: UNCTAD Secretariat, *Handbook of Trade Control Measures of Developing Countries, 1987* and *Handbook Supplement, 1987* (Geneva, UN Conference on Trade and Development, 1988).

Notes: Commodity sectors are defined according to the Standard International Trade Classification (SITC) system as follows:

Food	SITC	0+1+22+4
Agricultural raw materials		2 less (22+27+28)
Mineral fuels		3
Mineral and nonferrous metal ores		27+28+68
Chemicals		5
Iron and steel		67
Machinery and equipment		7
Other manufactures		(6+8) less (67+68)

1/ Percentage of tariff lines affected by NTBs, excluding restrictions against imports of alcohol and tobacco. Country abbreviations are reported in cases where it is not possible to compute the appropriate value of the frequency ratio from the source document.

2/ Country abbreviations in the column refer to Benin (BE), Burkina Faso (BF), Cameroon (CM), Central African Republic (CF), Congo (CG), Cote d'Ivoire (CI), and Senegal (SE). Letters in parentheses refer to specific commodities and goods: maize (m), rice (r), sugar (s), wheat (w), soap (p), and textiles and apparel (t).

3/ Country abbreviations in the column refer to Angola (AG), Benin (BE), Central African Republic (CF), Congo (CG), Ghana (GH), Senegal (SE) and Zimbabwe (ZW). Letters in parentheses refer to specific commodities and goods: maize (m), rice (r), sugar (s), wheat (w), soap (p), and textiles and apparel (t), and asterisks denote frequency ratios of 100 percent.

4/ Averages for a sample of 23 Sub-Saharan countries, using 1987 population levels as weights.

Finally, for expository purposes, the information is presented solely on aggregate basis for the three groups of Sub-Saharan countries defined previously. Essentially, the detailed information reported in the Appendix for the individual sample countries is utilized to compute population-weighted average rates of protection for each country group.

a. Tariffs and Para-Tariffs

As noted previously, the upper-low-income countries generally enforce the highest tariff rates among the sample Sub-Saharan countries. Despite this, the structure of nominal protection is remarkably similar among all three groups of countries. Except perhaps for the lowest-income countries, the sample countries tend to apply higher tariff rates against manufactures than primary commodities, with labor-intensive manufactures typically the most highly protected category. This pattern of protection is not unusual in developing countries; like many industrial countries, developing countries tend to enforce escalating rates of protection against labor-intensive products. 1/ Why labor-intensive products are so heavily protected, especially by comparison to other manufactured goods in which African and other developing countries have a lower comparative advantage, is sometimes puzzling. An explanation frequently given is that organized labor in the "modern sector" of these countries enjoys a wage rate higher than its social opportunity cost, which encourages the adoption of more capital-intensive technologies than otherwise and reduces competitiveness except behind high tariff walls. 2/

High tariff rates applied to imports of food are common in the Sub-Saharan countries, just as in many other developing and even industrial countries. Reflecting concerns for food security, high rates of protection are enforced in order to encourage sufficient domestic production to meet domestic demand as fully as possible. Because food security policies are often coupled with administered price systems to ensure low prices of agricultural staples, especially in urban centers, self-sufficiency is not always achieved. The resulting demand for food imports is frequently highly inelastic, and thus high tariff rates have the additional advantage (to the government) of holding the promise of considerable fiscal revenues where private commercial traders are allowed to import foodstuffs.

1/ Similar evidence of high rates of tariff protection against imports of labor-intensive manufactures is reported for the Asian developing countries by DeRosa (1986). A comprehensive review of tariff escalation in developing countries is presented by Laird and Yeats (1987), whereas tariff escalation in developing and industrial countries is compared in Finger and Laird (1987) and Yeats (1987).

2/ See, for instance, Power (1972) and Papanek (1985). A further explanation for high rates of protection against imports of labor-intensive manufactures is that these goods are predominantly consumer goods. Because the interests of consumers are typically less concentrated than those of manufacturers in less-developed countries, consumers may enjoy little effective political power to promote their economic interest in the adoption of more liberal trade regimes. On this possibility, see Olson (1971).

Across other categories of traded goods, there is less apparent variation in the tariff rates enforced by the Sub-Saharan countries. Mineral fuels and chemicals tend to enjoy the lowest rates of tariff protection, because imports of these goods are widely regarded as essential inputs to local production (and frequently exports) and face little competition from local producers. At the other end of the spectrum, agricultural raw materials and iron and steel products frequently enjoy higher rates of tariff protection (after foods and labor-intensive manufactures).

The pattern of protection afforded by statutory tariffs is not altered appreciably by the addition of other fiscal charges -- so-called para-tariffs. What is notable, however, is that para-tariffs appear to be applied more widely in the lowest-income and middle-income countries, where they contribute about 5 to 7 percentage points, on average, to total charges as a percentage of import value. One possible explanation for the lower utilization of para-tariffs in the upper-low-income countries is that these countries already enforce the highest average rates of tariff protection.

b. Nontariff Barriers

Although NTBs are employed in many countries to control trade flows on a more selective basis than fiscal measures, Sub-Saharan countries enforce quantitative restrictions with considerable frequency across all categories of primary commodities and manufactures. The pattern of protection revealed by the NTB data, however, is very similar to that found for tariffs and other fiscal measures. Specifically, among primary commodities imports of food and agricultural raw materials tend to face the highest NTB frequency ratios, and among manufactures the same is apparent for imports of labor-intensive, light manufactures. Thus, nontariff barriers tend to reinforce the structure of protection defined by fiscal measures, but at considerably higher economic costs in terms of the limited transparency of the import controls and extensive involvement of official bureaucracies. 1/

Despite the pervasiveness of NTBs in the Sub-Saharan countries, an appreciable degree of selectivity is enforced against imports of certain goods by several countries. This is seen in the statistics describing the frequency of import price controls and state trading monopolies. Among the food categories, imports of cereals (maize, rice and wheat) and sugar, and among the manufactures categories, imports of textiles, apparel and toiletries (mainly soaps and household detergents) are frequently regulated by national trade authorities. Many of these goods have high profiles in international trade disputes and negotiations. As mentioned previously, food imports are frequently regulated in connection with the food security interests of countries, raising objections from more resource-abundant countries that export foods and related agricultural commodities. Textiles and apparel also have a long history of engendering trade restrictions

1/ Complementarity between tariffs and NTBs is commonly found in developing countries, especially middle-income developing countries. See, Erzan et al. (1989).

because they are among the first manufactures countries produce and export. Today, they are an important source of friction in North-South trade relations in that the exports of textiles, clothing and related products by many developing countries to the major industrial countries are highly regulated under the terms of the Multi-Fibre Arrangement. Notably, however, no Sub-Saharan countries are presently signatories to bilateral agreements under the Arrangement, and so their exports of textiles are not bound by quantitative import ceilings in the advanced industrial countries. 1/

4. Protection in Other Countries

Protection in the major industrial countries and developing countries as a group is appreciably lower than that found in the group of sample Sub-Saharan countries. 2/ The major industrial countries are, broadly speaking, very open to imports. Whereas developing countries as a group enforce average tariff rates of about 20 percent and NTB frequency rates of about 40 percent, the advanced industrial countries impose average tariff rates of less than 5 percent and NTBs at average frequency rates of about 20 percent. Perhaps underscoring the importance of the Uruguay Round trade negotiations, one important category in which protection in the industrial countries approximates that in developing countries is agriculture. Food imports in the industrial countries face nontariff barriers, principally in the form of variable levies and other price control schemes administered by the European Community and United States and in the form of quantitative restrictions enforced by Japan, at an average frequency rate of about 40 percent, compared to about 48 percent in the developing countries. 3/ By comparison, protection is generally much higher in Sub-Saharan countries. For all traded goods, the average tariff rate is 30 percent and the average NTB frequency ratio is over 60 percent in the sample Sub-Saharan countries.

1/ See, for instance, GATT Secretariat (1984). The interest of developing countries in liberalizing world trade in textiles and apparel is considered most recently in Hamilton (1990).

2/ The discussion in this sub-section is based on a comparison of rates of protection in Sub-Saharan countries versus industrial and developing countries presented in Table 2 of the Appendix. The information about protection in the latter countries is compiled from recent studies by UNCTAD and the World Bank, and as a consequence the data are not perfectly reconciled with one another. It is also notable that the statistics presented in Appendix Table 2 are import-weighted average rates of protection, which have the disadvantage of biasing measured protection downwards because higher rates of protection are usually associated with lower levels of imports. Thus, the statistics reported for the Sub-Saharan countries in Appendix Table 2 do not match precisely those reported in the text tables.

3/ Imports of certain steel products also face higher than average rates of protection in the industrial countries, mainly through the surveillance of imports of ores and metals. Additionally, so-called voluntary export restraint (VER) agreements are imposed on a bilateral basis by many industrial countries, including especially agreements with many developing countries under the Multi-Fibre Arrangement.

Some low-income countries in other regions and a number of Latin American countries impose protection rates rivaling those of the sample African countries, but for nearly every category of trade and restrictive import measure the Sub-Saharan countries impose the highest rates of protection.

That the countries of Sub-Saharan Africa impose such high rates of protection, especially through the imposition of nontariff barriers, may importantly mirror their stage of economic and political development. In purely economic terms, however, such high rates of discrimination against foreign goods represent obstacles to the possibilities facing the countries of Sub-Saharan Africa to achieve greater economic efficiency and growth, and to enjoy greater economic welfare. What is less often emphasized explicitly, however, is that in foreclosing possibilities for greater economic efficiency and welfare, these restrictive import regimes also inhibit the region's exports.

III. Protection and Export Performance

Though the correlation is not necessarily perfect, the data on economic growth and protection in Sub-Saharan versus other countries, reviewed in the previous two sections, appear to support the view that countries that achieve high degrees of integration with the world economy through the maintenance of more liberal trade regimes tend to enjoy stronger export and overall economic performance, independent in particular of possible adverse external conditions reflected in their terms of trade. At issue here is whether the association observed between protection and export performance has a basis in economic theory, and, furthermore, whether a framework can be developed to gauge the effects of protection in Sub-Saharan Africa on the region's export performance. 1/

1. Protection and Export Performance

The theory of international trade and commercial policy has traditionally emphasized the costs of tariffs and other restrictive import measures in terms of economic efficiency and welfare. Nevertheless, the familiar Lerner symmetry condition demonstrates that an essential aspect of a reduction in aggregate demand for imports is a concomitant reduction in foreign demand for exports. 2/ Essentially, restrictions on imports impose a tax on exports. When a country restricts its imports, the import-competing sector increases its use of domestic resources in order to expand output to meet a larger share of home demand for traded goods. This causes

1/ Export performance might be measured in a number of different ways. Export growth measured in either nominal or real terms is one possibility. Other possibilities include the growth of exports relative to domestic output, and changes in the composition of exports following comparative advantage and its evolution over time. Each of these measures has important attributes; however, for simplicity the discussion here focuses mainly on the implications of alternative trade policy regimes for the level of real exports.

2/ Lerner (1936).

the cost of domestic resources to rise, and consequently exports to become less competitive. At the same time, the amount of foreign exchange consumers abroad can earn in order to purchase the home country's exports becomes scarcer. These factors, and the requirement that in the aggregate export and import flows (net of possible accomodating financial flows) must remain in balance, cause the real price of the country's currency to rise. Thus, foreign consumers will not maintain their purchases of the country's exports, reinforcing the incipient movement of domestic resources in the home country to the production of more profitable importable and nontraded goods. 1/

The effect of protection on exports can be demonstrated more formally. 2/ The requirement for "balanced trade" is related importantly to conditions in the market for nontraded goods and to the overall budget constraint of the economy:

$$(1) \quad P_x (X - P^* M) - N - K^* = 0$$

where X is the excess supply of exportables, M and N are excess demands for importable and nontraded goods respectively, P^* denotes the international terms of trade (P_m/P_x), which are assumed exogenously determined, P_x and P_m are prices of exportables and importables relative to nontraded goods (the numeraire), and K^* is an exogenously determined flow of international resources available to finance short to medium-term trade imbalances. 3/ The first term in the equation describes the balance of trade; accordingly, equation (1) illustrates that a necessary and sufficient condition for external balance is that the nontraded goods market be in equilibrium.

In the general model, excess demands for tradable and nontraded goods are functions of P_x , P_m and real income. However, a more tractable (and popular) model for analyzing the implications of import restrictions can be derived. Specifically, policy discussions and empirical work concerned with the effects of trade restrictions frequently assume that exportables and importables are both substitutes for home goods, but that the demands for traded goods themselves are independent in the sense that tradables are neither substitutes nor complements for one another. In addition, one typically assumes that changes in real income arising from the imposition of

1/ At given international prices for traded goods, foreign consumers will also be reluctant to draw on their accumulated savings to finance purchases of the home country's exports because to do so would further increase the real price of the country's currency, both in absolute terms and relative to the value of the currencies of competing export countries.

2/ The analysis presented in the remainder of this section draws heavily on Dornbusch (1974).

3/ In his exposition, Dornbusch (1974) does not consider international trade in assets, so that K^* is equal to zero. An approach to determining equilibrium changes in the real exchange rate similar to that developed here -- that is, one admitting the possibility of the existence of an initial trade deficit or surplus -- is presented recently by Krueger et al. (1988).

import restrictions only influence demands for nontraded goods. 1/ Under these circumstances, the implications of import restrictions for exports can be judged from the equilibrium condition for the balance of trade:

$$(2) \quad P_x [X(P_x) - P^* M(P_x P^* T)] = K^*$$

where T equals $(1+t)$ and the price-raising effect of an ad valorem tariff, t , on the price of imports, P_m , is given by $P_x P^* T$. Totally differentiating this equation yields the effect of the tariff (or other price-raising restrictions on imports) on the relative price and volume of exports:

$$(3a) \quad \hat{P}_x = [\eta/(\alpha-\eta)] \hat{T}$$

$$(3b) \quad \hat{X} = \alpha \hat{P}_x$$

where η and α are (compensated) price elasticities of import demand and export supply, respectively, and carots denote proportional change in variables (e.g., $\hat{X} = dX/X$). The elasticity η is negative, and α is positive. Thus, the tariff reduces the relative price of exportables and accordingly the level of exports. The final extent of the decline in both variables is governed by the magnitude of the price elasticities. The more elastic is the demand for imports or the more inelastic is the supply of exports, the greater is the decline in both the price and volume of exports. 2/

The relative price of imports, on the other hand, rises in response to the imposition of the tariff, but not by the full amount of the increase in the tariff, however. The so-called net protective rate is less than \hat{T} because the relative price of nontraded goods also rises, as is reflected by the effect of protection on P_x . 3/ More generally, the increase in the relative price of nontraded goods to exportables is identified with a protection-induced appreciation in the equilibrium real exchange rate.

One can easily give a diagrammatic representation to the model for the case in which there are no international resource flows (i.e., $K^* = 0$). Figure 1 shows the supply of exports, X , and the demand for imports measured

1/ Dornbusch (1974) points out that these assumptions are nontrivial and do not necessarily provide a good approximation of the conditions surrounding international trade in the real world. A somewhat more sophisticated approach to gauging the effects of protection on exports, that highlights in particular possible differences in the substitutability between importables and exportables, on the one hand, and nontraded goods, on the other, is presented by Clements and Sjaastad (1984).

2/ In the limiting case of a perfectly elastic supply of exports, the relative price of exports is unchanged by the imposition of the tariff. As will be shown, however, the quantity of exports still declines by the same proportion as imports.

3/ More formally, $\hat{P}_m^d = \hat{P}_x + \hat{T} = [\alpha/(\alpha-\eta)] \hat{T}$, where P_m^d is the domestic price of imports. The proportional increase in P_m^d is clearly positive; however, it is less than unity because of the decline in P_x resulting from increased protection.

in terms of exports at international prices, P^*M . Because $P_m^d = P_X P^*T$ (where P_m^d is the domestic price of imports), the demand for imports as well as the supply of exports is drawn as a function of the real exchange rate. The initial free trade equilibrium is at point A, where the trade balance is zero and the market for nontraded goods is also in equilibrium.

The imposition of a tariff shifts the demand for imports downward to P^*M' . The new equilibrium occurs at point D. It is reached after the "momentary" trade surplus, AF, induces the appreciation of the real exchange rate, and, owing to the reduced incentive for producers to export tradables, the quantity of exports declines from X to X'. The proportional appreciation in the exchange rate is equal to GD/DX' . This partially offsets the tariff rate, HD/DX' , and consequently the net protective effect of the tariff, measured by the proportional increase in the relative price of imports (HG/GX'), is less than the magnitude of the tariff.

The effect of protection on exports is, however, clear; while the tariff reduces import demand, it also causes the real exchange rate to appreciate and thereby reduces the incentive for local producers to export. Notably, the theory of trade and protection often places greater emphasis on the effect of protection on economic welfare. In Figure 1, the welfare costs of protection can be identified with the area of "dead-weight" loss, AHD. In terms of so-called Harberger-triangles, 1/ the reduced level of trade resulting from the imposition of the tariff is associated with net losses to the economy in consumer surplus (area AHG) and in producer surplus (area ADG). Beyond these static costs to the potential gains from international trade, important "dynamic" costs may also arise. These are more difficult to quantify, but are related to the discipline that international competition frequently brings to an open economy, in particular providing it with greater flexibility to respond efficiently to unanticipated developments -- both favorable and unfavorable -- in the world economy. 2/

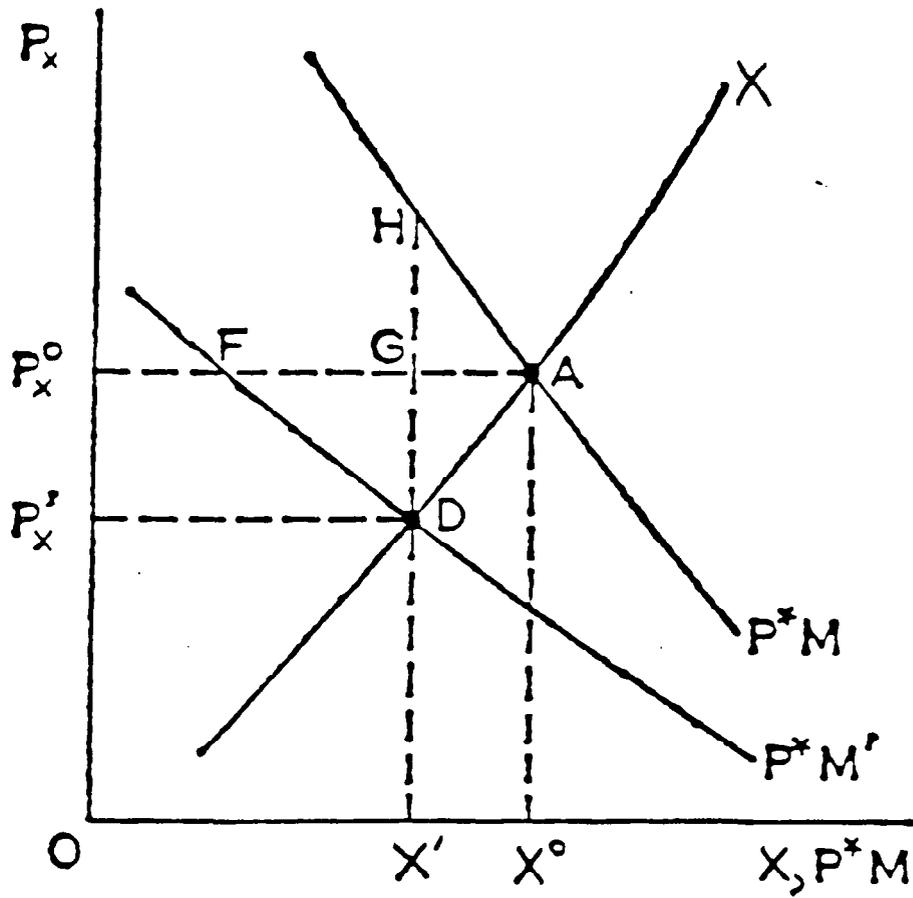
2. A Multi-Sector Empirical Model

As just outlined, the theory of international trade provides a formal basis for gauging the effect of protection on export performance. In what follows, an empirical version of the formal model is specified that utilizes the information about import duties and nontariff barriers presented in Section II, in combination with information describing the recent commodity composition of African trade, to estimate the effects of protection in Sub-Saharan Africa on the real exchange rate, exports and economic welfare of each of the sample countries.

1/ See Harberger (1971).

2/ Protection also often involves rent-seeking whose economic costs can be substantial -- according to some estimates, as much as 2-3 times the dead-weight loss depicted in Figure 1. On the relationship between exports and economic growth, among other studies see Kravis (1970), Goldstein and Khan (1982), and Riedel (1984). On estimating the economic costs of rent-seeking, see Krueger (1974), Posner (1975) and DeRosa (1988).

Figure 1



a. Basic Model

The multi-sector version of the theoretical model is based on the same maintained assumptions as the formal model -- that is, that the international terms of trade and resource flows between countries are exogenously determined, and that excess demands for traded goods depend solely on own-prices. The proportional change in the real exchange rate (i.e., the relative price of any exportable, P_{xj}) induced by the imposition of a given vector of ad valorem tariffs, however, is determined as

$$(4) \quad \hat{P}_{xj} = \sum_i VM_i(\eta_i \hat{T}_i) / [\sum_i (VX_i \alpha_i - VM_i \eta_i)]$$

where VM_i and VX_i are the initial values of imports and exports of commodity i , respectively, and where the price elasticity and tariff variables are defined as before but now take on values specific to each commodity. 1/

The multi-sector model in equation (4) closely resembles the formal theoretical model, and is clearly capable of utilizing detailed information about the structure of trade and nominal tariff protection by country. At the same time, some possible shortcomings in the model are revealed as the extent of disaggregation is increased. The model's lack of a fully articulated economic structure, particularly in regard to possibilities for substitution between tradable goods in production as well as consumption, is somewhat difficult to justify. Another possible shortcoming is the model's assumption that international terms of trade remain unchanged. When the model is applied to consider the implications of import restrictions in several Sub-Saharan countries simultaneously, the international relative prices of some agricultural or other commodities might be appreciably affected. 2/

1/ The choice of a commodity index for the price of exports relative to nontraded goods to represent the real exchange rate is arbitrary. Because the international terms of trade of exports are exogenous in the model, the proportional change in the relative price of every export good is identical to the expression in equation (4).

2/ The partial equilibrium character of the multi-sector model could be overcome by the adoption of the features of more sophisticated empirical models of international trade and economic activity. For instance, the model could be modified to incorporate estimates of cross-price as well as own-price elasticities of demand by adopting the assumption that traded goods may be distinguished by their place of production, following the general approach of the so-called Armington model (Armington (1969)). Also, the framework of computable general equilibrium (CGE) models, which specify production as well as consumption possibilities across countries and include consideration of the world-wide adjustment of prices for traded goods necessary to maintain global equilibrium of international trade and payments, could be adopted (see, especially, Whalley (1985) and Srinivasan and Whalley (1986)). As Winter (1986) points out, however, CGE models still suffer from some familiar problems, including the difficulties of selecting parameter values and appropriately specifying balance of payments

(continued...)

Notwithstanding these shortcomings, the multi-sector model is employed to estimate the effects of protection on the exports of the 23 sample Sub-Saharan countries. The extent of disaggregation in the model is limited to the eight major categories of primary commodities and manufactures seen in Table 3, thereby keeping the problem of selecting an appropriate range of values for the price elasticity parameters within manageable limits.

b. Parameter Values

The commodity composition of trade is represented here by the commodity pattern of the sample countries' exports and imports in 1985. 1/ These data, along with a detailed summary of the tariff and NTBs imposed by the 23 countries in 1987, are tabulated in the Appendix. The remaining parameters of the model consist of values for the price elasticities of import demand and export supply identified in equation (4).

There is an extensive literature on the determinants of import and export flows between countries, and on estimating the relative influence of different factors -- especially, the price and income variables that play prominent roles in macroeconomic models of individual countries and the world economy. 2/ Despite this fact, evidence on trade price elasticities by detailed goods categories and for wide numbers of individual developing countries remains limited.

Guiding the selection of elasticity parameter values here is the summary presented in Table 4 of representative estimates of the long-run price elasticities for foreign trade of Sub-Saharan countries, developing countries as a group, and major industrial countries. Most of the estimates of import demand and export supply elasticities refer to aggregate trade flows. By comparison, estimates for disaggregated trade in commodities and manufactures are limited in number, especially for developing countries. An important exception, however, is the availability of evidence regarding the

2/ (...continued)
constraints. Finally, it is notable that in a recent study of the external conditions facing African agricultural exports, Koester et al. (1989) conclude that simultaneous structural reforms in Sub-Saharan countries, resulting in substantially increased exports, would have little impact on international commodity prices because African countries account for only a small share of world exports of most primary commodities.

1/ The trade data are those reported by national authorities to the United Nations. The data may contain important valuation errors, and they are not adjusted to account for smuggling and other illegal trade that occurs in many African countries. As a consequence, the results of multi-sector model simulations may be biased to the extent that false customs declarations and illegal trade effectively circumvent import restrictions in Sub-Saharan countries. Finally, because detailed trade statistics for 1987 are not available for every sample country, 1985 trade statistics were selected for the analysis in the belief that they are, for the most part, fully revised and hence more reliable.

2/ For an overview of this literature, see Goldstein and Khan (1985).

Table 4. Representative Estimates of Price Elasticities of Import Demand and Export Supply

Source		All Goods	Foods	Agr. Raw Materials	Mineral Fuels	Minerals, Metal Ores	Manufs.
<u>Import Demand</u>							
Sub-Saharan Africa	Agbonyitor (7)	...	-1.05	...	-0.05	...	...
	Arize (6)	-1.15	...	...	...	...	...
	Arize-Afifi (18)	-1.27	...	...	...	...	...
	Salvatore (8) ^{1/}	...	-0.86	-0.87	-0.66	-0.87	-1.31
Developing Countries	Arize-Afifi (22) ^{2/}	-1.28	...	...	...	...	...
	Haque et al. (31) ^{3/}	-0.95	...	...	...	...	...
	Khan (10) ^{4/}	-1.54	...	...	...	...	...
	Khan-Knight (34) ^{3/}	-0.39	...	...	...	...	...
Industrial Countries	Goldstein-Khan (14)	-0.97	-0.59	-0.72	-0.54	-0.72	-1.83
<u>Export Supply</u>							
Sub-Saharan Africa	Arize (5)	1.02	...	...	...	...	...
	Balassa (16) ^{5/}	1.01	1.35	1.35	...	...	...
	Bond (...) ^{6/}	...	...	0.70	...	...	...
	Shappouri-Rosen (13) ^{7/}	...	0.79	0.79	...	0.44	...
Developing Countries	Bond (...) ^{8/}	...	0.70	0.43	...	0.24	...
	Haque et al. (31) ^{3/}	0.63	...	...	...	...	...
	Khan-Knight (34) ^{3/}	0.40	...	...	...	...	...
Industrial Countries	Goldstein-Khan (8)	2.90	...	...	...	4.90 ^{9/}	3.50 ^{10/}
Individual Commodities	Bond (...) ^{11/}	...	0.80	0.51	...	0.27	...

Sources: Alberto D.K. Agbonyitor, "Import Elasticities of Selected Sub-Saharan Countries," *Eastern Africa Economic Review*, Vol. 2, No. 2 (1986), pp. 129-35; Augustine Arize, "The Supply and Demand for Imports and Exports in a Simultaneous Model," *The Indian Journal of Economics*, Vol. 67, No. 265 (October 1986), pp. 177-92; Augustine Arize and Rasoul Afifi, "An Econometric Examination of Import Demand Functions in Thirty Developing Countries," *Journal of Post Keynesian Economics*, Vol. 9, No. 4 (Summer 1987), pp. 604-16; Bela Balassa, "Incentive Policies and Export Performance in Sub-Saharan Africa," *World Development*, Vol. 18, No. 3 (March 1990), pp. 383-391; Marian E. Bond, "An Econometric Study of Primary Commodity Exports from Developing Country Regions to the World," *IMF Staff Papers*, Vol. 34, No. 2 (June 1987), pp. 191-227; Morris Goldstein and Mohsin S. Khan, "Income and Price Effects in Foreign Trade," in Ronald W. Jones and Peter B. Kenen, eds., *Handbook of International Economics* (Amsterdam: North Holland, 1985); Madem U. Haque, Kajal Lahiri and Peter Montiel, "An Econometric Rational-Expectations Macroeconomic Model for Developing Countries with Capital Controls," *IMF Working Paper WP/90/11* (February 1990); Mohsin S. Khan, "Import and Export Demand in Developing Countries," *IMF Staff Papers*, Vol. 21, No. 3 (November 1974), pp. 678-93; Mohsin S. Khan and Malcolm Knight, "Import Compression and Export Performance in Developing Countries," *Review of Economics and Statistics*, Vol. 70, No. 2 (May 1988), pp. 315-21; Dominick Salvatore, ed., *African Development Prospects: A Policy Modeling Approach* (New York: Taylor and Francis, 1989); Shihla Shappouri and Stacey Rosen, *Export Performance in Africa*, Staff Report No. AGES 89-16, Economic Research Service, U.S. Department of Agriculture (May 1989).

Notes: Estimates generally refer to long-run price elasticities. Figures in parentheses denote total number of countries covered by the estimates; the number may be lower for individual categories of traded goods. Values are mean estimates across countries. Statistically insignificant estimates are not considered, including those found to have the wrong anticipated sign.

^{1/} Countries include Morocco and Tunisia.

^{2/} Predominantly African and Middle East countries.

^{3/} Estimates are based on pooled data.

^{4/} Predominantly Asian and Western Hemisphere countries.

^{5/} Estimates refer to the elasticity of the ratio of export to GDP with respect to the real exchange rate.

^{6/} Estimate refers to exports by African countries as a group.

^{7/} Mean value of estimates for selected individual commodities. Countries include Egypt and Morocco.

^{8/} Mean value of elasticity estimates for five developing regions: Africa, Asia, Europe, Middle East and Western Hemisphere.

^{9/} Exports by Canada only.

^{10/} Principally non-electrical machinery exports by Germany, United Kingdom, and United States.

^{11/} Mean value of elasticity estimates for selected individual commodities.

price-responsiveness of exports by Sub-Saharan countries of agricultural and other non-fuel primary commodities. This is a consequence of the emphasis that recent studies and policy discussions have placed on the need for adopting more flexible exchange rate regimes and reforming marketing channels for agricultural goods and other commodities in Sub-Saharan countries in order to increase producer prices and hence exports of traditional African products.

The price elasticity estimates for the Sub-Saharan countries are fairly large. For aggregate trade, they are somewhat greater than unity in the case of the import elasticities, and roughly equal to unity in the case of the export supply elasticities. Given that they are larger in magnitude than the representative estimates for other developing countries and the major industrial countries, these estimates provide support for economic reforms in Africa that would give price incentives a primary role in expanding production and trade.

The estimates for disaggregated trade indicate that some categories of traded goods are inherently more price sensitive than others. Manufactures, for instance, appear to be associated with higher elasticity values, implying that manufactured products are frequently more substitutable in both consumption and production than primary commodities. Conversely, mineral fuels appear to be the most inelastic in demand, while export supplies of mineral fuels, metal ores and minerals are apparently the least responsive to price changes.

Based on the representative estimates, the following common set of elasticity values is assumed for the sample countries in carrying out the empirical exercise to gauge the export and related effects of protection in Sub-Saharan countries:

	Food	Agr. Raw Materials	Mineral Fuels	Minerals, Metal Ores	Manufs.
Import demand	-0.75	-0.75	-0.50	-0.75	-1.25
Export supply	1.00	1.00	0.50	0.50	1.50

c. Accounting for NTBs

To this point, the role of nontariff barriers in the multi-sector model has not been considered. This is an important lacuna, given the pervasiveness of NTBs in the Sub-Saharan countries.

As noted at the outset of this study, accounting rigorously for the implications of nontariff barriers is not easily accomplished given the numerous forms NTBs take and their often indirect effects on goods prices. Here, an ad hoc approach is employed, whereby all forms of nontariff

barriers are regarded as restrictions imposed by national authorities to achieve quantitative limits on imports. In this circumstance, the quantity of imports in each sector can be regarded as an index of imports subject predominantly to either tariffs or nontariff barriers. Imports subject predominantly to tariffs are specified as before; that is, their demand is assumed price-sensitive, and their supply is assumed unlimited at the given international terms of trade. Imports subject predominantly to nontariff barriers, on the other hand, are assumed administratively determined; thus, although their demand may be price-sensitive, their supply is assumed price-inelastic. Finally, the frequency ratio of nontariff barriers is incorporated formally into the multi-sector model as the (geometric) weight of administered imports in the index.

Formally, the basic equation for determining the effect of protection on the real exchange rate in the empirical model becomes

$$(5) \quad \hat{P}_{xj} = \frac{\sum_i VM_i [(1-f_i)\eta_i \hat{T}_i + f_i \hat{B}_i]}{\sum_i [VX_i \alpha_i - VM_i (1-f_i)\eta_i]}$$

where f_i is the NTB frequency ratio and B_i is the quantitative limit on administered imports that policymakers enforce in sector i . 1/ In effect, when imports are widely affected by nontariff barriers, this refinement of the multi-sector model's specifications places somewhat greater emphasis on the price-responsiveness of export supply than import demand in determining the equilibrium adjustment of the real exchange rate. 2/ It also reduces the potential of tariff liberalization for improving export performance; where NTBs are a major determinant of import demand, exports will be

1/ The specification of the equilibrium change in import prices also becomes somewhat more complex. For each sector i , the proportional change in price becomes a weighted average:

$$\hat{P}_{mi}^d = (1-f_i)(\hat{P}_{xj} + \hat{T}_i) + f_i(\hat{B}_i/\eta_i)$$

where the last term in parentheses denotes the change in the price of importables whose local production is protected by nontariff barriers.

2/ If nontariff barriers are enforced against all imports (i.e., $f_i = 1$ for all i), the exchange rate adjustment equation in (5) is

$$\hat{P}_{xj} = \frac{\sum_i VM_i \hat{\beta}_i}{(\sum_i VX_i \alpha_i)}.$$

To the opposite extreme, if nontariff barriers are unimportant (i.e., $f_i = 0$ for all i), the adjustment equation is identical to equation (4) in which tariff changes and import price elasticities again matter for determining the equilibrium change in the exchange rate.

expanded significantly only through the liberalization of nontariff barriers. 1/

3. Estimates of the Effects of Protection

a. Estimation Method

The multi-sector model is applied to the problem of gauging the effects of protection in Sub-Saharan countries by specifying the sectoral values of T_i and B_i , the policy variables that denote changes in schedules of tariff rates and administered levels of imports respectively. Essentially, the model is simulated to estimate the effects of liberalizing tariffs and removing restrictive quantitative targets enforced by NTBs.

Each country's schedule of tariffs and other fiscal charges is assumed liberalized to the point that only a relatively low and uniform rate of import duty -- 10 percent -- is enforced, principally as a source of fiscal revenues rather than protection. 2/ The specification of changes in sectoral levels of administered imports is somewhat less refined. In reality, the extent to which nontariff barriers restrict imports to less than their free trade level varies by country and trade category. In the simulations of the model, however, all nontariff barriers are assumed simply to restrict imports by a common factor relative to their free trade levels. An appropriate mean value for this factor is unknown, so alternative values, forming "upper" and "lower-bound" estimates within a range thought to be reasonable, are specified. Nontariff barriers in Sub-Saharan countries are assumed to restrict targeted imports to between 80 and 90 percent of their free trade levels. By implication then, the restoration of free trade entails increases in administered imports of, alternatively, 25 and 10 percent in quantity terms. 3/

b. Results

The multi-sector model estimates of the effects of protection on prices, exports and economic welfare are summarized in Tables 5 and 6. Notably, the results also include an estimate of effects on fiscal revenues (relative to domestic output) of reducing tariffs and other import duties.

1/ Empirical studies of import demand in developing countries occasionally include consideration of nontariff restrictions, particularly as they relate to policymakers' objective to control international payments imbalances. In these studies the specification of import demand is similar to that in equation (5) above. In particular, see Hemphill (1974) and Khan and Knight (1988).

2/ In symbols, the proportional change in the para-tariff corresponding to each sector is set equal to $(0.1-t_i)/t_i$, where t_i is the initial sectoral tariff level. Where para-tariff levels are initially less than 10 percent, the sectoral level of import duties is left unchanged.

3/ In symbols, each B_i in the multi-sector model is set equal to, alternatively, 0.25 and 0.10.

Table 5. Effects of Import Liberalization in Sub-Saharan Countries: Upper Bound Estimates
(Changes assuming import duties are reduced to 10 percent and administered imports increase by 25 percent)

	Prices 1/		Exports			Economic Welfare & Fiscal Revenues					
	Real Exch. Rate	Imports	Total Value	Volume			Welfare Gain 2/			Total Import Duties Rel. to GDP 3/	
				Pri. Comds.	Manufs.	All Goods	Pri. Comds.	Manufs.	All Goods		
	-----Percent-----		US\$ Mill. 4/	-----Percent-----		-----US\$ Mill. 4/-----		Percent	Percentage Pts.		
Low-Income	38.5	-28.8	1670.0	34.5	57.8	37.3	405.5	158.7	564.2	1.2	-1.7
Lower-Low-Income	37.5	-29.2	976.1	32.6	56.3	36.1	209.4	106.5	315.9	1.3	-1.7
Zaire	23.8	-35.6	252.2	14.2	35.7	16.5	41.3	23.2	64.5	1.3	-5.1
Malawi	27.7	-26.6	68.5	27.6	41.5	28.3	11.1	6.0	17.1	1.8	-0.1
Mozambique	64.1	-28.7	113.8	57.1	96.1	75.0	28.0	26.2	54.1	1.7	..
Tanzania	51.5	-33.2	165.5	47.6	77.3	49.7	45.3	17.2	62.6	1.1	-0.1
Burkina Faso	79.2	-2.4	30.8	79.1	118.8	82.4	13.3	3.7	17.0	1.8	-1.5
Madagascar	40.3	-32.6	116.0	38.2	60.4	40.5	28.5	11.1	39.6	1.7	0.1
Burundi	51.2	-32.5	56.3	50.2	76.8	51.9	17.1	5.0	22.1	2.3	0.5
Zambia	27.6	-33.1	93.4	14.2	41.4	14.8	13.2	9.5	22.7	1.0	-0.9
Uganda	15.7	-33.3	62.8	15.7	23.5	15.7	9.8	4.2	14.0	0.3	-0.3
Guinea	6.8	1.5	16.6	3.5	10.2	3.6	1.9	0.3	2.2	0.1	..
Upper-Low-Income	40.3	-28.2	693.8	37.9	60.4	39.5	196.0	52.2	248.3	1.1	-1.8
Somalia	139.6	-33.9	57.7	133.6	209.3	137.8	41.7	6.4	48.1	2.1	..
Sierra Leone	19.8	-29.9	28.5	14.5	29.7	19.5	3.0	3.4	6.3	0.5	-1.0
Benin	72.0	-39.3	94.6	57.6	108.0	58.9	38.3	8.1	46.4	4.8	-3.8
C. Afr. Repub.	8.9	-13.1	11.0	8.8	13.3	10.3	0.4	0.8	1.2	0.2	-2.3
Kenya	19.2	-24.4	176.8	17.2	28.8	18.5	21.6	11.0	32.6	0.6	0.1
Sudan	53.8	-32.8	264.3	53.7	80.7	54.8	85.4	19.9	105.4	1.5	-3.8
Ghana	12.2	-23.5	60.9	11.1	18.3	11.5	5.6	2.7	8.2	0.2	-0.8
Middle-Income	15.1	-21.7	984.9	10.7	22.6	11.7	119.1	74.5	193.6	0.6	-2.1
Senegal	13.4	-10.0	42.2	11.8	20.0	12.7	4.2	1.8	6.0	0.2	-5.2
Zimbabwe	21.9	-29.5	217.8	19.2	32.8	23.2	31.0	24.2	55.2	1.2	-2.2
Cote D'Ivoire	5.3	-9.7	139.0	5.0	7.9	5.3	6.6	5.1	11.7	0.2	-1.4
Congo	24.2	-48.4	145.1	12.5	36.3	13.3	22.0	12.7	34.8	1.6	-1.1
Cameroon	11.0	-6.9	178.6	7.1	16.5	7.2	10.2	11.8	22.0	0.3	-1.1
Angola	24.6	-49.8	262.2	12.4	36.8	12.4	45.0	18.8	63.9	0.9	..
All Countries	34.1	-27.5	2654.8	30.0	51.1	32.5	524.5	233.2	757.7	1.1	-1.8

Sources: Simulations of the multi-sector model for each country, using 1985 trade flows and 1987 import duties and NTB frequency ratios, and assuming constant international terms of trade. Primary sources of data are International Monetary Fund, Government Financial Statistics Yearbook (Washington, D.C.: International Monetary Fund, 1990); UNCTAD Secretariat, Handbook of Trade Control Measures of Developing Countries and Handbook Supplement, 1987 (Geneva, UN Conference on Trade and Development, 1988); and World Bank, Trade Analysis and Reporting System (based on UN Series D Commodity Trade Tapes).

1/ Prices are measured in terms of nontraded goods. The real exchange rate is equal to the price of exportables.

2/ Total gain in consumer and producer surplus.

3/ Difference between simulated and 1985 values of total import duties relative to GDP for each country, except Benin (1979), Congo (1980), Madagascar and Sudan (1982), and Zimbabwe (1984).

4/ Per annum, measured in 1985 U.S. dollars.

Table 6. Effects of Import Liberalization in Sub-Saharan Countries: Lower Bound Estimates
(Changes assuming import duties are reduced to 10 percent and administered imports increase by 10 percent)

	Prices 1/		Exports			Economic Welfare & Fiscal Revenues					
	Real Exch. Rate	Imports	Total Value	Volume			Welfare Gain 2/			Total Import Duties Rel. to GDP 3/	
				Pri. Comds.	Manufs.	All Goods	Pri. Comds.	Manufs.	All Goods		
	-----Percent-----		US\$ Mill. 4/	-----Percent-----		-----US\$ Mill. 4/-----	Percent	Percentage Pts.			
Low-Income	16.7	-12.1	735.7	15.0	25.0	16.2	72.1	29.2	101.3	0.2	-1.9
Lower-Low-Income	15.8	-12.0	396.2	13.9	23.8	15.3	35.4	17.4	52.7	0.2	-2.0
Zaire	9.5	-14.2	100.9	5.7	14.3	6.6	6.6	3.7	10.3	0.2	-5.4
Malawi	11.2	-11.3	27.8	11.2	16.8	11.5	1.8	1.0	2.8	0.3	-0.5
Mozambique	25.6	-11.5	45.5	22.8	38.4	30.0	4.5	4.2	8.7	0.3	..
Tanzania	20.6	-13.3	66.2	19.1	30.9	19.9	7.3	2.8	10.0	0.2	-0.3
Burkina Faso	45.5	-5.2	17.7	45.5	68.3	47.4	3.9	0.9	4.8	0.5	-1.7
Madagascar	16.1	-13.0	46.4	15.3	24.2	16.2	4.6	1.8	6.3	0.3	-0.2
Burundi	20.5	-13.0	22.5	20.1	30.7	20.8	2.7	0.8	3.5	0.4	0.2
Zambia	11.0	-13.2	37.4	5.7	16.5	5.9	2.1	1.5	3.6	0.2	-1.1
Uganda	6.3	-13.3	25.1	6.3	9.4	6.3	1.6	0.7	2.2	0.1	-0.4
Guinea	2.7	0.6	6.7	1.4	4.1	1.4	0.3	0.0	0.3	0.0	..
Upper-Low-Income	18.2	-12.3	339.5	17.1	27.3	17.8	36.7	11.9	48.5	0.2	-1.9
Somalia	55.8	-13.6	23.1	53.4	83.7	55.1	6.7	1.0	7.7	0.3	..
Sierra Leone	7.9	-12.0	11.4	5.8	11.9	7.8	0.5	0.5	1.0	0.1	-1.1
Benin	28.8	-15.7	37.8	23.0	43.2	23.5	6.1	1.3	7.4	0.8	-4.4
C. Afr. Repub.	8.5	-12.3	10.5	8.4	12.7	9.8	0.3	0.8	1.1	0.2	-2.3
Kenya	11.6	-11.5	106.7	10.4	17.4	11.2	7.1	3.5	10.6	0.2	-0.1
Sudan	21.5	-13.1	105.7	21.5	32.3	21.9	13.7	3.2	16.9	0.2	-4.0
Ghana	8.9	-11.0	44.3	8.1	13.3	8.4	2.3	1.5	3.8	0.1	-0.8
Middle-Income	8.8	-11.0	568.5	6.5	13.2	7.0	30.7	25.0	55.7	0.2	-2.3
Senegal	12.3	-9.1	38.7	10.8	18.4	11.7	3.3	1.8	5.1	0.2	-5.2
Zimbabwe	8.8	-11.8	87.1	7.7	13.1	9.3	5.0	3.9	8.8	0.2	-2.5
Cote D'Ivoire	4.5	-6.7	119.3	4.3	6.8	4.5	3.6	5.2	8.8	0.2	-1.5
Congo	9.7	-19.4	58.0	5.0	14.5	5.3	3.5	2.0	5.6	0.3	-1.5
Cameroon	9.9	-7.0	160.4	6.4	14.8	6.5	8.2	9.0	17.2	0.2	-1.1
Angola	9.8	-19.9	104.9	5.0	14.7	5.0	7.2	3.0	10.2	0.2	..
All Countries	15.2	-11.9	1304.2	13.4	22.8	14.5	102.8	54.2	157.0	0.2	-2.0

Sources: Simulations of the multi-sector model for each country, using 1985 trade flows and 1987 import duties and NTB frequency ratios, and assuming constant international terms of trade. Primary sources of data are International Monetary Fund, Government Financial Statistics Yearbook (Washington, D.C.: International Monetary Fund, 1990); UNCTAD Secretariat, Handbook of Trade Control Measures of Developing Countries and Handbook Supplement, 1987 (Geneva, UN Conference on Trade and Development, 1988); and World Bank, Trade Analysis and Reporting System (based on UN Series D Commodity Trade Tapes).

1/ Prices are measured in terms of nontraded goods. The real exchange rate is equal to the price of exportables.

2/ Total gain in consumer and producer surplus.

3/ Difference between simulated and 1985 values of total import duties relative to GDP for each country, except Benin (1979), Congo (1980), Madagascar and Sudan (1982), and Zimbabwe (1984).

4/ Per annum, measured in 1985 U.S. dollars.

The proportional reduction of import duties to 10 percent in the sample countries is substantial in most cases. For the lowest-income countries and middle-income countries, the average reduction of tariffs and para-tariffs is about 50 percent; for the high-tariff, upper-low-income countries the average reduction is even greater, about 70 percent. One low-income country, Guinea, is assumed to experience no reduction in import duties because the country initially possesses a relatively liberal tariff regime.

The estimates of the effects of protection on export performance and economic welfare follow closely those reported for the adjustment of prices. The real exchange rate, as measured by the relative price of exports to nontraded goods, rises in the sample countries about 34 percent on average in the upper-bound scenario (Table 5) and about 15 percent in the lower-bound scenario (Table 6). The aggregate price of imports (relative to nontraded goods) falls in all countries by, alternatively, about 27 percent and 12 percent on average. The sample countries with the highest rates of tariff and NTB protection are estimated to have the most "overvalued" real exchange rates. In the case of Somalia, the extremely high overvaluation -- between 140 and 56 percent -- results from the country's high frequency of nontariff barriers, but also from its initial low level of merchandise exports relative to imports. 1/ In other instances where protection is low or initial exports are considerably greater than imports in value (Guinea, Central African Republic, Cote d'Ivoire and Congo), the estimated overvaluation of the exchange rate is relatively modest in magnitude -- as low as about 5 percent.

The simulation results indicate that protection in the sample countries reduces the combined annual exports of the 23 countries by between US\$ 2.7 billion and US\$ 1.3 billion per annum, measured in 1985 dollars. In proportional terms, import liberalization is estimated to increase the total exports of the sample African countries on average by between about 33 and 15 percent annually, measured in terms of both dollar value and volume. 2/ Because of their high rates of protection, the low-income countries would enjoy the greatest increase in total exports, between about 37 and 16 percent. Though protection is lower in the middle-income countries, these

1/ In 1985, the recorded value of Somalia's goods imports was about five times greater than the value of its goods exports (see Appendix Table 1). The high degree of invisibles trade (mainly workers' remittances) and import financing -- both assumed exogenous in the multi-sector model -- requires that, with import liberalization, the price of merchandise exports relative to nontraded goods must rise by an extraordinary amount in order for export earnings to increase sufficiently to match the increase in import payments.

2/ Because the international terms of trade are exogenous, proportional increases in the dollar value of exports are equal to those reported for export volumes in Tables 5 and 6. It is also notable in these two tables that the proportional increases in total exports closely mirror the magnitude of the proportional declines in the real exchange rate. This occurs because the implicit value of the aggregate elasticity of export supply for each country in the multi-sector model is near unity.

countries too would enjoy appreciable increases in their total exports -- between about 12 and 7 percent.

Producers of primary commodities, who in many cases already face considerable economic costs because of the instability of world commodity prices, suffer the largest absolute losses in export earnings. Also of interest is the multi-sector model's prediction that import liberalization would promote greater proportional expansion of nontraditional than traditional exports. This prediction follows directly from the model's assumption of a higher elasticity of export supply for manufactures than primary commodities. It illustrates however that protection inhibits possibilities for Sub-Saharan countries to achieve their often-stated economic goal of achieving greater export diversification.

Turning to the effects of protection on economic welfare, the estimated welfare gains from import liberalization are significantly less than the potential value of expanded trade, especially in the case of the lower-bound estimates. The largest part of the welfare gains are associated with expansion of trade in primary commodities. Indeed, the detailed estimates of the multi-sector model reveal that the welfare gains to commodity exporters are about twice the magnitude of those of importers of manufactured goods. 1/ By comparison, the welfare gains associated with imports of primary commodities are appreciable but smaller in magnitude, and those associated with exports of manufactures are the smallest. These results reflect the initial relative magnitudes of trade by the sample countries in different commodities and manufactures, and the multi-sector model's finding that, in volume terms, import liberalization leads to greater proportional expansion of exports than imports for most sample countries. Other systematic determinants of the welfare estimates are more difficult to explain, in particular because of the numerous differences across countries and trade sectors in tariff rates, NTB frequency ratios and assumed price elasticities for exports and imports.

In terms of domestic output, the effects of protection on economic welfare amounts to between only about 1.1 percentage points and 0.2 percentage points per annum. 2/ Such small magnitudes are not uncommon in economic studies of the static costs of protection and other economic distortions. 3/ As noted previously, consideration of the economic costs of rent-seeking in connection with tariffs and administered protection in Sub-Saharan Africa might result in much larger estimated gains from trade liberalization. Additionally, dynamic gains expected to result from eliminating protection are obviously not captured by the static estimates. Although definitive approaches to estimating the benefits of greater

1/ These detailed estimates can be obtained from the author upon request.

2/ While the results reported in Tables 5 and 6 suggest that several countries -- among others, particularly Burundi, Somalia, Benin and Cote d'Ivoire -- enjoy higher than average welfare gains (relative to their output levels), the variance of the estimates across countries is still relatively low.

3/ See especially, Harberger (1954).

efficiency of resource use, scale economies in producing exportables, and higher investment productivity have yet to be developed, such dynamic benefits are widely believed, in both international trade theory and studies of the comparative development experiences of countries, to follow in the wake of the adoption of liberal trade policies and to be significantly larger than the static benefits. 1/

Finally, with regard to the relationship between protection and central government revenues, consider the multi-sector model estimates of the impact on total import duties of dismantling import controls and reducing the combined level of tariffs and other import taxes to a uniform rate of 10 percent. Many developing countries rely heavily on international trade taxes for revenues. 2/ However, import duties in some countries are poorly administered and often include special exemptions, for instance in connection with industrial activities and investment projects favored by national development plans. 3/ Thus, if in liberalizing import policies Sub-Saharan countries were simultaneously to enforce import duties without exemptions -- that is, on a nondiscriminatory basis -- total revenues from import duties would not necessarily fall precipitously.

In Tables 5 and 6, the estimates of the fiscal impact of trade liberalization incorporate the assumption of nondiscriminatory enforcement of tariffs and para-tariffs by all countries. Some low-income countries -- Burundi, Kenya, Madagascar, Malawi and Tanzania -- are found to enjoy virtually no change in total fiscal revenues. In most instances, however, the Sub-Saharan countries experience declines in import duty revenues (relative to GDP) of about 1-2 percentage points as a result of the envisioned tariff administration-cum-import policy reform. These revenue losses, and still greater losses by countries such as Benin, Senegal, Sudan and Zaire, are significant in magnitude. These losses might be offset by gains in other fiscal revenues not explicitly considered by the simple multi-sector model, but in all cases they should be weighed against the expected enhancement of export performance and economic growth provided by the liberalization of import policies.

1/ A recent paper illustrating some possibilities, as well as difficulties, attending the measurement of dynamic gains from trade is provided by Baldwin (1989). For a recent discussion of the comparative approach to judging the economic merits of pursuing more liberal trade policies, see Krueger (1990).

2/ In 1986, customs duties and other levies on trade accounted for about 20 percent of central government revenues in Sub-Saharan countries. By comparison, they accounted for about 15 percent of government revenues in developing countries as a group, and only about 4 percent in industrial countries (International Monetary Fund (1989a)). For further discussion of the importance of trade taxes in developing countries, their limited efficacy as instruments for achieving economic objectives, and the possible importance of replacing trade taxes with domestic taxes before undertaking trade liberalization in less-developed countries, see Goode (1984) and Farhadian-Lorie and Katz (1988).

3/ KostECKI and Tymowski (1985).

IV. Conclusions

Policymakers in Sub-Saharan Africa are turning increasingly to consider possibilities for liberalizing their economies in order to reverse the recent trend in the region of dismal economic growth, low productivity of investment and mounting external debt obligations. Nevertheless, there is still some resistance in the region against proposals to dismantle import-substitution and other protectionist policies in order to allow domestic relative prices to adjust to levels more closely related to those in the world economy and renewed economic growth in the region to be led by a competitive, more robust export sector. In particular, trade liberalization is frequently viewed in the region as likely to result in higher trade deficits, despite numerous studies that conclude there is no presumption, based either on theory or evidence, that liberalization leads necessarily to a worsening of the external position. ^{1/}

Although economic theory has long emphasized that tariffs and other barriers to imports constitute a tax on exports, the effects of protection on export performance have not been estimated. This paper has sought to provide an overview of the extent and structure of nominal protection in Sub-Saharan countries, with the objective of illuminating the effect of this protection on the level and composition of Africa's exports. For this purpose, the effect of protection on the exports of a large sample of low and middle-income Sub-Saharan countries is estimated using a simple multi-sector model that captures the adjustment of the real exchange rate between traded and nontraded goods, as well as changes in trade flows, economic welfare and tariff revenues.

The information compiled about import restrictions enforced in Sub-Saharan and other countries reveals that protection is appreciably higher in Sub-Saharan Africa than in other developing regions as well as the major industrial countries. For instance, the average level of tariff rates is about 30 percent in the sample Sub-Saharan countries, compared to about 20 percent in developing countries as a group and less than 5 percent in the major industrial countries. Also, nontariff barriers in a number of different forms, including especially quantitative restrictions, foreign exchange controls and state trading, are widely applied in Sub-Saharan countries at frequency rates -- 80 percent or more in most low-income Sub-Saharan countries -- that are often greater than those imposed by other low-income developing countries.

With regard to the structure of nominal protection in Sub-Saharan Africa, some familiar patterns of protection across broad categories of primary commodities and manufactures are discernible. Like many other developing and industrial countries, the Sub-Saharan countries maintain escalating rates of tariff and other forms of protection against increasingly labor-intensive processed commodities and manufactures. In addition, for food security reasons, they apply high rates of protection against food imports, especially such cereals as maize, rice and wheat.

^{1/} See, for instance, Corden (1978) and Ostry (1990).

Finally, among other items, imports of labor-intensive apparel and other textile products are frequently the object of selective import controls, despite the fact that countries in Sub-Saharan Africa are predominantly low-wage economies.

The application of a simple multi-sector model designed to analyze the issue finds that the effect of protection in the 23 Sub-Saharan countries considered falls heavily on the relative price of exports to nontraded goods, and thus affects adversely the incentives for African producers to export both traditional and nontraditional goods. The estimates, based on the assumption that import duties are reduced to a uniform rate of only 10 percent and alternative "upper" and "lower-bound" assumptions about the extent to which dismantling of nontariff barriers will increase administered imports in each country, demonstrate that protection in the countries considered implies an average "overvaluation" of the real exchange rate in these countries of between about 34 and 15 percent. In turn, the overvaluation of exchange rates is estimated to reduce potential exports by US\$ 2.7 billion and US\$ 1.3 billion per annum (in 1985 dollars), or between about 33 percent and 15 percent per annum (relative to baseline levels). Under common-place assumptions about the relative price-responsiveness of the export supply of primary commodities versus manufactured goods, the overvaluation also implies that protection in Sub-Saharan Africa inhibits the progress of African countries in achieving greater export diversification.

The estimates of the static welfare costs of protection, in terms of the combined "dead-weight" losses of export producers and import consumers, are less dramatic, mirroring the findings of similar studies of the costs of protection for other countries. Nonetheless, the estimates serve as a reminder that consideration should also be given to the additional economic costs arising from unproductive rent-seeking activities, and to the dynamic benefits, arising from greater economic efficiency and higher productivity of investment, that international competition imparts to more open economies.

Finally, the empirical results suggest that although the Sub-Saharan countries rely importantly on international trade taxes for revenues, reducing import duties to a low, uniform level does not always reduce fiscal revenues to unmanageable levels, especially when countries also adopt policies to collect import duties more efficiently and without special exemptions. Where losses in government revenues from import duties are significant, however, these should still be weighed against the wider benefits of trade liberalization, namely, the development and welfare-enhancing possibilities of improved resource utilization, export performance and economic growth.

In conclusion, the analysis and findings of the present study support the view that high rates of protection in the Sub-Saharan countries themselves are an important factor contributing to the economic condition of these countries today, and especially to their poor export performance. However, regaining more robust export performance and economic growth cannot

be accomplished by simply reforming trade policies, especially to the extent that restrictive import measures arise because of other political and economic rigidities in Sub-Saharan African countries. In this vein, trade liberalization in many cases should be pursued in association with other policy reforms. Important related areas for economic reform include industrialization policies discriminating against agricultural and rural development, policies inhibiting financial development (including the growth of capital and foreign exchange markets), and regulatory and institutional arrangements hindering investment by domestic as well as foreign enterprises.

Table 1 (Cont.). Trade and Protection in Sub-Saharan Countries by Commodity Sector

Country	Primary Commodities				Manufactures				All Goods
	Food	Agr. Raw Materials	Mineral Fuels	Minerals & Metal Ores	Chem.	Iron & Steel	Mach. & Equip.	Other Manufs.	
<u>Sierra</u>									
Exports, 1985 (millions of U.S. dollars)	370.5	41.3	32.5	55.9	0.5	0.0	2.8	24.9	529.8
Imports, 1985 (millions of U.S. dollars)	66.9	12.5	26.9	5.9	58.5	10.2	203.5	105.7	493.3
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	26.0	30.0	29.9	29.9	29.7	30.0	30.7	30.1	29.6
Total charges	25.9	48.0	29.9	29.9	29.7	30.0	30.7	36.5	33.0
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	30.3	0.9	0.0	0.0	3.0	0.0	5.8	31.9	16.6
Prohibitions	44.3	59.6	19.4	45.9	5.2	49.3	12.2	28.3	28.3
Restrictive foreign exchange allocation	x	x	0.0	x	x	0.0	0.0	0.0	x
State trading monopoly	x	0.0	0.0	0.0	0.0	0.0	0.0	x	x
All measures	76.8	64.5	19.4	48.9	14.6	52.7	19.2	64.4	48.4
<u>Senegal</u>									
Exports, 1985 (millions of U.S. dollars)	207.5	15.5	2.7	67.0	17.2	0.4	3.8	17.1	337.4
Imports, 1985 (millions of U.S. dollars)	241.9	9.6	102.7	18.3	69.9	22.7	150.5	112.3	730.5
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	43.9	33.4	31.3	36.7	11.0	36.9	28.5	43.1	34.2
Total charges	43.9	33.4	31.3	36.7	11.0	36.9	28.5	43.2	31.2
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	7.3	0.0	4.6	1.5	7.0	0.0	2.4	1.7	3.7
Quotas	0.5	0.0	0.0	1.0	0.7	10.7	0.6	1.4	1.3
Prohibitions	2.3	0.0	0.0	0.0	0.6	0.0	0.0	0.9	0.7
Decreed customs value	x	x	x	0.0	0.0	0.0	0.0	x	x
State trading monopoly	x	0.0	0.0	0.0	0.0	0.0	0.0	x	x
All measures	13.1	2.3	16.7	2.5	8.2	10.7	3.1	6.2	7.2
<u>Zimbabwe</u>									
Exports, 1985 (millions of U.S. dollars)	385.8	107.2	9.8	155.0	16.5	171.5	15.4	76.2	954.7
Imports, 1985 (millions of U.S. dollars)	44.5	24.7	213.6	23.5	145.3	28.0	259.5	132.1	896.6
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	9.3	1.3	2.3	0.7	2.5	4.4	5.7	16.5	8.7
Total charges	27.6	18.6	18.9	19.9	19.9	23.9	16.1	34.9	25.5
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Restrictive foreign exchange allocation	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
State trading monopoly	x	0.0	0.0	0.0	0.0	0.0	0.0	0.0	x
All measures	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Cote d'Ivoire</u>									
Exports, 1985 (millions of U.S. dollars)	1,814.6	316.5	259.1	5.2	65.7	6.5	47.2	129.9	2,670.0
Imports, 1985 (millions of U.S. dollars)	297.5	18.0	381.9	27.7	221.4	54.8	385.5	334.3	1,733.8
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	23.2	9.3	17.5	19.5	20.7	20.6	16.4	31.8	23.3
Total charges	24.0	10.0	18.6	20.2	22.0	21.2	17.1	35.8	25.3
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	17.5	0.1	25.0	1.5	6.0	0.7	6.1	2.3	5.7
Quotas	7.4	0.0	25.0	1.5	5.3	0.7	3.4	0.8	3.3
Prohibitions	1.7	0.0	0.0	0.8	0.7	0.0	0.0	0.4	0.5
Decreed customs value	x	0.0	x	0.0	0.0	x	0.0	x	x
All measures	21.1	1.0	25.0	2.3	6.7	0.8	6.1	3.0	6.6

Table 1 (Cont.). Trade and Protection in Sub-Saharan Countries by Commodity Sector

Country	Primary Commodities				Manufactures				All Goods
	Food	Agr. Raw Materials	Mineral Fuels	Minerals & Metal Ores	Chem.	Iron & Steel	Mach. & Equip.	Other Manufs.	
Congo									
Exports, 1985 (millions of U.S. dollars)	15.8	18.2	1,013.9	1.2	0.1	0.7	2.0	35.2	1,087.2
Imports, 1985 (millions of U.S. dollars)	111.0	2.3	18.2	6.7	48.6	33.8	205.3	154.3	580.2
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	26.1	34.0	23.7	31.5	29.1	29.0	25.1	39.2	32.0
Total charges	26.9	34.1	26.4	31.5	30.1	29.3	26.3	41.1	33.2
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Quotas	1.2	0.0	0.0	0.0	0.7	0.0	0.2	1.1	0.7
Prohibitions	0.4	0.0	0.0	0.0	0.0	0.9	0.0	1.6	0.8
Decreed customs value	X	0.0	0.0	0.0	X	0.0	0.0	X	X
State trading monopoly	X	X	0.0	0.0	0.0	0.0	X	X	X
All measures	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cameroon									
Exports, 1985 (millions of U.S. dollars)	535.2	172.3	1,647.8	75.9	1.1	0.0	2.8	31.8	2,471.3
Imports, 1985 (millions of U.S. dollars)	213.9	11.5	30.6	10.6	168.1	32.4	469.2	337.8	1,782.6
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	26.1	34.0	23.7	31.5	29.1	29.0	25.5	39.2	32.0
Total charges	31.2	39.0	31.0	39.2	35.1	41.8	39.4	52.4	42.2
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	6.8	36.8	0.0	3.7	9.4	4.4	7.3	34.9	18.5
Prohibitions	2.3	0.9	0.0	0.0	0.9	0.0	0.5	1.1	1.0
Decreed customs value	X	X	X	X	X	X	0.0	X	X
All measures	8.1	37.7	0.0	3.7	10.1	4.4	8.1	39.3	20.7
Angole									
Exports, 1985 (millions of U.S. dollars)	24.0	0.5	2,079.8	1.4	0.1	0.0	1.2	0.6	2,109.5
Imports, 1985 (millions of U.S. dollars)	259.5	5.3	24.5	9.0	80.8	48.8	404.0	217.1	1,058.3
Customs and other import duties, 1987 (in percent)									
Mean tariff rate	14.1	8.2	7.0	5.7	9.2	8.3	6.6	19.7	11.6
Total charges	23.1	17.2	16.0	14.7	17.9	17.3	15.6	28.7	20.6
Nontariff barriers, 1987 (frequency ratio in percent)									
Restrictive licensing	0.0	0.0	0.0	0.0	1.4	0.0	0.5	1.1	0.7
State trading monopoly	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All measures	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: UNCTAD Secretariat, *Handbook of Trade Control Measures of Developing Countries and Handbook Supplement, 1987* (Geneva, UN Conference on Trade and Development, 1988); and World Bank, *Trade Analysis and Reporting System* (based on UN Series D Commodity Trade Tapes).

Notes: Positive-valued NTB frequency ratios whose precise values are not possible to compute from the source document are denoted by "X". Commodity sectors are defined according to the Standard International Trade Classification (SITC) system as follows:

Food	SITC 0+1+22+4
Agricultural raw materials	2 (less (22+27+28))
Mineral fuel	3
Mineral and nonferrous metal ores	27+28+68
Chemicals	5
Iron and steel	67
Machinery and equipment	7
Other manufactures	(6+8) less (67+68)

Exports are reported on a f.o.b. basis, whereas imports are mainly reported on a c.i.f. basis. Tariffs and other barriers against imports of alcohol and tobacco are not included in the data.

Table 2. Protection in Sub-Saharan Countries, Developing Countries and Major Industrial Countries

	Tariffs and Para-tariffs		Frequency of Non-tariff Barriers 1/								
	Tariffs	Total Charges 2/	All MTBs	Quantitative Restrictions				For. Ex. Restr. 3/	Decead Value	Surveil- lence 4/	State Monopolies
				All	Licence	Quota	Prohib.				
Sub-Saharan Countries	29	34	66	48	42	4	2	26	--	...	12
Low-Income	33	37	87	63	54	6	3	36	--	...	11
Middle-Income	24	31	41	29	27	1	1	13	--	...	13
Developing Countries	20	30	40	24	18	1	6	21	2	...	4
Low-Income	61	66	70	49	32	2	16	20	--	...	6
Middle-Income	17	28	38	22	17	1	5	21	2	...	4
Asia	22	25	21	18	15	--	3	6	--	...	--
Middle-East	4	5	11	6	4	--	2	7	--	...	13
South America	33	51	60	33	17	1	16	35	7	...	5
Major Industrial Countries	4	...	15	10	...	...	...	...	5	4	...
European Community	4	...	20	10	...	...	...	...	6	10	...
Japan	4	...	14	14	...	...	...	...	1	--	...
United States	4	...	11	8	...	...	...	...	5	--	...
Memorandum Items: By Non-Fuel Categories											
Foods											
Sub-Saharan Countries	33	38	69	52	41	7	4	26	--	...	11
Developing Countries	25	30	48	33	24	2	8	21	1	...	6
Major Industrial Countries	6	...	41	21	...	...	...	...	25	2	...
Agricultural Raw Materials											
Sub-Saharan Countries	25	30	66	46	39	4	3	26	--	...	9
Developing Countries	16	21	37	19	14	1	4	21	1	...	3
Major Industrial Countries	2	...	14	10	...	...	...	...	2	2	...
Ores and Metals											
Sub-Saharan Countries	23	27	61	42	38	2	2	26	--	...	12
Developing Countries	13	19	38	18	16	1	1	21	2	...	4
Major Industrial Countries	3	...	16	10	...	...	...	...	9	7	...
Manufactures											
Sub-Saharan Countries	29	34	66	48	43	3	2	26	--	...	12
Developing Countries	26	32	39	23	17	1	6	21	2	...	3
Major Industrial Countries	6	...	13	10	...	...	...	...	2	3	...

Sources: For Sub-Saharan countries, UNCTAD Secretariat, *Handbook of Trade Control Measures for Developing Countries, 1987 and Handbook Supplement, 1987* (Geneva: UN Conference on Trade and Development, 1988); for developing countries, Rafik Erzen *et al.*, "The Profile of Protection in Developing Countries," *UNCTAD Review*, Vol. 1, No. 1 (1989), pp. 29-50; and for the major industrial countries, Sam Laird and Alexander Yeats, *Quantitative Methods for Trade Barrier Analysis*, (Washington, D.C.: World Bank, 1989) and Development Research Department, World Bank, "Trade Measures Imposed by the EC, Japan and USA," (Computer tabulation, October 27, 1989).

Notes: Sub-Saharan countries consist of the 23 African countries listed in Table 2, whereas the developing countries consist of a sample of 50 countries, including 8 Asian countries, 8 Middle-East countries and 10 South American countries. Statistics in the upper panel refer to averages across all product categories. In the lower panel, non-fuel categories are defined as:

Foods SITC 0 + 1 + 22 + 4
 Agr. Raw Materials SITC 2 less (22 + 27 + 28)
 Ores and Metals SITC 27 + 28 + 67 + 68
 Manufactures SITC 5 to 8 less (67 + 68)

Only general measures are compiled. Health and product standards are excluded, as are discriminatory measures applied under the terms of preferential trade arrangements. The data refer to 1987 for the Sub-Saharan countries and to 1986 for other countries.

- 1/ Percentage of tariff lines affected by MTBs, excluding restrictions on imports of alcohol and tobacco.
- 2/ Customs duties plus customs surcharges and surtaxes, stamp taxes, other fiscal charges, and taxes on foreign exchange transactions.
- 3/ Advance import deposits, multiple exchange rates, and licensing or other restrictions on the acquisition and use of foreign exchange.
- 4/ Automatic and surveillance licensing, special monitoring of imports for statistical purposes, and investigations and actions under anti-dumping and countervailing duty regulations.
- 5/ Includes voluntary export restraint (VER) agreements and import quotas under the Multi-fibre Arrangement.
- 6/ Restrictive measures enforced against imports of alcoholic beverages and tobacco products are excluded.
- 7/ Restrictive measures against iron and steel imports (SITC 68) are excluded from ores and metals and included in manufactures.
- 8/ Restrictive measures against chemical imports (SITC 5) are excluded.

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