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Trade Creation, Trade Diversion and Effective Protection in the Central American Common Market

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Aggregate analyses suggest that the formation of the Central American Common Market (CACM) has resulted in little or no trade diversion, but different conclusions apply when the import data are appropriately disaggregated. Increases in the effective rates of protection for consumer goods have led to increased demand for extra-regional imports of intermediate inputs and decreased demand for extra-regional imports of final goods. On balance, the CACM is a trade-diverting customs union for non-durable consumer goods: trade-creating effects are present in Honduras and Costa Rica, but trade-diverting effects dominate in Guatemala, El Salvador and Nicaragua.

A number of economists have concluded that the formation of the Central American Common Market (CACM) has, on balance, resulted in trade creation and a more efficient allocation of resources in the region.[1] Moreover, no evidence has been found for trade diversion of manufactured goods, with the exception of edible oils and petroleum products.

In sections I and II of this paper it is argued, first, that such findings are paradoxical, given that industrialisation in a protected market is the *raison d'être* of the CACM, and, secondly, that different conclusions may well apply if the import data are appropriately disaggregated. The apparent paradox disappears in section III, where it is shown that there has been trade diversion in a broad range of consumer goods. A summary of the empirical results and some policy implications make up the concluding section of the paper.

I. CENTRAL AMERICAN INDUSTRIAL DEVELOPMENT
(a) *Industrialisation and Effective Protection*

The conclusion that the CACM is a trade-creating customs union with little trade diversion is inconsistent with three salient features of Central American integration. First, a major goal of the integration programme is to accelerate import-substituting industrialisation on a regional level, and it appears that this objective has been successfully pursued. It is unlikely that industry's contribution to gross regional product would have increased from 13% in 1960 to more than 17% by the end of the decade, had the CACM not been formed. Import substitution implies, however, a diversion

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of trade away from low-cost foreign suppliers to higher-cost Central American producers. This implication is at odds with a conclusion that the CACM is characterised by the dominance of trade creation over trade diversion.[2]

Secondly, manufactured goods other than processed food account for most of the expansion of intraregional trade. In 1968, 12·4% of intraregional imports were processed food, beverages and tobacco, 76·1% other manufactures, and only 10·3% agricultural commodities.[3] The agricultural sector, in which the potential for trade creation without trade diversion is very high, is subject to continued tariff and non-tariff barriers to intraregional trade.[4] The expansion of trade in manufactures has resulted chiefly in intraindustry rather than interindustry specialisation, so the effect should be one of lower marginal costs through longer production runs and a reduction in the variety of products produced in individual plants.[5] These economies manifest themselves in the substitution of Central American for foreign goods through the operation of what Corden has labelled a 'cost-reduction effect'.[6]

Thirdly, and most importantly, the common external tariff of the CACM provided for a general increase in nominal and effective rates of protection for final demand goods. Increased protection—even though on a regional rather than a national level—implies potential *diversion* of trade away from non-member countries.

It is not self-evident that Central America has become more protectionist since the formation of the common market in 1961. Although the unweighted average tariff rose from 34% in 1959 to 50% in 1967, with increases primarily in consumer goods and construction materials,[7] one can also cite the fact that approximately half of all extra-regional imports in Central America in recent years were exempted from payment of duty. A much smaller proportion of imports were exonerated from duty prior to the formation of the CACM, so one recent study concludes that 'the overall rate of nominal protection in Central America has fallen and consequently the overall rate of effective protection'.[8]

The fact that *some* purchasers are exempted from payment of duty on *some* imports does not, however, necessarily imply a reduction in the rate of protection in any meaningful sense. Viner demonstrated long ago that tariff reductions that discriminate among countries may lead to a *less efficient* allocation of resources. Similarly, tariff exemptions that discriminate among users and commodities may well *increase* rather than reduce the rate of protection for domestic producers.

In Central America, governments rarely allow public agencies, charities and other favoured institutions to import, free-of-duty, final goods that are available from local producers. Moreover, duty exemptions granted to local producers under industrial development laws are for the importation of raw materials, intermediate goods and capital equipment, not final demand goods. Removal of duties on imported inputs, while maintaining or increasing the tariff rate on a finished product, necessarily increases the effective rate of protection for the favoured activity. The effect of liberal

duty exemptions has thus been to increase rather than decrease the rates of effective protection for final goods produced in the region.[9, 10]

(b) *The Importance of Tariff Exemptions in Central American Industry*

Data on import duties exonerated under industrial development laws are incomplete, but the estimates reported in Table 2 suggest that this type of fiscal incentive became increasingly common in all five countries during the past decade. These estimates probably understate the true level of exemptions, and the data for each country reflect differences in the ability to record such exemptions as well as differences in industrial policy. Nevertheless, available data suggest that exemptions granted to industrial firms amounted to approximately half the value of total revenue from duties collected by the end of the 1960s.[11]

TABLE 1

CENTRAL AMERICA: TARIFF RATES BEFORE AND AFTER THE ESTABLISHMENT OF A COMMON EXTERNAL TARIFF (PERCENTAGE UNWEIGHTED AVERAGES)

	Number of product categories	Average tariff 1959	1967
1. Nondurable consumer goods	49	68	122
2. Durable consumer goods	17	27	42
3. Fuels and lubricants	6	63	46
4. Raw materials and intermediate products for agriculture	7	7	9
5. Raw materials and intermediate products for industry	77	31	35
6. Construction materials	13	29	73
7. Capital goods for agriculture	7	7	7
8. Capital goods for industry	44	9	11
9. Transport equipment	6	8	9
All commodities	226	34	50

Source: IMF tabulations reported in Havelock Brewster, 'The Choice between Efficiency and Industrial Balance: Protection and Employment in the Central American Common Market', Guatemala, April 1972, section 3, table 1.

Partial data on the proportion of imported intermediate goods exempted from payment of duty by virtue of industrial development laws are available for three countries in Central America (see Table 3). It is interesting to note that many of these imports are not recorded in the Uniform Classification of Imports by Economic Use (CUODE) under the category corresponding to raw materials and intermediate goods for industry. Textiles, for example, are classified as non-durable consumer goods, and component parts for motor vehicle assembly plants are classified as consumer durables.

TABLE 2

CENTRAL AMERICA: IMPORT DUTIES EXONERATED UNDER INDUSTRIAL DEVELOPMENT LAWS, 1960–70 (MILLIONS OF U.S. DOLLARS)

	CACM	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica
1960	7·2	2·6	2·5	0·03	0·5	1·6
1961	7·8	2·6	2·3	0·08	0·2	2·5
1962	11·8	2·8	2·6	0·3	4·0	2·1
1963	20·0	5·1	3·7	1·2	3·4	6·7
1964	30·1	5·4	6·5	2·4	4·9	10·9
1965	38·6	5·0	8·5	3·0	7·1	15·0
1966	45·4	6·3	9·5	4·1	8·6	16·9
1967	51·1	13·0	10·0	4·2	10·3	13·7
1968	55·6	14·8	10·4	6·1	12·3	12·0
1969	58·4	13·8	11·0	6·0	13·0	14·6
1970	77·7	14·8	10·7	7·0	12·7	32·5

Source: SIECA, *El Desarrollo Integrado de Centroamérica en la Presente Década* (BID-INTAL, Buenos Aires, 1973), appendix 10, table 26, p. 147.

The data reported for three countries in Table 3 indicate that extra-regional imports of raw materials and intermediate goods increased at a fast rate (13% to 20% per annum) in the mid-1960s, but the duty-free portion of these imports increased at an even faster rate (33% to 62% per annum). As a result of these disparate growth rates, after 1966 one-half to three-quarters of intermediate imports for industry were exonerated from payment of duty in Guatemala, El Salvador and Costa Rica (see columns 5 and 6 of Table 3). Data are not available for Honduras or Nicaragua, but the trend is unlikely to be very different in those two countries.

It is not known what proportion of intermediate goods for industry was exempted from payment of import duties in the 1950s, but fewer fiscal incentive contracts were awarded each year to industrial firms in the 1950s than in the 1960s. Central American governments granted an average of 49 contracts annually from 1952 to 1959. After the formation of the CACM the number of such contracts awarded each year increased rapidly from 137 in 1960 to a high of 466 in 1965.[12] These contracts exonerate industrial firms from payment of import duties and other taxes for an initial period of five to ten years. A contract is almost always renewed when it expires, so 'temporary' incentives have become a permanent feature of the Central American manufacturing sector.[13]

Each government in Central America grants fiscal incentives on the basis of *national* legislation, but the formation of the CACM led to an escalation in tariff exemptions granted to industry. The common external tariff is in reality a *maximum* external tariff, because member countries can exempt industrial firms from payment of duty on intermediate goods, thereby increasing the rate of protection for value-added in later stages of manufacture.[14] When production is threatened by imports from partner countries (trade creation), it is natural for a government to attempt to

TABLE 3

CENTRAL AMERICA: RELATIONSHIP BETWEEN DUTY-FREE AND TOTAL
EXTRA-REGIONAL IMPORTS OF RAW MATERIALS AND INTERMEDIATE GOODS FOR
INDUSTRY, 1961–70 (MILLIONS OF U.S. DOLLARS)

	Duty-Free		Total		Duty-free × 100 total	
	(1)	(2)	(3)	(4)	(5)	(6)
Guatemala						
1961	5·8	4·9		23·7		20·7
1962	8·1	6·8		23·2		29·4
1963	11·9	9·6		41·4		23·3
1964	19·4	15·3		45·3		33·8
1965	18·4	14·3		52·2		27·4
1966	18·3	14·0		47·4		29·5
1967	53·4	38·4		76·9		50·0
1968	n.a.	n.a.		70·8		—
Average annual rate of increase 1963–67	62%	56%	—	19%		
El Salvador						
1963	8·6		36·5	27·5	23·5	
1964	20·6		43·0	33·6	48·0	
1965	21·5		48·7	38·9	44·2	
1966	31·1		58·3	43·9	53·3	
1967	35·7		65·1	48·9	54·9	
1968	35·3		66·2	49·5	53·4	
1969	42·6		72·7	n.a.	58·6	
Average annual rate of increase 1963–68	40%	—	13%	13%		
Costa Rica						
1963	n.a.		31·8	33·3	—	
1964	17·3		35·7	35·5	48·6	
1965	33·5		51·8	46·7	64·5	
1966	31·8		48·9	43·1	63·9	
1967	37·1		58·1	43·7	63·8	
1968	46·4		71·4	51·1	73·4	
1969	48·9		78·5	n.a.	62·3	
1970	71·5		102·2	n.a.	70·0	
Average annual rate of increase 1964–68	33%	—	20%	11%		

Notes:
n.a.—not available.
Entries in columns 2, 4 and 6 refer to raw materials and intermediate goods classified in CUODE category 5.
Entries in columns 1, 3 and 5 refer to actual imports of raw materials and intermediate goods, irrespective of their classification in the CUODE.
Sources: Alfredo Guerra-Borges, *Evaluación de la Política de Fomento Industrial en Guatemala* (Instituto de Investigaciones Económicas y Sociales, Guatemala, 1971), pp. 29–36; Consejo Nacional de Planificación y Coordinación Económica, *Programa de Desarrollo Industrial 1973–1977* (San Salvador, September 1971), Tables III–4 and IV–20; Banco Central de Costa Rica, *Algunos Indicadores Económicos del Sector Industrial* (San Jose, 1972), p. 29; S. Schiavo-Campo, 'Import Structure and Import Substitution in the Central American Common Market', Guatemala: SIECA/ROCAP, June 1971.

improve the competitive position of domestic industry by removing taxes, including taxes on imported inputs. The difficulty is that partner countries can and will retaliate by granting similar concessions to their own industries. Existing national legislation in each of the five countries thus provides that local firms receive benefits at least equal to those granted in other Central American countries to actual or potential competitors.[15]

These indirect subsidies to industries and the associated retaliation can create a general increase in imports of intermediate goods from non-member countries, a bias in import substitution against intermediate goods, and an increase in the import content of goods that are traded intraregionally. In summary, the knowledge that governments exempted an increasing proportion of raw materials and intermediate goods from payment of duties, following the formation of the CACM, lends support to the hypothesis that the observed absence of trade diversion of aggregate imports is a result of external trade creation in intermediate goods, combined with trade diversion in final demand goods.

II. TRADE CREATION AND TRADE DIVERSION

(a) *The Concept*

In standard customs union theory it is often assumed that a common external tariff exists prior to economic integration. If all imports are valued at world prices and there are no decreasing costs in the production of importables, this simplifying assumption implies that the sum of trade creation (shift from high-cost domestic production to lower-cost production in a partner country) plus trade diversion (shift from low-cost production outside the region to higher-cost production in a partner country) is equal to the expansion of intraregional imports induced by economic integration. Attention is thus focused entirely on the effects of freeing intraregional trade.

In empirical studies it is neither possible nor desirable to ignore the effects of the establishment of a common external tariff. The expansion of intraregional imports induced by the common external tariff and economic integration may be less than, rather than equal to, the sum of trade creation plus trade diversion. Changes in tariff rates and duty exemptions for imports from non-member countries give rise to trade-suppression (high-cost domestic production replacing low-cost non-member production) and external trade creation (low-cost non-member production replacing high-cost domestic production). But trade-suppression is a form of trade diversion, for it represents a shift from low- to higher-cost sources of supply.[16] Similarly, external trade creation is a form of trade creation to the extent that production is shifted to a lower-cost source of supply.

Complications arise when measured 'external trade creation' occurs in a commodity that is not produced within the region. There will then be production effects only to the extent that the foreign commodity is able to substitute for locally produced goods. In other words, there must be substitutability in consumption, if the commodity is a consumer good, or substitutability in production, if it is an intermediate good.

Consider the case, for example, of trade diversion in nails combined with 'external trade creation' in steel wire, which is an important input in the manufacture of nails. If steel wire is not produced in the region and if domestic products such as wood and plastic are poor substitutes for steel wire, then the 'external trade creation' measured by the investigator is not a form of trade creation at all. Nails cannot be produced without wire, so 'external trade creation' in steel wire is necessary if there is to be trade diversion in nails.

In the present paper, as in previous studies, it has not been possible to measure the extent to which 'external trade creation' represents a shift from high- to lower-cost production. The reader is thus advised to keep the inverted commas in mind, for the extent of true trade creation depends upon how good a substitute the extraregional import is for products produced within the region.

In summary, allowing for the effects of a common external tariff, gross trade creation (trade creation broadly defined) is equal to the sum of integration-induced imports from partners that replace domestic production plus the external trade creation that results in the replacement of domestic production by imports from non-member countries. Similarly, gross trade diversion is the sum of intraregional imports that replace extraregional imports, plus the domestic production that replaces extraregional imports. The net effect on resource allocation depends on whether trade-creating or trade-diverting effects dominate.

(b) *Measurement*

Of the various methods proposed for measurement of trade creation and trade diversion, the most widely accepted is one that was used by Balassa in his study of the European Economic Community and later applied by two different investigators to Central American data.[17] The basic assumption of Balassa's method is that the income elasticities of import demand would have remained constant over time in the absence of economic integration. In other words, any change in the relationships between imports and gross domestic product—measured by income elasticities of import demand—is assumed to be due to the formation of the common market.

With this *ceteris paribus* caveat, a rise in the income elasticity of demand for total (intraregional plus extraregional) imports is evidence of gross trade creation,[18] i.e. the replacement of domestic production by imports from partner and/or non-member countries. If a rise in the total import elasticity is accompanied by a rise in the income elasticity of demand for intraregional imports, there is evidence of orthodox trade creation, i.e. the replacement of domestic production by imports from partner countries. External trade creation will be reflected in a rise in the income elasticity of demand for extraregional imports.

Similarly, a fall in the income elasticity of demand for extraregional imports is evidence of gross trade diversion. If the fall in the extraregional elasticity is accompanied by a rise in the intraregional elasticity, there is

evidence of trade diversion narrowly defined, i.e. the replacement of imports from non-members by imports from partner countries.

The approach used in this study follows Balassa in assuming constant income elasticities of import demand in the absence of economic integration; it differs in employing regression analysis in order to test for the significance of observed changes in elasticities. The technique of ordinary least squares has been used to fit log-linear equations of the form $\log M = \log a + b \log Y + \log u$, which is equivalent to $M = aY^b u$ where M is value of imports, a is a constant term, Y is gross domestic (regional) product and u is a random disturbance term. The coefficient 'b' is thus the income elasticity of import demand, which is constant for all Y.[19]

For the purposes of the present study, the pre-integration period of each Central American country begins in the year 1953 and ends the year prior to entry into the CACM, i.e. 1960 for Guatemala, El Salvador and Nicaragua, 1961 for Honduras and 1962 for Costa Rica. The post-integration period begins in 1961, 1962 and 1963 for these respective countries, and ends in 1968. Data for years after 1968 are excluded because of the disruption of intraregional trade following the 'migration war' between El Salvador and Honduras in July 1969. Years prior to 1953 are excluded because detailed trade data do not exist. For Central America as a whole, the pre- and post-integration periods are defined as 1953–60 and 1961–68 respectively.

This definition of 'pre-integration' and 'post-integration' periods may bias the results in favour of trade creation, for two reasons. First, the income elasticity of demand for aggregate imports falls in the recession years 1957–61, and this may be due to the fact that domestic producers can easily satisfy demand during a period of recession, while supply rigidities cause a spillover into imports during years in which demand is rising rapidly.[20] Secondly, there was considerable trade liberalisation in the pre-integration period, with annual rates of increase in intraregional imports averaging 16% in 1953–60 compared to 30% in 1961–68. For reasons that are elaborated at some length elsewhere, it is very likely that this early expansion of intraregional trade resulted in trade diversion rather than trade creation.[21] In summary, the income elasticities of demand for extraregional imports may well be lower than 'normal' in the pre-integration period, and this will impart a downward bias to estimates of trade diversion.

(c) *Need for Appropriate Disaggregation of Trade Data*

When the income elasticities of import demand were estimated using the OLS technique, the results confirmed the findings of previous studies that there is evidence of trade creation and no evidence of trade diversion of *aggregate* imports for Central America as a whole.[22] At an aggregate level, industrialisation and the expansion of intraregional trade do not appear to have been at the expense of extraregional imports. But aggregate analyses can be misleading, because changes in the structure of trade are ignored. Import substitution, intraindustry specialisation and increases in

the effective protective rate for final goods lead to a *rise* in the income elasticity of demand for extraregional imports of intermediate goods and a *fall* in the income elasticity of demand for extraregional imports of final goods. These two effects could conceivably offset each other at the aggregate level and account for the virtually unchanged extraregional elasticity in Central America.

A disaggregate analysis of trade creation and trade diversion is clearly needed for any region that combines economic integration with an early stage of import-substituting industrialisation. The only disaggregate study currently available for the CACM is based on the one-digit level of the Standard International Trade Classification, and reaches the conclusion that 'manufacturing growth was apparently not of the diversionary sort, since the average [*income elasticity of demand for total imports in SITC categories six and eight*] rose from 0·3 during the pre-integration period to 1·3 in the post-integration period'.[23] In a disaggregate analysis it is, however, important to distinguish between intermediate and final goods. Since the SITC is not based on such a distinction, it is preferable to use the Uniform Classification of Imports by Economic Use (CUODE).

TABLE 4

CENTRAL AMERICA: INTRA-REGIONAL IMPORTS AS A PERCENTAGE OF TOTAL
IMPORTS, BY CUODE CATEGORY, 1958–68

Commodity category	1958	1962	1964	1966	1968
1. Non-durable consumer goods	6·9	16·1	28·9	40·5	50·9
2. Durable consumer goods	1·3	2·9	5·2	10·9	15·1
3. Fuels and lubricants	0·2	0·3	10·4	8·7	8·3
4. Raw materials and intermediates for agriculture	3·7	8·9	6·2	11·5	16·9
5. Raw materials and intermediates for industry	6·1	14·3	16·6	18·6	20·8
6. Construction materials	3·3	9·0	13·0	18·4	28·2
7. Capital goods for agriculture	2·5	3·1	3·0	6·6	9·0
8. Capital goods for industry	2·1	1·1	1·1	3·1	4·6
9. Transport equipment	1·1	3·2	0·9	0·3	0·8
10. Various products	6·5	3·7	14·9	23·9	15·9
All Commodities	4·1	9·2	13·8	18·7	24·1

Source: S. Schiavo-Campo, 'Import Structure and Import Substitution in the Central American Common Market', Guatemala: SIECA/ROCAP, June 1971.

Table 4 shows the importance of intraregional imports in the supply of total imports for each of the ten CUODE categories in selected years. For all commodities, producers within the region supplied nearly a quarter of total imports by 1968. But only in category 1—consumer non-durables— did Central American producers supply more than half of total imports by 1968. This suggests that the expansion of intra-regional trade is more

likely to have resulted in trade creation or trade diversion for consumer non-durables than for any of the other CUODE commodity categories.

Table 5 shows the relative importance of CUODE commodity categories in intraregional trade for selected years. In 1968, consumer non-durables accounted for 52·5% of all intraregional imports, consumer durables for 5·8% and intermediate goods for industry 25·8%.[24] The results of the analysis for the other seven categories are not reported in section III below, because the contribution of these commodities to the expansion of intraregional trade, and thus to trade creation or trade diversion, is minimal.[25]

TABLE 5

CENTRAL AMERICA: PERCENTAGE DISTRIBUTION OF INTRA-REGIONAL
IMPORTS AMONG CUODE CATEGORIES, 1958–68

Commodity Category	1958	1962	1964	1966	1968
1. Non-durable consumer goods	44·9	46·2	50·0	51·9	52·5
2. Durable consumer goods	3·5	3·2	3·7	6·1	5·8
3. Fuels and lubricants	0·4	0·3	4·6	2·2	1·5
4. Raw materials and intermediates for agriculture	4·0	4·8	2·6	3·2	3·6
5. Raw materials and intermediates for industry	30·5	33·8	30·6	26·4	25·8
6. Construction materials	6·0	7·3	5·9	5·8	6·8
7. Capital goods for agriculture	2·4	1·1	0·8	1·0	0·9
8. Capital goods for industry	5·8	1·5	1·1	2·4	2·5
9. Transport equipment	1·2	1·5	0·3	0·1	0·1
10. Various products	1·3	0·4	0·4	0·9	0·5

Note: Column entries may not sum to 100·0 because of rounding.
Source: S. Schiavo-Campo, 'Import Structure and Import Substitution in the Central American Common Market', Guatemala: SIECA/ROCAP, June 1971.

The CUODE classification was revised in 1963–64, but SIECA (the secretariat of the CACM) has classified imports for the years 1963–68 in terms of the old system. There thus exists a consistent historical series on which to base an analysis. The division of imports between intraregional and extraregional sources of supply is, however, not known for CUODE categories in the years 1953–57 and 1959–61. Intraregional imports for these years have been estimated using data on the structure of trade in 1958. This means that the disaggregate data for intraregional imports in the pre-integration period are subject to unknown measurement errors. To measure trade creation and trade diversion it is, however, necessary only to have good data on total imports and extraregional imports. Extraregional imports by CUODE category are computed as the difference between total imports and estimated intraregional imports. Given the low volume of intraregional trade in the pre-integration period, this should not be a serious source of error in estimating income elasticities for extraregional imports.

TABLE 6

CENTRAL AMERICA: TESTS FOR CONSTANCY OF INCOME ELASTICITIES OF DEMAND
FOR IMPORTS OF CONSUMER GOODS AND INTERMEDIATES FOR INDUSTRY

	Total imports Elasticity		F	Extraregional imports Elasticity		F
	Pre	Post	Ratio	Pre	Post	Ratio
Central America						
Non-durable consumer goods	0·84 (0·17)	1·40 (0·06)	9·74**	0·68 (0·23)	0·15 (0·09)	5·47*
Durable consumer goods	1·22 (0·22)	1·49 (0·16)	0·96	1·20 (0·23)	1·20 (0·18)	0·00
Raw materials and intermediates for industry	1·76 (0·14)	2·40 (0·13)	9·67**	1·67 (0·16)	2·19 (0·15)	4·82*
Guatemala						
Non-durable consumer goods	0·90 (0·32)	1·09 (0·18)	0·28	0·77 (0·38)	0·06 (0·12)	3·47†
Durable consumer goods	1·50 (0·54)	1·25 (0·28)	0·18	1·48 (0·55)	1·01 (0·30)	0·59
Raw materials and intermediates for industry	2·05 (0·15)	3·20 (0·42)	6·27*	1·91 (0·14)	3·21 (0·46)	6·96*
El Salvador						
Non-durable consumer goods	1·22 (0·23)	1·50 (0·12)	1·07	1·03 (0·33)	0·33 (0·17)	3·30†
Durable consumer goods	2·29 (0·36)	1·19 (0·27)	4·45†	2·29 (0·36)	0·83 (0·33)	5·74*
Raw materials and intermediates for industry	2·66 (0·31)	2·38 (0·16)	0·60	2·72 (0·22)	2·42 (0·17)	0·83
Honduras						
Non-durable consumer goods	0·36 (0·25)	1·55 (0·13)	17·95**	0·04 (0·29)	0·08 (0·17)	0·02
Durable consumer goods	0·66 (0·23)	1·78 (0·16)	16·01**	0·59 (0·24)	1·63 (0·17)	12·24**
Raw materials and intermediates for industry	1·02 (0·26)	2·54 (0·21)	20·66**	0·96 (0·28)	2·33 (0·23)	14·71**
Nicaragua						
Non-durable consumer goods	1·38 (0·17)	1·26 (0·09)	0·32	1·29 (0·22)	0·14 (0·16)	10·90**
Durable consumer goods	0·35 (0·36)	1·87 (0·16)	13·75**	0·24 (0·40)	1·63 (0·20)	7·95**
Raw materials and intermediates for industry	1·85 (0·40)	1·43 (0·14)	1·06	1·81 (0·43)	1·14 (0·13)	2·67
Costa Rica						
Non-durable consumer goods	0·52 (1·08)	1·87 (0·20)	53·39**	0·43 (0·09)	0·28 (0·23)	0·51
Durable consumer goods	0·81 (0·12)	1·06 (0·45)	0·49	0·80 (0·12)	0·76 (0·38)	0·01
Raw materials and intermediates for industry	0·83 (0·19)	1·57 (0·23)	5·00*	0·79 (0·20)	0·99 (0·27)	0·31

Notes:
The figures in parentheses are the standard errors of the estimated elasticities.
Pre = Pre-integration period.
Post = Post-integration period.
(†) indicates that the F-ratio is significantly different from zero at the 90% level of confidence, (*) at the 95% level, and (**) at the 99% level.

III. RESULTS OF THE DISAGGREGATE ANALYSIS

(a) *Regression Equations*

The regression equations for Central America as a whole and for each member country of the CACM are available from the author upon request. The estimated elasticities and standard errors are listed in Table 6, along with a test for significance of the difference between pre-integration and post-integration elasticities.[26] The F-ratio relevant to this test is listed to the right of each pair of elasticities; its critical value is 3·18 at the 90% level of confidence, 4·75 at the 95% level and 9·33 at the 99% level.

(b) *The CACM*

For Central America as a whole, there is evidence of both trade creation and trade diversion in non-durable consumer goods. At the same time, there is evidence of external trade creation in raw materials and intermediate goods for industry. The estimated income elasticity in the post-integration period is only 0·15 for extraregional imports of consumer non-durables, compared to 2·19 for intermediate goods. These results are consistent with the thesis that the CACM is characterised by trade diversion in final goods, combined with external trade creation in the intermediate inputs required to produce these goods.

A question arises as to whether the CACM is, on balance, a trade-creating or a trade-diverting customs union with respect to non-durable consumer goods. At least one economist has interpreted any rise in the income elasticity of demand for total imports of a product group as evidence of net trade creation and improved resource allocation.[27] Most students, however, follow Viner in examining both trade creation and trade diversion to determine the net effect on allocative efficiency. The question is, thus, whether the positive effects of trade creation are sufficient to outweigh the negative effects of trade diversion.

There is no simple answer to this question when, as in the case of consumer non-durables, there is a significant amount of both trade creation and trade diversion. One approach, which has been used elsewhere,[28] is to compare the hypothetical imports that would have been observed had the CACM not been formed with actual imports during the CACM years. If the pre-integration equations are projected into the post-integration period, actual total imports of consumer nondurables are U.S.$47 million greater than hypothetical imports in the terminal year 1968, while actual extra-regional imports are $52 million less than hypothetical imports. In other words, the evidence suggests that there was net trade diversion in 1968. Similar results can be obtained for each year in the post-integration period. Summing over the period 1961–68, there appears to have been trade creation amounting to $135 million and trade diversion amounting to $218 million, i.e. net trade diversion of $83 million in the first eight years of the CACM.[29]

Unlike the case of consumer non-durables, economic integration appears to have had little effect on Central American imports of durable consumer goods. This result is understandable for three reasons. First, and

most importantly, motor vehicles dominate this category of imports. Vehicles are one of the few items not included in the common external tariff, thus any change in demand would not be ascribed to a common market effect. Secondly, many of the products in this category are merely assembled in the region and thus are often ineligible for free trade. Thirdly, the component parts imported by assembly plants are classified as consumer durables rather than as intermediate inputs for industry. It is thus impossible to distinguish between intermediate and final goods in the case of assembly activity.[30]

(c) Member Countries

The regression results suggest that effects on resource allocation in member countries have been varied. The elasticities and tests reported in Table 6 indicate that for Guatemala, El Salvador and Nicaragua the CACM has been a trade-diverting customs union in consumer non-durables. Intraregional imports of consumer non-durables appear to have displaced foreign rather than domestic production, for in none of these countries is there statistically significant evidence of trade creation.

Aggregate analyses provide no evidence of trade diversion in Guatemala or Nicaragua; but the results are different when the import data are appropriately disaggregated. In Guatemala, trade diversion of consumer non-durables has been compensated by external trade creation in intermediate inputs for industry. In Nicaragua it is external trade creation in durable consumer goods that has offset the trade diversion of consumer non-durables.

The results for Honduras are particularly interesting because it is often asserted that this country left the CACM at the end of 1970 due to dissatisfaction arising from trade diversion.[31] The present analysis does not, however, provide any evidence of trade diversion in Honduras. For consumer non-durables, the income elasticity of demand for extraregional imports is not significantly different from zero before or after entry into the CACM. The low elasticity in the pre-integration period is a reflection of Honduras' protectionist commercial policy, which included quantitative restrictions on imports as well as tariff barriers. The significant rise in the total import elasticity from 0·36 to 1·55 is evidence of orthodox trade creation, i.e. the replacement of Honduran production of non-durables by lower-cost imports from partner countries. Furthermore, there is a large and significant rise (from 0·96 to 2·33) in the income elasticity of demand for imported intermediate goods, which is evidence of external trade creation in inputs for Honduran industry.

In Costa Rica, like Honduras, there is evidence of trade creation in non-durable consumer goods and little evidence of trade diversion. The demand for extraregional imports of consumer durables and intermediate goods appears, however, to have been affected very little by the CACM. Costa Rica is the only country for which there is evidence of orthodox trade creation (rather than external trade creation) in raw materials and intermediate goods for industry. Costa Rica's income elasticity of demand

for total imports of intermediates was, however, quite low in the pre-integration period and is still, with Nicaragua, much lower than that of the three northern countries.

(d) Remaining Aggregation Problems

It is surprising that there is evidence of external trade creation in intermediate goods for only two of the five countries, given that one-half or more of these imports were exempted from payment of duties by the end of the period under study. This result may stem from two distinct causes. First, intermediate goods are often classified as consumer goods because of deficiencies in the trade data and because it is sometimes impossible to record the final destination of an imported good in a market economy. Secondly, it is quite possible that external trade creation in some intermediates has been compensated by trade diversion in other intermediates which are more easily produced within the region.

A related problem of aggregation and classification lessens the importance of the observed external trade creation for consumer durables in Honduras and Nicaragua and the trade diversion for the same category of commodities in El Salvador. These results appear to be caused by an exogenous upward shift in demand for motor vehicles in the first two countries and a downward shift in demand in the third. The regression equations could be re-estimated with imports of *consumer durables less motor vehicles* as the dependent variable. This has not been done here because in any case 'consumer durables' is a very heterogeneous commodity category that includes an unknown but important proportion of intermediate goods.

IV. CONCLUSION

(a) Summary of the Empirical Results

The evidence now available for the CACM indicates that there has been substantial trade diversion of non-durable consumer goods, an important commodity category that accounted for 52% of intraregional trade by the end of the period under study. External trade creation in intermediate goods compensated for trade diversion in final goods and accounts for the observed absence of trade diversion in aggregate studies. There was considerable compensating trade creation in consumer non-durables, but on balance the CACM appears to be a trade-diverting customs union for non-durable consumer goods.

For member countries there is also evidence of both trade creation and trade diversion in consumer non-durables. Honduras and Costa Rica have experienced trade creation, while the other three countries have experienced trade diversion. Moreover, there is little or no evidence of trade diversion in the two 'trade creation' countries and little or no evidence of trade creation in the three 'trade diversion' countries.

These empirical findings are summarised in Table 7. No inference of trade creation or trade diversion has been made unless there is at least a 90% statistical probability that the relevant income elasticity changed

following economic integration. It should be emphasised that the results for consumer non-durables are biased against trade diversion because (1) a number of recession years were included in the pre-integration observations, (2) the expansion of intra-regional trade in the pre-integration period was probably trade-diverting, and (3) some of the inputs for industry have been classified as non-durable consumer goods.

TABLE 7

TRADE CREATION AND TRADE DIVERSION IN CENTRAL AMERICA

Country	Non-durable consumer goods	Durable consumer goods	Raw materials and intermediates for industry
CACM	Trade creation** and trade diversion**		External trade creation**
Guatemala	Trade diversion*		External trade creation**
El Salvador	Trade diversion*	Trade diversion**	External trade creation**
Honduras	Trade creation**	External trade creation**	External trade creation**
Nicaragua	Trade diversion**	External trade creation**	
Costa Rica	Trade creation**		Trade creation**

Notes: * Inference of change in the relevant income elasticity at the 90% or higher level of confidence.
       ** Inference of change in the relevant income elasticity at the 95% or higher level of confidence.

The results for consumer durables are included where changes in income elasticities are statistically significant, but this category of goods is so heterogeneous that it is difficult to infer that resource allocation was affected by trade diversion or external trade creation. It is, however, interesting to note that *extraregional* imports of consumer durables aggravated Nicaragua's balance of payments problems in the 1960s. In February 1969 fiscal and balance of payments problems in Nicaragua provoked a brief crisis and a closing of the border to intraregional imports.

Although there is significant evidence of external trade creation in intermediate goods for only two countries, this may be due to the fact that many imported inputs for industry are classified as consumer goods. Since an increasing proportion of intermediate goods were exempted from import duties in the CACM, one would have expected evidence of external trade creation in each of the five member countries.

(b) *Policy Implications*

The finding of external trade creation in intermediate goods confirms the general view that 'Central American industrialisation is skin-deep, so

to speak. There is scarcely any production of capital goods or the heavy category of intermediates. There have come into existence a large number of plants, many of less than optimum size, which have bitten off a tiny chunk of value added at the finishing end of the processing peration'.[32] Duty exemptions in the past may have appeared to be an attractive way to subsidize production, but their adverse effects on the economy are now being felt. These indirect subsidies have penalised existing and potential production of intermediate goods and have encouraged the establishment and expansion of plants that are highly dependent on imported inputs.

Member countries of the CACM recognised very early the need to harmonise fiscal incentives and to prohibit tariff exemptions for intermediate goods produced in Central America. But the realisation of these objectives requires a degree of co-operation that appears to be absent in Central America. The stormy history of the Agreement on Fiscal Incentives, which was signed in 1962, ratified in 1969 and is not yet fully effective, is in part due to the problem of enforcing limits on tax concessions granted in five independent countries. Similarly, article IX of the Treaty of Managua, and numerous agreements since, prohibit exemptions from payment of import duty for products available from Central American industry. In recent years, violations of this rule have been a serious source of conflict within the CACM.

Developing countries can realise gains not only through trade creation, but also—perhaps primarily—through efficient trade diversion. Regional specialisation can reduce the cost of import substitution, a cost that can be very high in the autarkic industrialisation of small economies. In Central America, many of these potential gains have not been realised because of an unplanned and undesired industrial policy that grants too much protection to some industries and too little to others. While all member countries agree collectively that the indiscriminate granting of fiscal incentives should end, each one separately has an incentive to cheat, either in the hope that partner countries will continue to follow the rules, or out of suspicion that they are already cheating.

The optimist might hope that lack of co-operation in limiting fiscal incentives is a problem unique to Central American integration, but instinct suggests that this is not the case. The Andean Group recently agreed to establish a *minimum* common external tariff intended primarily to end the 'tariff exemptions that have been widely employed, in particular in Chile and Peru, to encourage the establishment of domestic industries using imported inputs'.[33] Time will show whether or not the Andean Group is more successful than Central America has been in ending this practice.

APPENDIX

SOURCES OF DATA

The disaggregate import data are from Salvatore Schiavo-Campo, 'Import Structure and Import Substitution in the Central American Common Market', Guatemala, 1971, Appendix Table A-2. With the exception of El Salvador, the Gross Domestic Product

series are from International Monetary Fund, *International Financial Statistics*, supplement to the 1971 issues. The GDP data were converted to U.S. dollars at the official rate of exchange except in the case of Nicaragua, 1953–62 and Costa Rica, 1953–61 because of dual exchange rates that were in effect. A proxy exchange rate for Nicaragua was calculated by giving the official rate a weight of 0·7 and the fluctuating free market rate a weight of 0·3. The proxy for Costa Rica was calculated as the ratio of the dollar value of imports to their c.i.f. value in domestic currency. The GDP series for El Salvador is from Schiavo-Campo, Appendix Table A-5, and the original source is the Central Reserve Bank of El Salvador.

Notes

1. See Wilford [1970], Nugent [1971] and Schiavo-Campo [1971].
2. Schiavo-Campo's research 'confirms the co-existence, in the CACM years, of two interconnected phenomena: the substitution of regional production for extra-area imports and the expansion in the regional market size which made it possible'. Yet the same author claims, paradoxically, that 'the results of earlier studies, leading to the conclusion that net trade creation (more efficient resource allocation) has resulted from the CACM, are confirmed by the findings of the present study'. [*Schiavo-Campo 1971, pp. viii, 91*].
3. The source is Rosenthal [*1973, p. 19 and Table 11*]. If one's definition of 'manufactures' is restricted to categories 6 and 8 of the Standard International Trade Classification (SITC), then 'manufactures' accounted for 47·3% of the value of intraregional imports in 1968.
4. On the failure of economic integration in Central America's agricultural sector, see Lizano [1972].
5. For a detailed discussion, see Willmore [1972].
6. In Corden [1972].
7. See Table 2. Average tariffs for individual countries are not shown because the basic pattern is the same in each country.
8. Brewster [*1972, section 3*].
9. It is interesting to note that the secretariat of the CACM recognises that 'the rising proportion of customs franchises for raw materials and intermediate goods given throughout the past decade caused an increase in tariff protection for consumer goods; in other words the effective protection tended to rise during this period' [*SIECA 1973, Appendix 2, p. 15*].
10. Any attempt to measure changes in effective rates of protection is hampered by lack of data in Central America, particularly by the absence of input-output tables. Nugent [1968] has made a conservative but rough estimate of effective protection for non-durable consumer goods in the CACM. Using weighted average tariffs on extra-regional imports of inputs for the years 1964–66, 'semi-hypothetical' input coefficients and a low assumed nominal rate of protection (50%), Nugent arrived at an estimate of 154% as the protective rate for value-added in consumer nondurables. Applying the same input coefficients and nominal tariff to the 1960–63 data in Nugent's paper yields an estimate of 126%. This increase in effective rate of protection is to be expected when an increasing proportion of inputs is exempted from payment of import duties.
11. There are no data available on profits taxes exonerated under industrial development legislation. A World Bank mission estimated, however, 'that income taxes paid by the industrial sector averaged far less than 1% of total industrial output in 1969 or roughly 4–6% of profits. These estimates, based on fragmentary data, confirm the mission's general impression that much of the potential for easing the fiscal squeeze by tapping the rapidly growing industrial sector was squandered by the indiscriminate granting of fiscal incentives in addition to poor tax administration and large-scale evasion' [*IBRD 1971, p. 15*].
12. No fiscal incentive contracts were signed in Costa Rica or Honduras in the period 1952–59. See IBRD [*1971, annex table 35*].
13. For details, see IBRD [*1971, pp. 14–15*] and Joel [*1971*].

14. Nicaragua, for example, granted exemptions for containers and raw materials imported by juice canners when the high tariff on the final good was replaced with a lower CACM tariff [*Watkin, 1967, p. 93*].
15. See Joel [*1971, pp. 231 and 248*].
16. This point has been made by Krauss [*1972, p. 421*]. Decreasing costs can also result in trade suppression, as is demonstrated by Corden [*1972*].
17. Balassa [*1967, pp. 1–21*], Wilford [*1970*] and Nugent [*1971, section IIB*]. For a survey of empirical studies of trade creation in Europe, see Balassa [*1967, pp. 1–5*] and Williamson and Bottrill [*1971, pp. 325–32*].
18. Balassa [*1967, p. 5, n. 3*] has unfortunately used the term 'gross trade creation' with reference to increases in intraregional trade. Others, perhaps influenced by Balassa's use of the term 'gross trade creation', have interpreted any rise in the income elasticity of demand for total imports as evidence of *net* trade creation (*see, e.g., Wilford 1970, p. 63*). One must ask, net of what? The measure is certainly not net of trade diversion.
19. It would be preferable to include a relative price term in the equation and to deflate both Y and M, but reliable price data are not available for Central America.
20. See Nugent [*1971, section IIB*].
21. Details are in Willmore [*1975*].
22. There is, however, evidence of trade diversion in El Salvador, external trade creation in Honduras and trade creation in Costa Rica [*Willmore 1975*].
23. The pre-integration period was defined as 1956–61 and the post-integration period as 1961–67 [*Wilford 1970, p. 67*].
24. The trade figures for durable consumer goods understates the importance of this category in domestic production. In 1968 Central American production supplied 98% of the apparent consumption of furniture and fixtures, 40% of electrical appliances and 23% of automotive products (assembled vehicles and replacement parts). The source is IBRD [*1971, annex table 52*].
25. With the exception of fuels and lubricants [*CUODE 3*], changes in income elasticities were not significant at the 90% level of confidence. There has definitely been trade diversion and no trade creation in petroleum products, but these are not freely traded in the CACM; intraregional trade was due almost entirely to exports from El Salvador under bilateral agreements with Guatemala, Honduras and Costa Rica.
26. See Chow [*1960*].
27. See Wilford [*1970, pp. 66–68*], where it is asserted that there is net trade creation and more efficient resource allocation in foodstuffs, raw materials and manufactured goods.
28. Balassa [*1967, pp. 11–15*] and Williamson and Bottrill [*1971, p. 328*].
29. This is a conservative estimate, for intraregional trade is valued at protected Central American prices rather than at world prices. The excess price of Central American production thus results in an overestimate of trade creation. If, for example, Central American prices for traded consumer nondurables are 20% higher then c.i.f. world prices, net trade diversion would be an estimated U.S. $142 million rather than $83 million.
30. Inability to distinguish between intermediate and final goods represents a serious obstacle to the measurement of trade creation and trade diversion. The two types of goods are often grouped together even at the seven-digit or 'product' level of the Central American Uniform Tariff Nomenclature, a classification system based on the SITC. The problem is not limited to consumer durables; inputs for such non-durables as cosmetics and pharmaceuticals are also indistinguishable from final goods in existing trade data. But the lumping of input with output is much more common in the case of consumer durables because of the importance of assembly operations in that commodity category.
31. See, for example, Holbik and Swan [*1972, pp. 8 and 36*]. For the argument that Honduras' discontent arises not from trade diversion, but rather from the effects of trade creation on Honduran production, see Willmore [*1974*] and Lizano and Willmore [*1975*].
32. IBRD [*1971, p. 9*].
33. Balassa [*1973*].

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The Dual and the Exchange-constrained Economy

*by Susan Hill Cochrane**

Nelson's model of the exchange-constrained economy is compared with Eckaus's model of the dual economy. The purpose of this comparison is to illustrate the similarity of the models in explaining unemployment of one factor as the result of the composition of demand and the scarcity of a second factor. Both authors agree to this point. However, Nelson emphasises that unemployment arises from price rigidity while Eckaus maintains that technological limits of substitution are also important. Policy implications differ depending on whether Nelson's or Eckaus's assumptions are accepted. Currie has suggested that the redistribution of income may reduce unemployment in both circumstances.

The problem of unemployment, open or disguised, has attracted almost as much attention in development economics as the process of economic growth. Two rather complex models have been constructed to give some insight into the problem. In the 1950s the model of technical dualism was developed. It was used to show that certain supply and demand conditions could generate full employment of one resource or factor and unemployment of a second factor. It was also shown that no simple increase in aggregate demand could eliminate such unemployment. In the 1960s Chenery and others developed a model of the exchange-constrained economy which showed, among other things, that the requirements of economic growth and the domestic and foreign resources available to a country may be such that growth could occur only at the cost of domestic unemployment.

In a recent article, Lauchlin Currie [*1971*] implicitly compared the problem of unemployment in a dual economy and an exchange-constrained economy. In addition, Currie suggested a solution to the unemployment problem which has not previously been examined in the context of these models. In this paper, Nelson's model of the exchange-constrained economy [*1970*] will be explicitly compared with Eckaus's model of dualism [*1955*]. The implications of Nelson and Eckaus will be discussed in the context of Currie's new solution.

Eckaus and Nelson devoted their articles to describing the technical conditions that prevent certain economies from obtaining the desired composition of output without unemployment. The key to both discussions is the existence of a scarce factor: capital in Eckaus's model and foreign exchange in Nelson's model. Despite the basic similarities of the two models,

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