Trade liberalization *and economic growth* in Central America

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This article examines the long-run relationship between export performance and economic growth in three Central American countries from 1950 to 1999. Therefore, it excludes the recent years of slowdown in the world economy, 2000-2002. The cointegration analysis supports the view that the external sector has been a key determinant of these countries' long-run rate of economic growth. The article also suggests that the trade liberalization experiences seen since the mid-1980s have had very disparate impacts on these countries' long-run rates of economic growth. Lastly, the implications of these results for trade liberalization strategies and the possible impact of a United States-Central America Free Trade Agreement are examined.

I.
Introduction

Like many other developing economies after World War II, Central American countries adopted a development strategy based on industrialization via import substitution and State-led economic growth. The strategy propelled the region's economic expansion for several decades. However, it gradually ran out of steam as the elementary phases of import substitution concluded and the countries failed to build a robust capital goods industry capable of competing internationally. By the late1970s, the import-substitution strategy had run its course, and the region increasingly faced ballooning fiscal deficits, acute inflation, supply shortages and, ultimately, severe balance-of-payments crises coupled with economic recession.

The 1980s —the "lost decade" in Latin America's economic development— were marked by a series of attempts to correct these macroeconomic disequilibria in the face of serious limitations to accessing foreign credit and capital markets. Drastic stabilization and structural-adjustment programmes were implemented aimed at reducing inflation and correcting fiscal imbalances. Two important elements of these programmes were the adoption of trade liberalization policies —to reduce tariff and non-tariff barriers— and the downsizing of the public sector.

These programmes succeeded in lowering inflation and correcting the fiscal imbalances in most of the region. In addition, they brought about a change in the composition of exports, most notably in Costa Rica and El Salvador, both of which witnessed an extraordinary growth in exports in the 1990s. However, notwithstanding this strong export drive, Central America's economic expansion in the 1990s was weaker than the one seen from 1950 to 1970, the peak years of the import-substitution period (see table 1). This contrast is also becomes apparent when rates of demographic growth are included in the analysis. Indeed, Central America's real per capita GDP grew at an average annual rate of 1.1% in the 1990's, significantly below the 2.9% average seen in the 1960s and the 1.7% witnessed in the 1970s.[1]

Central America's lacklustre economic performance did not help improve the social conditions of the population. Moreover, its dismal performance during the 1980s further worsened these conditions. With the exception of Costa Rica, more than 50% of the Central America's population lives under the poverty line or in extreme poverty.

The search for alternative strategies for improving the welfare of their populations led Central American economies, starting the in the 1990s and in some cases even as far back as the mid-1980s, to intensify their outward orientation and deepen their commercial ties with their northern neighbours. In 1994 and 1997 Costa Rica and Nicaragua signed free trade agreements with Mexico. In 2000, El Salvador, Guatemala and Honduras (the so-called Northern Triangle) followed suit, and more recently Costa Rica signed a free trade agreement with Canada. While these trade agreements may stimulate exports —and, thus, economic growth— they fall short of Central American Governments' goal of gaining access to the United States market on a footing equal to that afforded by the North American Free Trade Agreement (NAFTA) —that is, on equivalent terms regarding tariff and non tariff restrictions as those enjoyed by Mexico and Canada. In its current form, the Caribbean Basin Initiative (CBI) partly compensates that shortcoming by giving textiles and other specific products preferential access to the United States market.

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[1] See Bulmer-Thomas and Kincaid (2000).

TABLE 1

Central America: GDP growth, 1950-1999

Country	Period					
	1950-99	1950-60	1960-70	1970-80	1980-90	1990-99
Costa Rica	4.9	6.6	6.0	5.5	2.1	5.0
El Salvador	3.5	4.8	5.4	3.0	-0.8	4.6
Guatemala	3.7	3.7	5.0	5.4	0.9	4.1
Honduras	3.7	2.9	4.7	5.2	2.2	3.1
Nicaragua	3.1	5.5	6.1	0.8	-0.8	3.2

Source: Prepared by the authors with ECLAC data.

Influenced by NAFTA, Central America is currently negotiating a free trade agreement with the United States and the rest of the Americas for the not-too-distant future. This initiative is seen by the small economies as a fundamental tool for enhancing their growth potential. They expect that the Free Trade Agreement of the Americas (FTAA) would not only increase intrahemispheric exports but would also attract foreign direct investment to Central America. An important feature of the proposed FTAA is the agreement to "take into account differences in the levels of development and size of the economies of our Hemisphere, to create opportunities for the full participation of the smaller economies and to increase their level of development".[2] For the smaller economies, the recognition of such structural differences would represent a key principle to orient their initiatives and demands in the trade-negotiation process.

In accordance with the notion that the balance of payments is a fundamental constraint on developing countries' long-run economic-growth rate,[3] this article examines the relationship between export performance and economic growth in three Central American countries. It then builds upon the empirical findings to infer implications regarding trade agreements and the prospects for trade liberalization.

A main assumption of this analytical perspective, in its most simplified version, is that the difference between the rate of growth of a given country and that of the rest of the world is proportional to the ratio of its respective income elasticity of imports to that of exports. In a nutshell, the model posits that, *ceteris paribus*, the growth rate of a given country will, in the long run, diverge from that of the rest of the world if the country's income elasticity of imports is greater that the rest of the world's income elasticity for that country's exports.

The article is divided into six sections. Following the introduction, the second section presents, albeit briefly, the theoretical model adopted in this article, in the version initially introduced by A.P. Thirlwall in the early 1980s (and later referred to by P. Krugman as "the 45-degree rule"). The third section introduces the methodological considerations and the long-run econometric techniques used in the article. The fourth section applies these techniques to derive the foreign-trade elasticities. The fifth section examines the behaviour of the income elasticities of imports and exports over time and links these results with free trade negotiations and trade liberalization policies. Lastly, the conclusion and final reflections are given in the sixth section.

[2] See Fourth Trade Ministerial Meeting, Summit of the Americas (1998), and Fifth Trade Ministerial Meeting, Free Trade Area of the Americas (1999).

[3] The model was originally developed by Thirlwall (1979). Recent contributions to this theoretical perspective include those made by McCombie and Thirlwall (1997), Moreno-Brid (1998-99 and 2001) and Barbosa (2002).

II

A theoretical model to analyze trade liberalization and growth

Regarding the assumption that a country cannot rely on foreign capital to finance its trade deficit indefinitely, Thirlwall's model states that there are the terms of trade or other price effects exert no influence, that the ratio of the growth of income in a given country to that of the rest of the world is equal to the ratio of the income elasticity of exports of the rest of the world to that country's income elasticity of imports. Expressed as a formula:

[1] $$y_b / y_w = \pi / \xi$$

where:
y_b = real rate of growth of domestic income *(dy/y)*;
y_w = real rate of growth of the rest of the world *(dw/w)*;
π = income elasticity of exports;
ξ = income elasticity of imports.

Equation [1] is easily obtained as the solution to the simple trade-growth model expressed by the following three equations:

[2] $dx/x = \eta\ (dp/p - dp^*/p^*) + \pi\ dw/w$

[3] $dm/m = \phi\ (dp^*/p^* - dp/p) + \xi\ dy/y$

[4] $dp^*/p^* + dm/m = (dp/p + dx/x)$

in which equations [2] and [3] are the standard demand functions for exports and imports, although expressed in terms of their growth rates, and x represents real exports; m, real imports; p, domestic prices; p^*, external prices; w, real income in the world; y, domestic income in real terms; $\eta < 0$ and $\pi > 0$, the price and income elasticities of exports; and $\phi < 0$ and $\xi > 0$, the respective elasticities of imports. For simplification, the nominal exchange rate is assumed to be fixed and equal to one. Equation [4] is merely the dynamic expression of a balance-of-payments identity that states that in the long run exports and imports attain equilibrium (i.e., the trade deficit must be eliminated, such that $X = M$). Solving the system of equations [2] to [4] yields the following expression of the economy's long-run growth rate (y_b):

[5] $$y_b = \frac{\pi\ dw/w + (\eta + \phi + 1)\ (dp/p - dp^*/p^*)}{\xi}$$

And, if the Marshall-Lerner condition is just fulfilled, equation [5] is simplified to:

[6] $$y_b = \frac{\pi\ dw / w}{\xi}$$

which is easily transformed to give the same expression as equation [1] above.

[7] $$y_b / y_w = \pi / \xi$$

According to equation [7], if the ratio of income elasticities to foreign trade is less (greater) than one, the local economy's real income (y_b) will grow at a slower (faster) pace than that of the rest of the world (y_w).

This has several implications for trade liberalization, and, in general, for regional free trade agreements. First, a trade liberalization policy will spur economic growth if it is associated with an increase in the income elasticity of the country's exports (π) greater than any increase that it may bring about in the country's income elasticity of imports (ξ). This conclusion, insofar as it emphasizes the impact on economic growth, may provide a simple benchmark to distinguish between successful and unsuccessful trade liberalization strategies. Second, within a regional-integration process that includes economies of different sizes and levels of development, a less developed economy will tend, over time, to catch up to (fall behind) industrialized economies, if the elasticity ratio is greater (less) than one. Third, and more importantly, if the relevant ratio of elasticities differs for, say, two groups of developing economies, a regional-integration process will inevitably result in divergence between them. Some economies will

benefit and catch up with the most advanced ones; others will lag further behind, and thus may run the risk of seeing an increase in their relative and perhaps absolute levels of poverty.

III

Methodological considerations

An empirical analysis of equation [1] requires a framework specifying the import and export demand function from which the income elasticities of exports and imports are obtained. In this article, we follow the conventional approach, known as the *imperfect-substitutes model*.

This approach is based on the assumption that domestic and foreign goods are not perfect substitutes. And, in treating an infinite elasticity of supply as a given, the model posits that exports and imports are essentially demand-determined. It thus argues that the main determinants of imports are the importing country's income, the price of imports and the domestic price of locally produced goods and services tradable in international markets. Likewise, the main determinants of exports are the rest of the world's income and the price of export goods relative to the price of foreign-made goods that compete with them in the international market. In addition, monetary illusion is typically assumed away, and a zero-homogeneity restriction is imposed to ensure that the foreign and the domestic price elasticity of import (export) demand are of the same magnitude in absolute terms.

The assumptions of the imperfect-substitutes model validate the use of single-equation econometric methods to estimate a country's foreign trade performance.[4] Stated as logarithms, the standard specifications of import and export demand are:

$$[8] \qquad ln(m_t) = a_0 + a_y\, ln(y_t) + a_p\, ln(Pm_t/Pd_t) + u_t$$

$$[9] \qquad ln(x_t) = b_0 + b_y\, ln(y^*_t) + b_p\, ln\,(Px_t/P^*_t) + v_t$$

where u_t and v_t stand for white noise disturbance terms; m_t, real imports; and y_t, the real domestic income of the importing country. Pd_t and Pm_t stand, respectively, for domestic-price indices of locally produced tradable output and of imported goods and services expressed in local currency. Accordingly, Px_t and P^*_t are the corresponding price indices of exports and of goods from abroad. In both equations, all prices are expressed in units of the respective local currency. The parameters a_y and b_y correspond to the long-run income elasticities of import and export demand, and a_p, b_p represent their long-run price elasticities.

Note that, given the article's focus on long-term foreign trade performance, equations [8] and [9] assume away all short-run (lagged) influences of income and relative prices on import and on export demand.[5] Therefore, the coefficients of the two log-linear equations reflect the long-run income and price multipliers of export and of imports.

An empirical analysis of long-run economic relationships must take into account the potential non-stationary properties of the data; that is, it must take into account the fact that time series processes may not have a constant mean or a bounded variance. The standard method for allowing for non-stationarity in the estimation of long-run economic relationships is to apply cointegration methods. The first step of this method requires verifying that the relevant variables have compatible orders of integration,[6] which is done here by applying the conventional and the augmented Dickey-Fuller tests.

Once such compatibility has been verified, the next step consists of estimating the number of stationary linear

[4] Goldstein and Kahn (1985) present the standard view of these models.

[5] Note that this concept of long-run equilibrium does not presume a steady-state growth path; such a path implies a unitary income elasticity of demand to maintain a constant ratio of imports (or exports) to income in the steady state, when relative prices are constant.

[6] The order of integration of a stochastic variable X(t) is defined as the number of times it must be first-differenced to obtain a stationary series.

combinations (so-called *cointegration vectors*) of the relevant variables. If no such combination is identified, it is said that the variables are not cointegrated, that is, that there is no stable long-run linear relationship between them. On the other hand, if at least one such combination exists, the variables are said to be cointegrated, and the estimated coefficients are interpreted as the long-run linear multipliers of the relevant regressors. To estimate the number of any such cointegrating vectors, we applied the Johansen methods.[7] To apply these methods, a vector autoregressive (VAR) system must first be specified with the set of relevant variables and then the number of long-run equilibrium relationships among them must be estimated.

IV

Central America's long-term import and export demand

1. Sources of the data

To derive the data used here to estimate import and export functions for Guatemala, Costa Rica and El Salvador, the authors used official figures from ECLAC and International Monetary Fund (IMF) databanks for the time domain 1950-1999. The figures for gross domestic product (y), imports (m) and exports (x) are measured at constant prices in units of local currency. Both exports and imports include trade in goods as well as in services. In accordance with standard procedures, the relative price variables —Pm_t/Pd_t in equations [8] and Px_t/P^*_t in equation [9]— were replaced with the real exchange rate, defined as the ratio of the consumer price index of each Central American nation to that of the United States, measured in units of domestic currency. Given that the main destination of Central American exports is the United States, this country's national income, measured in real terms, was used to estimate world income in the econometric analysis of export demand.

2. The empirical results

As mentioned above, the first step in the econometric analysis of long-run import and export demand was to apply Dickey Fuller and augmented Dickey Fuller (DF and ADF) tests to assess stationarity properties of the time-series considered in equations [8] and [9] for 1950-1999. The Akaike information criterion (AC) and the Schwarz criterion (SC) were used to select the optimum lag k for the ADF tests. The findings indicate that, for each country, the log-levels of real GDP, real imports, real exports and the real exchange rate are I(1) processes and their first differences are I(0) processes (table 2).

In addition the log-level of the United States' national income in real terms was also found to be an I(1) process, and its first difference an I(0) process (table 2). In each case, the model-selection criteria suggested an optimum one-year lag for the unrestricted VAR systems for both imports and exports (table 3).[8]

Table 4 gives the results of the Johansen cointegration analysis for export and import demand of the three countries under consideration. In each case the results indicate —at a 5% significance level— the existence of one cointegrating vector for import demand, as given by equation 8. Note, moreover, that the magnitude of the long-run income elasticity of imports of these three economies is similar —within the 1.27 to 1.49 range. With the exception of Guatemala, the long-run price elasticities of import demand are not significant at a 5% confidence level.

In the case of exports, the results of the Johansen tests for each of these countries fail to disprove the hypothesis of having only one cointegrating vector.

[7] Simple introductions to unit-root testing and cointegration analysis may be found in Cuthbertson and others (1992), Charemza and Deadman (1992) and Enders (1995).

[8] Some individual equations of the VAR-systems of import demand for El Salvador and Guatemala as well as of export demand for Guatemala failed to pass the Lagrange Multiplier (LM) test for no residual serial correlation in 1950-1999. The problem may be solved by introducing a "dummy" variable to reflect methodological changes in reporting data on in-bond industries.

TABLE 2

Three Central American countries: Dickey-Fuller (DF) and augmented Dickey Fuller (ADF) unit-root test, 1950-1999[a]

Country	Variable	DF (ADF) AC	DF (ADF) SC
Costa Rica	LGDP	-2.4	-2.4
	ΔLGDP	-6.4[b]	-6.4[b]
	LX	-2.4	-2.4
	ΔLX	-7.7[b]	-7.7[b]
	LM	-2.6	-2.6
	ΔLM	-5.2[b]	-5.1[b]
	LRER	-2.5	-2.5
	ΔLRER	-7.2[b]	-7.2[b]
El Salvador	LGDP	-2.2	-2.2
	ΔLGDP	-3.3[b]	-3.3[b]
	LX	-2.0	-1.2
	ΔLX	-6.2[b]	-6.2[b]
	LM	-2.3	-2.3
	ΔLM	-5.2[b]	-5.2[b]
	LRER	-0.92	-2.2
	ΔLRER	-3.0[b]	-8.3[b]
Guatemala	LGDP	-2.2	-1.8
	ΔLGDP	-3.4[b]	-3.4[b]
	LX	-2.6	-2.6
	ΔLX	-5.4[b]	-5.4[b]
	LM	-2.6	-2.6
	ΔLM	-4.6[b]	-5.6[b]
	LRER	-3.8[b]	-2.3
	ΔLRER	-6.0[b]	-6.0[b]
United States	LNI	-3.1	-3.1
	ΔLNI	-6.0[b]	-7.0[b]

[a] ΔX stands for the first difference $X_T - X_{T-1}$. DF and ADF are the Dickey-Fuller and augmented Dickey-Fuller unit-root statistical tests. AC and SC are the Akaike information criterion and Schwartz criterion statistics.

[b] Significance at a 5% confidence level.

According to these findings, Costa Rica has the highest long-term income elasticity of exports (2.64), followed by El Salvador (2.24). The estimated income elasticity for Guatemala was much lower (1.07). Without exception, the long-term price elasticity of exports was not significant at a 5% confidence level.

There may be various causes for the real exchange rate's lack of a significant long-term influence on these three Central American countries' exports and imports. One possible cause is the relatively small long-term variation in the exchange rate in the period under analysis. Another possible cause may be the fact that we did not use the trade-weighted real exchange rates in the econometric analysis. It could also be caused by reflect problems of aggregation. And, finally, this lack of influence may be actually make clear that in the long-run non-price factors have a much more definitive influence on trade that do relative price variations. In any case, it supports the analytical model expressed in equation [1], suggesting that Central America's long-term trade performance has been determined mainly by non-price factors. This buttresses the argument that boosting these countries' long-term export potential requires changing their export mix in favour of goods for which demand —both globally and locally— is highly income-elastic. Hence, in addition to avoiding a loss in their competitive advantages through price reductions, tariffs or nominal devaluation, developing countries should seek to implement policies to improve their technological prowess, innovative skills and scientific capacities.

Finally, the empirical validity of equation [1] can be substantiated by comparing the elasticity ratio derived from the cointegrating equations with the ratio of each of the Central American countries' average GDP growth to that of the United States. In every case, even if the sample includes the INTEL effect in the case of Costa Rica (see section V.2 below), the export-import elasticities ratio approximates the growth ratio, indicating, to some extent, the existence of a long-run relation between the two magnitudes.

TABLE 3

Three Central American countries: Trivariate VAR optimal lag structure and tests of residual serial correlation of single-variable import equations[a]

Country	VAR Variables	Test Diagnostic/Lag order AC/lag	SC/lag	ALR p-value/lag chosen[b]	Lagrange Multiplier Test $\chi^2(1)$		
		Import equation					
					LM	LGDP	LRER
Costa Rica	LM, LGDP, LRER	192.3/1	176.5/1	0.34/1	4.6	0.8	0.0
El Salvador	LM, LGDP, LRER	159.9/1	148.2/1	0.22/1	5.5[c]	13.9[c]	2.6
Guatemala	LM, LGDP, LRER	193.8/1	183.1/1	0.28/1	4.3	10.3[b]	0.8
		Export equation					
					LX	LNI	LRER
Costa Rica	LX, LNI, LRER	172.9/1	162.2/1	0.77/1	0.6	0.6	0.02
El Salvador	LX, LNI, LRER	180.1/1	169.4/1	0.88/1	0.0	0.4	2.1
Guatemala	LX, LNI, LRER	188.7/1	176.4/1	0.63/1	5.2[c]	0.0	1.1

Source: Prepared by the authors.

[a] Optimal order selection of VARs, according to Akaike information criterion (AC), Schwartz criterion (SC) and the adjusted likelihood ratios (ALRs) calculated with up to a six-year lag.

[b] ALR = Adjusted Likelihood Ratio

[c] Significance at the 5% confidence level in the results of the Lagrange Multiplier (LM) tests of residual serial correlation.

TABLE 4

Trivariate Johansen cointegration procedure for Central American countries, 1950-1999[a]

Country	Lag	Johansen cointegration test results				Cointegrating vector	Likelihood ratio test $\chi^2(1)$
						Import equation	
Costa Rica	1	Ho:	H1:	LRS	5% CV	LM = -1.32 + 1.36LGDP –0.15LRER	0.16
		r=0	r<1	61.0	22.0	(1.40) (0.07) (0.32)	
		r<1	r =2	10.6	15.9		
El Salvador	1	Ho:	H1:	LRS	5%CV	LM = -0.60 + 1.49LGDP -0.49LRER	2.04
		r=0	r<1	44.4	22.0	(2.1) (0.22) (0.26)	
		r<1	r =2	8.5	15.9		
Guatemala	1	Ho:	H1:	LRS	5%CV	LM=-3.3 + 1.27LGDP -1.09LRER	7.86[b]
		r=0	r<1	82.7	22.0	(1.7) (0.08) (0.39)	
		r<1	r =2	8.6	15.9		
						Export equation	
Costa Rica	1	Ho:	H1:	LRS	5%CV	LX = 4.3 + 2.64LGDP -1.89LRER	0.87
		r=0	r<1	65.9	22.0	(20.9) (1.4) (4.2)	
		r<1	r =2	15.6	15.9		
El Salvador	1	Ho:	H1:	LRS	5%CV	LX =-13.8 + 2.24LGDP +1.43LRER	4.3
		r=0	r<1	63.5	22.0	(6.1) (0.54) (0.71)	
		r<1	r =2	4.7	15.9		
Guatemala	1	Ho:	H1:	LRS	5%CV	LX=17.8 + 1.07LGDP -3.51LRER	2.5
		r=0	r<1	60.4	22.0	(18.4) (0.47) (3.6)	
		r<1	r =2	10.9	15.9		

Source: Prepared by the authors.

[a] The values in parentheses in the fourth column correspond to the asymptotic standard errors. The likelihood ratio test $\chi^2(1)$ in the fifth column refers to the chi-square (χ^2) with one degree of freedom, under the null hypothesis that the terms-of-trade parameter in the cointegrating vector equals zero.

[b] Significant at the 5% level.

TABLE 5

Three Central American countries: Income elasticity of imports and exports and the growth ratio[a], 1950-1999

Country	Income elasticity of imports	Income elasticity of exports	Elasticity ratio (b_y/a_y)	Growth ratio (y/y_{rw})
Costa Rica	1.36	2.64	1.94	1.50
El Salvador	1.49	2.24	1.50	1.03
Guatemala	1.20	1.07	0.89	1.11

Source: Tables 2 to 4

[a] The elasticity ratio is also expressed as π / ξ in section 2, equation [1].

V

Trade liberalization and foreign-trade performance

1. The behaviour of the income elasticity of imports and exports

The previous section estimated the long-run income elasticities of the export and import demand functions. Equation [1] was used to compare the elasticity ratio to the long-run average growth ratio. To shed light on the relationship between potential economic growth and changes in trade regimes we examined the behaviour over time of the income elasticities of imports and exports.

More specifically, the exercise consists of recursively changing the sample size of the time domain used in the econometric estimates in order to correlate variations in the elasticity parameters with changes in the orientation of trade and in general of economic policy. Thus, a visible shift in, say, the import and/or export elasticities of income may stem from the adoption of outward-oriented policies, changes in the production structure or a combination of the two. In this exercise, 1986 was chosen as the year marking a critical change in the trade regime, from protectionism to the adoption of trade liberalization policies. That year was chosen because it marks the beginning of the Uruguay Round (1986-1994).

The Uruguay Round signalled a fundamental turning point in the conception of trade relations. Most countries, even when they did not immediately become members of GATT, accepted that, whatever their level of development, they should adhere to the same principles, rules and obligations required by a multilateral free trade agreement. In keeping with this general trend, Central American started to gradually dismantle its trade barriers.[9]

In accordance with this methodology, cointegrating equations for imports and exports were run for all countries considered for a fixed number of observations —of which there was a total of 30— with 1950-1980 the starting period and 1969-1999 the end period.[10] The calculation of these equations yielded a series of 19 observations for the income elasticities of imports and exports for Costa Rica, El Salvador and Guatemala, which are plotted in figures 1 to 4.

Figures 1 to 4 show, firstly, that the income elasticity of imports is more stable over time than is

[9] Costa Rica joined GATT in 1990, and El Salvador and Guatemala joined in 1991. However, the beginning of their trade reform process preceded their formal accession to GATT. This is shown, for the case of Costa Rica, in appendix B, which lists selected trade reform measures from 1984 to 1988.

[10] An identical exercise could be carried out by using a smaller sample, but this would require a different set of econometric techniques.

FIGURE 1

Costa Rica. Income elasticities of imports and exports

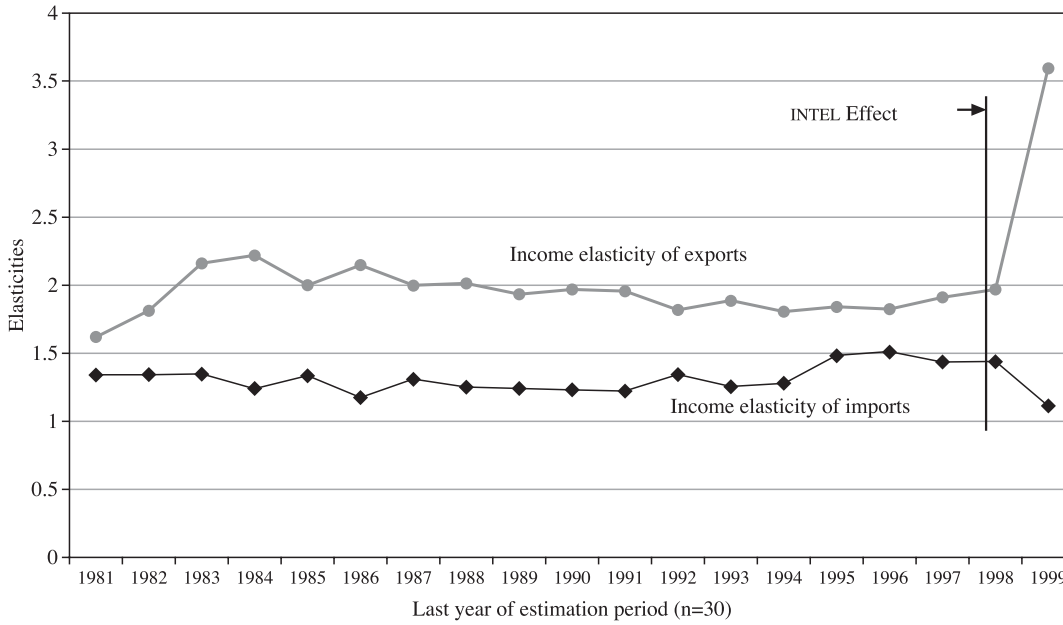

FIGURE 2

El Salvador. Income elasticities of imports and exports

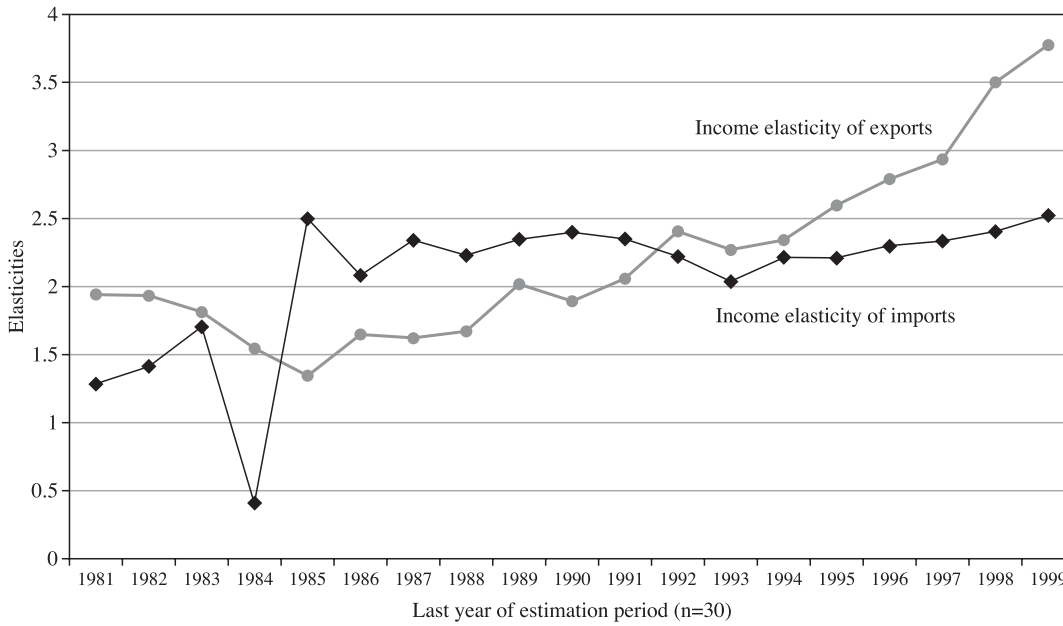

FIGURE 3

Guatemala. Income elasticities of imports and exports

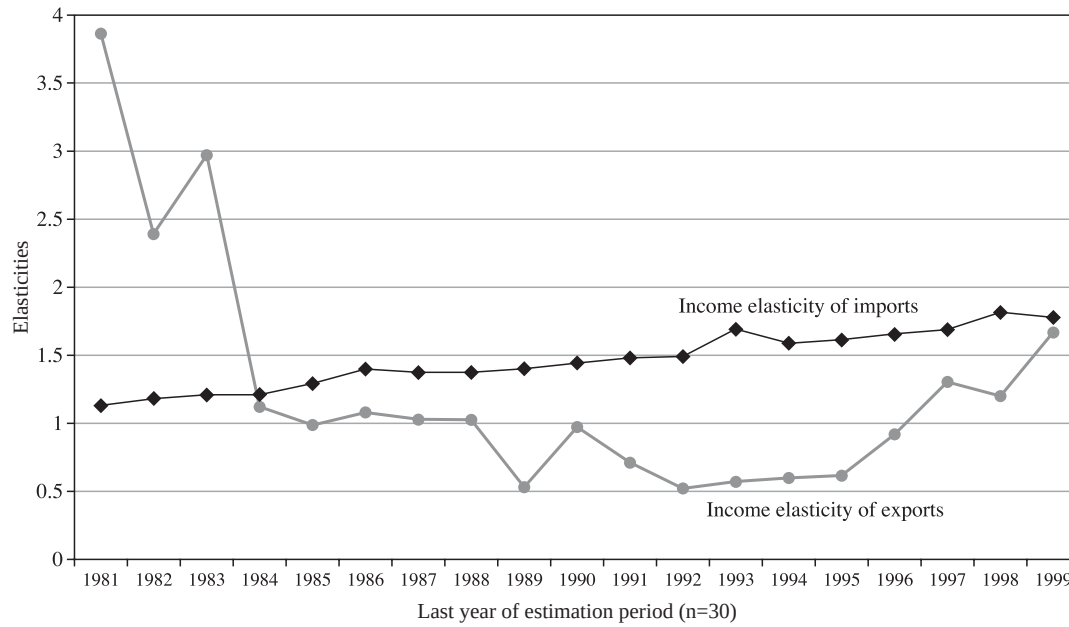

FIGURE 4

Costa Rica, El Salvador and Guatemala normalized income elasticities of imports (1985=100)

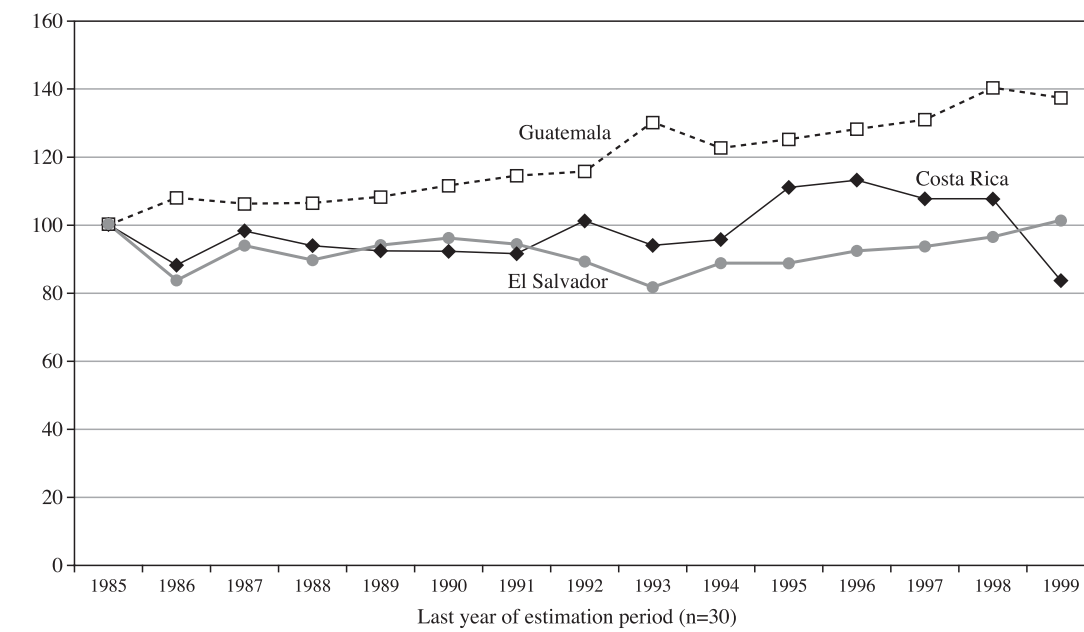

TABLE 6

Three Central American countries: Ratio of income elasticity of exports to income elasticity of imports

	Protectionism	Trade liberalization	
	Before 1986	1986-1991	1992-1999
Costa Rica	1.5	1.6	1.6
El Salvador	1.9	0.7	1.2
Guatemala	2.2	0.7	0.5

Source: Authors' own calculations based on official figures.

the income elasticity of exports;[11] they also cast doubt on the extent to which export policies in fact have precise and predictable consequences. Second, trade liberalization seems to have altered the relationship between the two parameters in two of the three cases considered: El Salvador and Guatemala) (table 6). In every case, these policies are associated with an increase of the income elasticity of imports greater than the increase in the income elasticity of exports. In both El Salvador and Guatemala, the change in the trend for both parameters occurs at the same endpoint (1994). In Costa Rica, trade liberalization's impact on the propensity to export and import did not affect the elasticity ratio (see table 6).

Third, the change in the composition of exports to the main trading partner —from primary commodities to manufacturing or high-technology goods— alters the income-elasticity of exports. The most extreme example is Costa Rica for the last period in question (1969-1999), which includes the effects on trade performance of the INTEL plant that began operating precisely in 1999 (figure 1).[12] As a result, between 1968-1998 and 1969-1999 the income elasticity of exports increased from 1.96 to 3.59. For its part, the income elasticity of imports decreased from 1.43 to 1.11. A glance at figures 2 and 3 points to similar conclusions for El Salvador and Guatemala. For both countries, the estimation periods, which include the 1990s, show an increase in the income elasticity of exports that coincides with a change in the composition of exports from agricultural goods to manufacturing goods (table 7).

TABLE 7

Three Central American countries: Percentage composition of main export products to the United States, 1990-1999

		Year			
Countries	Product	1990	1993	1996	1999
Costa Rica	Machinery	0.2	0.4	0.3	37.4
	Fruits and nuts	22.8	22.4	20.0	13.0
	Textiles	37.4	41.2	35.5	20.8
	Electrical machinery	4.4	5.3	7.8	6.5
	Subtotal	64.8	69.3	63.6	77.7
El Salvador	Textiles	22.8	51.5	67.2	82.8
	Coffee and tea	36.1	20.2	4.9	4.2
	Electrical machinery	10.3	6.5	3.1	1.9
	Fish and crustaceans	5.2	4.3	3.7	1.7
	Subtotal	74.4	82.5	78.9	90.6
Guatemala	Textiles	24.0	45.8	47.7	54.9
	Coffee	23.7	12.9	15.6	13.4
	Fruits and nuts	15.3	11.6	10.8	8.6
	Mineral fuels	2.9	2.0	3.6	4.2
	Subtotal	65.9	72.3	77.7	81.1

Source: Authors' own calculations based on official figures and ECLAC MAGIC (Module for the Analysis of Growth of International Commerce) software (2001).

However, in both El Salvador and Guatemala the increase in the income elasticity of exports fails to compensate for the rise in the import-elasticity of income. As shown in table 6, the elasticity ratio decreased during the trade liberalization period. Moreover, in the case of Guatemala this pattern was reinforced during the export-promotion period, which points to this economy's tendency to lag behind its main trading partner. Beyond the immediate implications, which underscore the correlation between growth, exports and income elasticities, these results reveal a further and more fundamental consequence: a process of divergence in the growth rates of Central American economies as they integrate into the world economy.

[11] This validates earlier estimates of both parameters obtained for different periods and for a set of developing and industrialized economies (Hieke, 1977).

[12] At the other end of the spectrum, other free-trade zone activities, such as textiles, have a low value-added component. However, it should be stressed that this refers only to the added value of their export products. This is the free-trade zones' direct contribution to the generation of added value. However, there is also an indirect effect that cannot be excluded: free trade zone foreign-exchange earnings that can in fact be invested in other high value-added activities. Thirlwall's Law focuses on the importance of having access to foreign exchange to promote investment and growth.

TABLE 8

Central America and the United States: Correlation coefficients between the differences in their growth rates, 1950-1999[a]

Correlation variables	1950-1960	1960-1970	1970-1980	1980-1990	1990-1999
DCRG, USG	0.26	0.24	0.37	0.58	0.42
DCREL, USG	0.09	-0.24	-0.04	0.07	0.51

[a] DCRG = difference between Costa Rica's growth rate and that of Guatemala; DCREL = difference between Costa Rica's growth rate and that of El Salvador; USG = United States' growth rate.

2. Trade and convergence

The model presented in section 2 posits a long-run proportional relationship between a country's ratio of income elasticities of imports to its income elasticities of exports and the ratio between that country's economic growth and that of the rest of the world. The empirical findings shown in figures 1 to 4 and in table 7 indicate that the ratio between the income elasticities of exports and those of imports did not change systematically while trade liberalization policies were being applied. Consequently, countries were unable to enhance their economic growth potential and, therefore, the wellbeing of their population.

In the case of Costa Rica, the income elasticity of exports remained, throughout the estimation period, above the income elasticity of imports. This tendency was accentuated in the most recent estimation period (ending in 1999) as Costa Rica began to export higher value-added goods such as electronic components, as a result of the establishment of the INTEL plant.

In the cases of El Salvador and Guatemala, the trade liberalization period (i.e., starting in the second half of the 1980s) saw a decline in the ratio of income elasticities of exports to those of imports, which suggests that this process, in conjunction with other factors such as adverse external developments and internal strife, rather than alleviating the balance-of-payments tension, may have made it more restrictive, further limiting these countries' long-run economic growth potential. Nonetheless, following export-diversification processes in the early 1990s, El Salvador was the only country able to reverse the trend in that ratio and capitalize on the momentum of its external performance.

These findings suggest that the expansion of external demand that may follow a regional-integration process brought about by the lowering of tariff and non-tariff barriers and the reduction of asymmetrical treatment may, in fact, lead —in the absence of offsetting policies— to growth divergence among the three Central American countries considered in this study. In accordance with the sheer logic of the model presented in section 2, an increase in external demand not compensated by a decline in the non-export sectors will increase the growth rates of Central American economies. But given the differences in the ratio of income elasticities of exports to those of imports, it will increase their growth potential to varying degrees.

To examine the empirical bases of this hypothesis, the correlation coefficients between the rate of growth of the national income in the United States and the differences in growth rates of, on the one hand, Costa Rica and, on the other, Guatemala and El Salvador were calculated on a ten-year basis for the period 1950-1999. As shown in table 8, in all cases the correlation coefficients increased starting in 1980 and yielded positive values. Moreover, this result suggests a direct association between the expansion of external demand and divergence within Central America, with Costa Rica rapidly closing the gap vis-à-vis the United States and the others lagging behind considerably.

VI
Conclusions

This essay examines the relationship between export performance and economic growth using a balance-of-payments growth-constrained model. Briefly stated, our approach shows that a country's economic growth is determined essentially by two factors: (1) the effect of the rest of the world's income elasticity on the country's exports; and (2) the country's own income elasticity of imports. The balance-of-payments model has important implications for trade negotiations and the trade liberalization proposals that may result from them. In particular, it states that tariff and non-tariff barriers to foreign trade will bring about an improvement in the country's economic growth potential if the boost to its export sector more than compensates any slowdown in its non-export sector.

During the study period, Central American countries adopted varying trade policy regimes and at the same time were buffeted by a series of external shocks, unforeseen events and abrupt changes in domestic economic policy. Nonetheless, the econometric relationships discussed here show a long-run proportional correlation between the ratio of export-to-import elasticities in Central America and the ratio between rates of income growth in Central America and those in the United States. Furthermore, the findings presented for Central America also suggest that trade liberalization has had rather disparate results among the cases examined.

Costa Rica's has been the most successful experience. Its trade liberalization-cum-export promotion strategies are associated with an improvement in its external demand and an insignificant, relative decline in the domestic sector that competes with imports. Thus, its economic growth potential improved.

The experience of the two other countries of the region has been less favourable. Trade liberalization has not alleviated the external constraint on El Salvador's and Guatemala's economic growth paths. Importantly, in view of their economic history, trade liberalization may have acted as an aggravating factor of both countries' listless economic performance.

The important issue, from a policy perspective, is how to ensure that trade agreements and trade liberalization promote economic growth. Along this line, the econometric results presented here indicate that Central American countries can improve their long-term growth potential by changing the composition of their tradable output in favour of goods for which world and local demand is highly elastic to income. Therefore, these countries should ensure that trade negotiations become a vehicle to strategize policies that improve their technological prowess, innovative skills and scientific capacities.

As shown above, the structural differences in the three Central American economies' responses to trade liberalization has significant implications for the potential impact of an FTAA on the tendency of their growth paths to converge. In fact, we have seen that, in conjunction with other factors, in the last two decades, when trade liberalization has begun to be implemented, rising demand in the United States has tended to widen the gap between Costa Rica and the other countries in the region. These results suggest that an exogenous expansion of external demand may lead to an intensification of regional divergence in economic growth in Central America. Such a conclusion may imply that the free trade agreement, in and of itself, may not be sufficient to ensure convergence and a faster rate of economic growth in Central America.

APPENDIX A

Three Central American countries: Macroeconomic indicators, 1950-1999
(Annual growth rates)

Variable	Costa Rica	El Salvador	Guatemala
		1950-1999	
GDP	4.9	3.5	3.7
Exports	6.8	4.7	4.4
Imports	6.6	6.3	4.9
Current account deficit as a % of GDP	4	1.4	2.9
Real exchange rate	0.6	2.3	0.1
		1950-1970	
GDP	6.0	4.9	4.1
Exports	6.2	5.3	4.1
Imports	8.5	6.2	4.1
Current account deficit as a % of GDP	-2.4	-0.4	-2.3
Real exchange rate	0.1	-0.4	0.5
		1970-1980	
GDP	5.5	3.0	5.4
Exports	4.7	4.6	6.9
Imports	6.3	3.7	6.8
Current account deficit as a % of GDP	-6.0	-1.0	-1.8
Real exchange rate	0.0	-1.7	-0.7
		1980-1990	
GDP	2.1	-0.8	0.9
Exports	5.7	-3.8	-2.4
Imports	1.8	1.4	-2.1
Current account deficit as a % of GDP	-4.9	-3.1	-3.7
Real exchange rate	3.1	-2.9	4.3
		1990-1999	
GDP	5.0	4.6	4.1
Exports	10.7	12.0	6.4
Imports	8.4	12.7	8.8
Current account deficit as a % of GDP	-4.3	-2.1	-4.5
Real exchange rate	-1.3	-2.7	-2.0

Source: Data calculated by the authors based on official and ECLAC figures.

APPENDIX B

Costa Rica: Selected reform measures related to trade liberalization in the 1980s and 1990s

Year	Measures
1984	Law on financial equilibrium in the private sector; seeks to promote exports through three export regimes: export contracts, temporary admission and free trade zones.
1985	Standard Central American Tariff Code. Import tariffs range from 1% to 100%.
1986	First structural-adjustment programme. Includes the phasing out of import tariffs and the elimination of quantity restrictions.
1987	Import deposits are reduced from 50% to 10%, before being eliminated in 1992.
1989	Second structural-adjustment programme; seeks to unify import duties on a 5%-40% tariff scale; includes a programme to phase out the tariff ceiling.
1989	The 10% *ad valorem* tax on coffee profits is modified to stand at between 2.5% and 10%.
1990	Costa Rica joins GATT. Pursuant to GATT rules, it agrees to replace quantity restrictions on imports with tariffs. Tariffs are set at between 55% and 274%. Agricultural products are included. Tariff quotas are applied to two agricultural categories: chicken parts and dairy products.
1992	Elimination of the Central Bank import surcharge, which ranged from 0% to 100%.
1992	The law governing all tax exemptions and the exceptions thereto (Law No. 7293), which eliminates most such exemptions, including those on import taxes.
1994	The 3% tax on all imports is reduced to 1%.
1995-1996	Parameters of the Central American Common External Tariff: 0% for raw materials and capital goods, 5% and 10% for intermediate inputs and 20% for finished goods; the 20% ceiling is further reduced to 15% in 1997.
1996	The export-contract and temporary-admission regimes are replaced with the *régimen devolutivo de derechos* and the *régimen de perfeccionamiento activo.*
1997	Costa Rica adopts a final tariff-reduction programme, with the aim of arriving at the 15% ceiling by 2000.
1998	In July 1999, the authorities apply the common external-tariff programme by reducing tariffs on intermediate goods from 16% to 15%.

Source: Prepared by the authors.

APPENDIX C

Estimation of elasticities[a]

Year	IEICR	IEECR	IEIEL	IEEEL	IEIG	IEEG
1981	1.3346	1.6132	1.2807	1.9383	1.1284	3.8641
1982	1.3354	1.8078	1.4131	1.9358	1.1799	2.388
1983	1.3391	2.1518	1.7063	1.813	1.2068	2.9595
1984	1.2341	2.2144	0.40724	1.5464	1.2054	1.1191
1985	1.3273	1.9984	2.4947	1.3458	1.2917	0.98767
1986	1.1694	2.1439	2.083	1.6452	1.3971	1.0782
1987	1.3026	1.9934	2.3401	1.6233	1.37	1.0248
1988	1.2462	2.0119	2.2333	1.6683	1.3749	1.0255
1989	1.2315	1.9259	2.344	2.017	1.3969	0.52705
1990	1.2212	1.961	2.3982	1.8938	1.441	0.96059
1991	1.2151	1.9478	2.3511	2.058	1.4786	0.71146
1992	1.34	1.8168	2.2228	2.4079	1.4924	0.52329
1993	1.2442	1.8783	2.0358	2.2666	1.6847	0.57335
1994	1.2691	1.801	2.2128	2.3393	1.5831	0.59729
1995	1.4726	1.839	2.2092	2.6002	1.6141	0.61551
1996	1.5018	1.8219	2.3019	2.7889	1.6549	0.91555
1997	1.4296	1.9099	2.3339	2.9328	1.6893	1.3046
1998	1.4289	1.9611	2.4029	3.5019	1.8124	1.1948
1999	1.1096	3.5884	2.5243	3.7771	1.775	1.6678

Source: Prepared by the authors.

[a] IEICR: income elasticity of imports, Costa Rica.
IEECR: income elasticity of exports, Costa Rica
IEIEL: income elasticity of imports, El Salvador.
IEEEL: income elasticity of exports, El Salvador
IEIG: income elasticity of imports, Guatemala.
IEEG: income elasticity of exports, Guatemala.

APPENDIX D

Standardized income elasticity of Imports[a]

Year	IEICR	IEIEL	IEIG	IEICR	IEIEL	IEIG
1985	1.3273	2.4947	1.2917	100	100	100
1986	1.1694	2.083	1.3971	88.1037	83.4970	108.1598
1987	1.3026	2.3401	1.37	98.1391	93.8029	106.0618
1988	1.2462	2.2333	1.3749	93.8899	89.5218	106.4411
1989	1.2315	2.344	1.3969	92.7823	93.9592	108.1443
1990	1.2212	2.3982	1.441	92.0063	96.1318	111.5584
1991	1.2151	2.3511	1.4786	91.5467	94.2438	114.4693
1992	1.34	2.2228	1.4924	100.9568	89.1009	115.5377
1993	1.2442	2.0358	1.6847	93.7392	81.6050	130.4250
1994	1.2691	2.2128	1.5831	95.6152	88.7000	122.5594
1995	1.4726	2.2092	1.6141	110.9470	88.5557	124.9594
1996	1.5018	2.3019	1.6549	113.1470	92.2716	128.1180
1997	1.4296	2.3339	1.6893	107.7074	93.5543	130.7811
1998	1.4289	2.4029	1.8124	107.6546	96.3202	140.3112
1999	1.1096	2.5243	1.775	83.5983	101.1865	137.4158

Source: Prepared by the authors.

[a] IEICR: income elasticity of imports, Costa Rica.
IEIEL: income elasticity of imports, El Salvador.
IEIG: income elasticity of imports, Guatemala.

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