

## U.S.-Latin American Trade Flows: 1967-1985

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This paper studies U.S.-Latin American (L.A.) trade flow trends for the period 1967-1985. Since the trade flows between some individual countries and the U.S. are of particular importance, and since the policies and performance of these countries varied substantially, the same trend equations were estimated for the U.S., -Mexico, -Argentina, -Brazil, and, -Rest of Latin America (ROLA) trade flows. In the 1980's the U.S. was experiencing a general decline in international competitiveness in its traditional export sectors and L.A. was developing comparative advantages in non-traditional sectors. U.S. trade with L.A. expanded throughout the 1967-1985 period with the greatest expansion being with ROLA and Mexico, respectively. Remarkably, U.S. imports from ROLA and Mexico have grown at a faster rate than those from Brazil, the acknowledged L.A. export leader.

### I. Introduction

This paper studies U.S.-Latin American (L.A.) trade flow trends for the period 1967-1985. These years represent a relatively long and significant period of time in the economic development of the countries under study and also an important period in the trade relationship between the U.S. and Latin America. This period covers several phases of the world business cycle in terms of both output and trade, including strong growth years and years of retrenchment and negative growth. It includes the period when severe price shocks on the world oil markets caused tremors

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not only in other energy markets but on the world economy. During the period covered the OECD went from a Fixed Exchange Rate System to a Managed Floating Exchange Rate System. The U.S. economy and by extension the U.S. dollar which for two decades following WWII reigned supreme in the world economy, slowly had to adjust to being the weakened leader among the industrial countries. In step with these developments the U.S. went from a net surplus nation to a net deficit nation in its trade relationships and now finds itself a net debtor nation to the rest of the world.

The twenty years that ended in 1980 constitute the golden period of Latin American economic growth.<sup>1</sup> In that era the region experienced varied but steady growth. In terms of trade regimes, there was in general a deemphasizing of import-substitution industrialization and a movement towards a more export-oriented regime with varying degrees of trade liberalization.

The eighties were years of crises for almost all the countries in the region, which have undergone painful adjustment processes, have curtailed imports and in many cases have attained significant trade surpluses used to serve at least partially their external debt.

Given this general setting the study of the U.S.-Latin American trade trends, and the various factors that impinge on them is interesting as it throws some light on several issues such as the evolution of the respective countries' comparative advantage, the stability of the trade relationships, the impact of the debt crisis, the domestic protectionist and other incentive policies, etc. This analysis is also useful to assess how well the data fit the traditional trade theories regarding U.S. and L.A. exports and imports particularly in regards to basic commodities and manufactures. This essay does not pretend to be comprehensive, but rather a first exploratory step in the overall study of U.S.-L.A. trade flows.

## II. Trend Analysis

To analyze the trade trends, standard trend equations of the form

$$\begin{aligned} \ln X &= a + bt \\ \text{where } X &= \text{value of exports} \\ t &= \text{time} \end{aligned}$$

<sup>1</sup> See for example a detailed analysis of this period in Inter-American Development Bank, *Economic and Social Progress in Latin America: 1982 Report*, 1983, Washington, D.C.

were used. Total U.S. exports to L.A. and U.S. exports for the ten categories of the SITC one digit classification were used (Table 1). To study the L.A. exports to the U.S., the U.S. import data at similar level of disaggregation were used (Table 2).<sup>2</sup> Since the trade flows between some individual countries and the U.S. are of particular importance, and since the policies and performances of these countries varied substantially, the same trend equations were estimated for the U.S.-Argentina, U.S.-Brazil, U.S.-Mexico, and U.S.-Rest of Latin America (ROLA) trade flows (Table 3). Furthermore, since the period covered by the data includes the 1980s crisis, it was considered appropriate to estimate trends for the 1967-1985 period as a whole (Equation A) and for the 1967-1980 subperiod (Equation B). Another estimation for the whole period, including a dummy variable for the 1981-1985 years was also made (Equation C).

### III. Empirical Analysis

#### A. Total U.S.-L.A. Trade Flows (*These trend estimates are summarized in Tables 1 and 2*)

Between 1967-1985 (Equation 1) the rate of growth of U.S. imports from L.A. outpaced exports with imports growing at a 8.8% annual rate compared to a 5.7% rate of growth for exports. The exceptions to this trend were SITC categories: 0, Food and Live Animals; 2, Inedible Crude Materials except fuels; and 4, Animal and Vegetable Oils and Fats, i.e., agricultural and primary commodity based products. However, if we exclude the 1981-1985 period from the time series (Equation 2) the rate of growth of trade between the U.S. and L.A. was more balanced with U.S. imports growing at an 11.9% annual rate compared to a 10.7% rate for exports. Thus, while L.A. grew, trade in both directions grew at a high and similar rate, increasing the interdependence between the U.S. and the L.A. region. During this shorter period, SITC categories in which the rate of growth of U.S. exports exceeded the rate of imports were the same as mentioned above, and also included SITC categories: 5, Chemicals; and 6, Manufactured Goods by Chief Material.

The long term rate of growth of the OECD countries declined after the late 1960s, a trend which was reinforced by their conservative reaction to the 1973 oil price increase. During this period L.A. growth continued healthy due in part to very heavy external borrowing. Thus, the L.A.

<sup>2</sup> All the data were deflated by the corresponding exports and imports implicit price deflators used in the U.S. Gross National Product Accounts.

Table 1  
TRENDS OF U.S. IMPORTS FROM LATIN AMERICA

SITC	Equation (1) 1967-1985		Equation (2) 1967-1980		Equation (3) 1967-1985 plus Dummy	
	Rate of Growth	$\bar{R}^2$	Rate of Growth	$\bar{R}^2$	Rate of Growth	Dummy coefficient
Total Trade	8.8 <sup>c</sup>	0.92	11.9	0.92	11.6	0.94
0. Food and live animals	3.0 <sup>d</sup>	0.74	6.9	0.92	6.6	0.88
1. Beverages and tobacco	11.1 <sup>d</sup>	0.95	16.1 <sup>d</sup>	0.96	11.3 <sup>d</sup>	0.95
2. Crude materials, inedible exc. fuels	-0.01 <sup>c</sup>	0.47 <sup>a</sup>	3.7	0.62	3.2	0.32
3. Mineral fuels, lubricants, etc.	12.6 <sup>c</sup>	0.89	17.5	0.87	16.7	0.99
4. Oils & fats, animal & veg. products	0.08	-0.03 <sup>a</sup>	4.1	0.22	4.1	0.22
5. Chemicals	9.2	0.93	8.7	0.91	8.3	0.93
6. Manuf. goods classified by chief mat.	8.7	0.85	9.3	0.75	9.3	0.85

Table 1 (continued)

SITC	Equation (1) 1967-1985		Equation (2) 1967-1980		Equation (3) 1967-1985	
	Rate of Growth	R <sup>2</sup>	Rate of Growth	R <sup>2</sup>	Rate of Growth	plus Dummy coefficient
7. Machinery & transport equipment	13.0 <sup>d</sup>	0.98	13.9 <sup>c</sup>	0.98	13.5 <sup>d</sup>	0.97 b
8. Misc. manuf. articles	8.5 <sup>c</sup>	0.96	23.1 <sup>c</sup>	0.90	22.5	0.92 -0.89
9. Other commodities & goods, N.E.C.	6.7 <sup>c</sup>	0.95	8.6	0.96	8.2	0.96 b

a t-statistic insignificant at the 0.05 probability (all other t's significant at the 0.01 critical probability)  
b Dummy variable coefficient insignificant  
c Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order one to correct for positive autocorrelation  
d Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order two to correct for positive autocorrelation  
e Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. An attempt to correct for positive autocorrelation resulted in t-statistic being insignificant.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 2  
TRENDS OF U.S. EXPORTS TO LATIN AMERICA

SITC	Equation (1) 1967-1985		Equation (2) 1967-1980		Equation (3) 1967-1985 plus Dummy		
	Rate of Growth	$\bar{R}^2$	Rate of Growth	$\bar{R}^2$	Rate of Growth	Dummy coefficient	
Total Trade	5.7 <sup>c</sup>	0.85	10.7	0.92	5.9 <sup>d</sup>	0.83	b
0. Food and live animals	7.0 <sup>d</sup>	0.72	13.8 <sup>d</sup>	0.87	11.1	0.68	b
1. Beverages and tobacco	0.2 <sup>d</sup>	0.56 <sup>a</sup>	6.3 <sup>c</sup>	0.75	2.2 <sup>f</sup>	0.58	b
2. Crude materials, inedible exc. fuels	7.1 <sup>c</sup>	0.79	11.5	0.87	11.0	0.85	-0.47
3. Mineral fuels, lubricants, etc.	8.3	0.85	8.1	0.81	8.0	0.84	b
4. Oils & fats, animal & veg. products	9.6	0.74	13.9	0.83	13.2	0.81	-0.59
5. Chemicals	7.0 <sup>e</sup>	0.65	11.9	0.91	11.0	0.81	-0.66
6. Manuf. goods classified by chief mat.	4.5 <sup>d</sup>	0.71	9.7	0.82	5.5 <sup>d</sup>	0.69	b

Table 2 (continued)

SITC	Equation (1) 1967-1985		Equation (2) 1967-1980		Equation (3) 1967-1985 plus Dummy		
	Rate of Growth	$\bar{R}^2$	Rate of Growth	$\bar{R}^2$	Rate of Growth	Dummy coefficient	
7. Machinery & transport equipment	5.6 <sup>d</sup>	0.68	11.3 <sup>d</sup>	0.97	9.4	0.69	-0.56
8. Misc. manuf. articles	6.3 <sup>d</sup>	0.89	10.2	0.97	6.0 <sup>d</sup>	0.86	b
9. Other commodities & goods, N.E.C.	2.9 <sup>d</sup>	0.41	5.4 <sup>d</sup>	0.55	8.6	0.49	-0.62

a t-statistic insignificant at the 0.05 probability (all other t's significant at the 0.01 critical probability)

b Dummy variable coefficient insignificant

c Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order one to correct for positive autocorrelation

d Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order two to correct for positive autocorrelation

e Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. An attempt to correct for positive autocorrelation resulted in t-statistic being insignificant.

f Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order three to correct for positive autocorrelation.

Source: Compiled from official statistics of the U.S. Department of Commerce.

**Table 3**  
**US TRADE WITH ARGENTINA, BRAZIL, MEXICO, AND THE REST OF LATIN AMERICA**  
**1967-1985**

SITC	US-ARGENTINA			US-BRAZIL			US-MEXICO			US-REST OF LATIN AMERICA						
	US EXPORTS		US IMPORTS	US EXPORTS		US IMPORTS	US EXPORTS		US IMPORTS	US EXPORTS		US IMPORTS				
	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth	Rate of $\bar{R}^2$ Growth					
Total Trade	1.8 <sup>d</sup>	0.65 <sup>a</sup>	7.4	0.79	4.1 <sup>c</sup>	0.23	10.0	0.96	9.1 <sup>c</sup>	0.76	14.2 <sup>d</sup>	0.97	9.1 <sup>d</sup>	0.94	11.1 <sup>d</sup>	0.92
0. Food and live animals	.0	-0.06 <sup>a</sup>	4.2	0.59	7.2	0.39	4.2	0.66	10.8 <sup>b</sup>	0.66	1.8 <sup>d</sup>	0.26	12.0 <sup>d</sup>	0.93	9.5 <sup>d</sup>	0.95
1. Beverages and tobacco	3.9 <sup>d</sup>	0.62 <sup>a</sup>	15.1	0.54	1.5 <sup>d</sup>	0.67 <sup>a</sup>	14.0 <sup>c</sup>	0.95	-15.8 <sup>c</sup>	0.65	13.4 <sup>d</sup>	0.94	7.7 <sup>d</sup>	0.85	12.4 <sup>c</sup>	0.97
2. Crude materials, inedible exc. fuels	2.2 <sup>c</sup>	0.29 <sup>a</sup>	-7.0 <sup>c</sup>	0.50	5.6 <sup>c</sup>	0.45	4.6	0.43	9.8 <sup>b</sup>	0.79	4.0 <sup>d</sup>	0.87	11.6 <sup>c</sup>	0.92	5.5 <sup>d</sup>	0.64
3. Mineral fuels, lubricants, etc.	4.9 <sup>c</sup>	0.28	35.0	0.34	5.6 <sup>c</sup>	0.73	36.0	0.39	7.6	0.62	39.6 <sup>c</sup>	0.91	20.2 <sup>c</sup>	0.92	12.4 <sup>c</sup>	0.89
4. Oils & fats, animal & vegetable products	8.1	0.25	6.0	0.35	-4.7	-0.02 <sup>a</sup>	.8	-0.04 <sup>a</sup>	16.0	0.59	-4.2	0.34	13.6 <sup>c</sup>	0.89	5.9	0.28
5. Chemicals	1.4 <sup>c</sup>	0.42	10.9	0.78	5.5 <sup>c</sup>	0.20	19.3 <sup>c</sup>	0.83	9.4 <sup>d</sup>	0.90	13.8 <sup>c</sup>	0.92	9.7 <sup>c</sup>	0.93	11.4	0.94
6. Manuf. good classified by chief mat.	-3.8 <sup>d</sup>	0.52	10.7	0.69	-10.5 <sup>c</sup>	0.55	17.9	0.96	10.9 <sup>d</sup>	0.85	8.4 <sup>c</sup>	0.86	7.1 <sup>d</sup>	0.89	11.6 <sup>c</sup>	0.81



Table 3 (continued)

SITC	US-ARGENTINA			US-BRAZIL			US-MEXICO			US-REST OF LATIN AMERICA						
	US EXPORTS		US IMPORTS	US EXPORTS		US IMPORTS	US EXPORTS		US IMPORTS	US EXPORTS		US IMPORTS				
	Rate of $\bar{R}^2$	Growth	Rate of $\bar{R}^2$	Growth	Rate of $\bar{R}^2$	Growth	Rate of $\bar{R}^2$	Growth	Rate of $\bar{R}^2$	Growth	Rate of $\bar{R}^2$	Growth				
7. Machinery & transport equipment	4.2 <sup>d</sup>	0.76 <sup>a</sup>	7.2	0.51	0.35 <sup>e</sup>	0.17	16.8 <sup>d</sup>	0.95	9.1 <sup>d</sup>	0.84	12.6 <sup>c</sup>	0.98	8.0 <sup>d</sup>	0.91	19.7 <sup>c</sup>	0.98
8. Miscellaneous manuf. articles	5.1 <sup>d</sup>	0.61 <sup>a</sup>	13.5 <sup>e</sup>	0.47	-7.6 <sup>c</sup>	0.75 <sup>a</sup>	14.0 <sup>d</sup>	0.95	7.7 <sup>d</sup>	0.82	6.6 <sup>c</sup>	0.88	10.8 <sup>d</sup>	0.97	20.9 <sup>d</sup>	0.99
9. Other commodities & goods, N.E.C.	8.1 <sup>d</sup>	0.74	5.4	0.30	5.4 <sup>d</sup>	0.54	11.6	0.94	-5.8 <sup>e</sup>	0.33	8.0 <sup>c</sup>	0.95	8.1 <sup>b</sup>	0.77	11.4 <sup>d</sup>	0.94

a t-statistic insignificant at the 0.05 probability (all other t's significant at the 0.01 critical probability)

b Dummy variable coefficient insignificant

c Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order one to correct for positive autocorrelation

d Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. Applied Cochrane-Orcutt two-step auto-regressive iterative process of order two to correct for positive autocorrelation

e Durbin-Watson statistic was initially less than critical value at the 0.05 level of significance, i.e., positive autocorrelation was suspected. An attempt to correct for positive autocorrelation resulted in t-statistic being insignificant.

Source: Compiled from official statistics of the U.S. Department of Commerce.

markets remained quite dynamic, and U.S. producers could expand exports substantially.

The fastest growth rates of U.S. imports (Table 1) were in SITC: 7, Machinery and Transport Equipment; 3, Mineral Fuels and Lubricants; 1, Beverages and Tobacco; and 8, Miscellaneous Manufactures. The compound annual growth rate for the SITC 7 category for the whole period was 13%, and for the shorter 1967-1980 period was close to 14%. In spite of a relatively low base, this high rate is remarkable. Similar rates for the SITC 8 category of 8.5% and 23%, were also very high. These high growth rates reflect a changing comparative advantage as L.A. began to develop some competitiveness in industries which the U.S. was losing. Other double digit growth rates were found in SITC 1, Beverages and Tobacco and SITC 3, Fuels. These high rates are expected as they reflect natural resource based comparative advantages as well as the energy price increases.

The Dummy variable coefficients (Equation 3) are negative as expected except for SITC 1, 5, 6, 7, and 9 in which cases they are not significant. The largest coefficient is in Miscellaneous Manufactured Products which includes apparel, footwear, and other products in which L.A. would have a strong comparative advantage. Remarkably, Chemicals and Manufactured Goods Classified by Material, which includes leather, rubber, cork, wood, paper, textiles, iron and steel and other metals, do not show a significant lowering of their growth rate during the recession.

During the 1967-1980 period the growth rates of U.S. exports (Table 2) for all sectors were between 5% and 14%, and the rates for manufactures were comparable to those of natural resource based products. However, the recession of the 1980s has had a substantial impact on U.S. exports to L.A. This has been a widespread phenomenon, which the Dummy coefficients (Equation 3) show to have been felt similarly across sectors except for foods, beverages and tobacco, and fuels. That is, all U.S. exports to manufactures and raw materials dropped, while only the most essential ones to Latin American consumption remained robust.

Equation (1) of imports gives a somewhat better fit than that for exports with an  $\bar{R}^2$  of 0.92 for U.S. imports from L.A. versus an  $\bar{R}^2$  of 0.85 for U.S. exports to L.A. for the period 1967-1985. The only exception to this being SITC categories 2 and 4 in which U.S. exports have remained strong and competitive through the economic slowdown of the 1980s.

When Equation (2) is used (1967-1980) the  $\bar{R}^2$  for total imports equal that of total exports with an  $\bar{R}^2$  of 0.92 for each, and there is a stronger fit in the export equation for SITC categories 6, Manufactured Goods; and 8,

Miscellaneous Manufactured Articles, in addition to SITC 2 and 4 of Equation (1).

When the Dummy variable for the years 1981-1985 (Equation 3) is included, the  $\bar{R}^2$  for imports once again exceeds that of exports with a value of 0.94 versus 0.83 respectively. With SITC categories 2 and 4 once again being the only exceptions. Although the dummy variable has reduced the differentiation between export and import trends, it is clear that the 1980s witnessed a weakening in the trend of U.S. exports to Latin America with no apparent weakening in U.S. imports from L.A.

The t-statistic for Equations (1), (2), and (3) for exports and imports were in general high and significant at the 0.01 critical probability, with the t's for the import equations in general supporting our observations based on the  $\bar{R}^2$ 's.

The uncorrected Durbin-Watson statistics in Equation (1) for both U.S. imports from and exports to L.A. were low for the period 1967-1985 with a value of 0.79 for imports and 0.43 for exports. This is well below the critical value of 1.06 at the 0.05 level of significance leading us to suspect that positive autocorrelation is present in the time series. This implies that while trade flows in both directions have been cyclical, U.S. exports have been more cyclical than imports. This result is contrary to the commonly held view that L.A. exports are subject to high cyclical fluctuations due to the OECD countries' business cycle. While that could be the case for individual commodities, it is not so in the aggregate.

In order to correct for the low Durbin-Watson statistic we applied the Cochrane-Orcutt two-step auto-regressive iterative process of order one, and where necessary of order two, to correct for positive autocorrelation. The Cochrane-Orcutt corrective processes were applied successfully in all cases except for exports of SITC 6, Chemicals, where the correction process resulted in an insignificant t-statistic. As a result of the correction the Durbin-Watson statistic rose to 1.76 for imports and 1.72 for exports.

In Equation (2) when the problem years of 1981-1985 are excluded from the time series the uncorrected D-W statistic rises to 1.37 for imports and 1.06 for exports. While exports continue to be more cyclical than imports, the D-W statistic for exports is now indeterminate at the 0.05 level of significance while no autocorrelation is now suspected for imports. The exception for imports being SITC categories: 1, 7 and 8; and for exports, SITC categories: 0, 1, 7, and 9 which are now also suspected of positive autocorrelation. In all cases a correction was made for positive autocorrelation with the sole exception of imports of SITC 8, Miscellaneous Manufactured Articles, which resulted in an insignificant t-statistic.

When the Dummy variable for 1981-1985 is used in Equation (3) the uncorrected D-W statistic again rises to almost the level of Equation (2) with a value of 1.31 for imports and 0.93 for exports. Now, however, both values are in the indeterminate range yet still maintain the same rankings. The exceptions to imports again include SITC categories 1 and 7 with positive autocorrelation indicated while for exports SITC categories 1, 6 and 8, indicate positive autocorrelation. Once again the problem of positive autocorrelation was successfully corrected for, using the Cochrane-Orcutt process.

It thus appears that cyclical influences on both imports and exports vary with exports being more cyclical than imports yet both tend to increase the more disaggregation the data and analysis gets with SITC categories: 1, 7 and 8 being the most volatile in both directions.

While the differentiation between Equations (1), (2), and (3), and the resulting significance statistics outlined above verified a clear change in the trade flows between the U.S. and L.A. beginning in 1981, the plot of actual to fitted values and the plot of residuals for U.S. exports to L.A. indicate the presence of two inflection points. One inflection point being 1981, already assumed and verified, the other inflection point being 1973, indicating significant changes and/or adjustments in U.S. exports to L.A. beginning at these two points in time. The year 1973 is associated of course with the onset of the first oil crisis resulting in a quadrupling in world oil prices and the resulting stagflation that characterized the remainder of the decade. The year 1981 is associated with the consequences of the second energy crisis of 1979-80 resulting in a further tripling of world oil prices, the onset of a world recession and the consequent Third World debt crisis of which L.A. is the focus.

Similar analysis for U.S. imports from L.A. indicate that these same economic forces affected U.S. imports approximately at the same time, i.e., 1973 and 1981, with an additional inflexion point around 1969 now also emerging. From 1969 on, U.S. import growth rates accelerated partly due to the generalized commodity price increases that took place in the years before the first oil price shock.

### *B. U.S. Trade with Argentina, Brazil, Mexico, and the Rest of Latin America*

Given the general problems involved in aggregate analysis and the obvious problems involved in treating the 25 Latin American and Caribbean countries as a single entity, as well as the indications given by the preceding analysis that important economic factors affecting the

U.S.-L.A. trade relationship appear to have their origins on the L.A. side, it was decided that a more disaggregated approach was in order. In this regard U.S. trade with L.A. was disaggregated into trade with Argentina (AR), Brazil (BR), Mexico (MX), and the Rest of Latin America (ROLA).

The rate of growth of U.S. exports and imports to and from AR, BR, MX, and ROLA are in general consistent with the figures for total U.S. exports and imports, with the rate of growth of imports from AR, BR, MX, and ROLA, greater than that of exports to AR, BR, MX, and ROLA. The rank order of growth rates was consistent for both imports and exports with the fastest growth rate for imports from MX, followed by ROLA, BR, and AR, in rank order, i.e., 14.2%, 11.1%, 10.0%, and 7.4% respectively; and 9.4%, 9.1%, 4.1%, and 1.8% respectively for U.S. exports. Thus U.S. trade with L.A. was expanding throughout the 1967-1985 period with the greatest expansion being with MX and ROLA respectively.

### *Mexico*

Although the rate of growth of U.S. imports from MX was 14.2% versus 9.4% for exports there was variation at a more disaggregated SITC level with the rate of growth of imports from MX exceeding that of exports in SITC categories: 1, 2, 5, 7, and 9. U.S. imports from MX exceeded the average rate of growth of 14.2% in SITC categories 3. U.S. exports to MX exceeded the average rate of growth of 9.4% in SITC categories: 0, 2, 4, and 6. Once again we see indications of a fast growth of U.S. Manufacturing imports and slower Natural Resource Based Products' imports, showing a changing comparative advantage. MX exports of manufactures were becoming increasingly competitive and were making significant inroads in the U.S. market during this time period. Many of these exports were in products of U.S. sunset industries.

### *Rest of Latin America*

Likewise, while the rate of growth of U.S. imports from ROLA exceeded that of exports by a rate of 11.1% versus 9.1%, variation existed at a more disaggregated level with the rate of growth of imports from ROLA exceeding that of exports in SITC categories: 1, 5, 6, 7, 8 and 9. U.S. imports from ROLA exceeded the average rate of growth of 11.1% in SITC categories: 1, 3, 5, 6, 7, 8 and 9. U.S. exports to ROLA exceeded the average rate of growth of 9.1% in SITC categories: 0, 2, 3, 4, 5 and 8. With the fastest rate of growth of imports being in manufactures while in exports it is in agricultural and natural resource based products. ROLA during this period demonstrated increased competitiveness in manufac-

tures steadily increasing its exports to the U.S.

### *Brazil*

The results for U.S. trade with BR were similar, with the rate of growth of imports from BR exceeding that of exports, i.e., 10.0% versus 4.1%. The rate of growth of trade with BR was less than that with MX and ROLA, with less variation at the disaggregated level with the rate of growth of imports exceeding that of exports in SITC categories: 1, 3, 4, 5, 6, 7, 8 and 9. U.S. imports from BR exceeded the average rate of growth of 10.0% in SITC categories: 1, 3, 5, 6, 7, 8 and 9. U.S. exports to BR exceeded the average rate of growth of 4.1% in SITC categories: 0, 2, 3, 5 and 9. Similar comments for those made above for MX and ROLA regarding the strong performance of exports of manufactures apply also to BR. If anything more need be said it is that BR's expansion of exports to the U.S. is much broader in scope than that of MX and ROLA. Brazil is the largest country in L.A. and the most self-sufficient. It has the most diversified L.A. economy, and it is the one in which protectionist policies benefit many sectors, thus, the low rate of growth of U.S. exports.<sup>3</sup>

### *Argentina*

In the case of U.S. trade with AR, once again the same general pattern emerges with the rate of growth of U.S. imports from AR exceeding that of exports, i.e., 7.4% versus 1.8%. At a more disaggregated level the rate of growth of imports exceeds that of exports in SITC categories: 0, 1, 3, 5, 6, 7 and 8. U.S. imports from AR exceeded the average rate of growth of 7.4% in SITC categories: 1, 3, 5, 6 and 8. While U.S. exports to AR exceeded the average rate of growth of 1.8% in SITC categories: 1, 2, 3, 4, 7, 8 and 9.

AR has had a very sluggish growth record during the period covered, and thus, its market has grown very slowly and so have U.S. exports to AR. U.S. imports have also grown at a relatively slow pace as most of AR's exports are in natural resource based products which compete in world markets with the U.S. as AR is the L.A. country with the natural resource endowment most similar to that of the U.S.

Summarizing the results of U.S. trade with AR, BR, MX and ROLA during 1967-1985; the rate of growth of imports exceeded that of exports for SITC categories: 1, 3, 5, 6, 7, 8 and 9, in at least 3 of the 4 country

<sup>3</sup> The difficulties of exporting to Brazil are not only faced by the U.S., but they are shared by all other L.A. countries. See for example, Inter-American Development Bank, *Economic and Social Progress in Latin America, 1984 Report*, 1985, Washington, D.C., Ch. 2.

groupings. In terms of the composition of imports from AR, BR, MX and ROLA, the rate of growth of imports exceeded the average within each country grouping for SITC categories: 1, 3, 6, and 8, in at least 3 of the 4 country groupings. In terms of the composition of exports to AR, BR, MX and ROLA, the rate of growth of exports exceeded the average within each country grouping for SITC categories: 0, 2, 3, and 4, in at least 3 of the 4 country groupings.

All U.S. import equations have better fits than those for U.S. exports. The  $\bar{R}^2$  coefficients for U.S. imports from AR, BR, MX and ROLA are high, i.e., 0.79, 0.96, 0.97 and 0.92 respectively with t-statistics that are significant at the 0.01 critical probability. The relatively lower  $\bar{R}^2$  for AR indicates that domestic factors in Argentina were arresting export growth during this period relative to the rest of L.A. In contrast, the  $\bar{R}^2$  coefficients for U.S. exports to AR, BR, MX and ROLA vary, i.e., 0.65, 0.23, 0.76 and 0.94 respectively. The  $\bar{R}^2$  coefficients for exports are lower than those for imports for AR, BR and MX, and in particular for exports to AR and BR, with the t-statistic significant only at the 0.10 critical probability in the case of AR.

Likewise the uncorrected D-W statistics for U.S. imports from AR, BR, MX and ROLA are higher than those for U.S. exports to AR, BR, MX and ROLA respectively. Only the D-W statistic for U.S. imports for AR and BR was above the critical value at the 0.05 level of significance leading us to suspect that positive autocorrelation is present in the time series for U.S. imports from MX and ROLA and in U.S. exports to AR, BR, MX and ROLA. Once again in order to correct for the low D-W statistic we applied the Cochrane-Orcutt corrective process of order one, and where necessary of order two, to correct for positive autocorrelation. The Cochrane-Orcutt correction procedure was successful in all cases except for imports from AR, SITC 8; exports to BR, SITC 2, 5 and 7; and exports to MX, SITC 9: in which cases the correction process resulted in an insignificant t-statistic.

U.S. trade with AR has been the most cyclical compared to the other country groupings with U.S. exports to AR being more volatile than imports. In addition to the overall cyclical trends that characterized the aggregate time series for U.S.-L.A. trade with the pivotal years of 1973 and 1980, we now see emerging two additional trends particular to U.S. trade with AR indicating a change in trade regime around the years 1969 and more clearly 1976. U.S. exports to AR expanded sharply in the 1976-1980 period only to decline precipitously in the 1981-1985 period. The 1976-1980 period is well known in Argentina as this was the time of the neo-liberal experiment under Martinez de Hoz which resulted in a

dramatic overvaluation of the Argentinean peso and a large inflow of short term capital.<sup>4</sup>

U.S. exports to BR have also been more volatile than imports indicating again the strong influence of domestic economic factors and trade policies originating within BR on this trade relationship. U.S. exports to BR were clearly on the rise between 1967-1974. There was then an adjustment in BR imports caused primarily by the increase in world petroleum prices during the 1974-1977 period. Growth again resumed in U.S. exports to BR in the 1977-1980 period and then declined precipitously in the 1981-1984 period.

Although U.S. exports to MX were again more volatile than imports as in the case of AR and BR the fit was much better and appeared to follow the economic cycle of the U.S. to a much greater extent. This of course makes sense given the close proximity of the MX economy to the U.S. and its greater degree of economic integration with the U.S. Two main trends approximately the overall U.S.-L.A. trends with the demarcation years 1973 and 1981 emerge. By 1977 MX had adjusted to the changed world energy situation and had begun to benefit from higher oil prices as MX oil production began to increase substantially, a trend that reversed as oil prices fell and the country fell into a debt crisis.

The fit for U.S. trade with ROLA was even better than that of trade with MX and there was even less divergence in the export and import trends. The same general trends were evident in the data with the pivotal years 1973-1974 and 1981-1982 most prominent followed by a secondary inflection around 1969.

#### IV. Conclusion

It appears then that between 1967 and 1985:

(a) The rate of growth of U.S. imports from L.A. outpaced exports with imports growing at a 8.8% annual rate compared to a 5.7% rate of growth for exports.

(b) U.S. exports to L.A. declined significantly in the 1980s while imports remained robust. This appears to be the result of, first, the drop of L.A.'s capacity to import as a result of the debt crisis, and second, the im-

<sup>4</sup> See for example Blejer, M., "Liberalization and Stabilization Policies in the Southern Cone Countries: an Introduction," *Journal of Inter-American Studies and World Affairs*, Feb.-April 1983.



fact of an increasingly overvalued dollar on U.S. exports causing a general decline in international competitiveness of U.S. exports.

(c) U.S. exports to L.A. appear to have grown mostly in agricultural and natural resource based products while U.S. imports from L.A. grew faster in manufactured goods.

(d) In the 1980s the U.S. was experiencing a general decline in international competitiveness in its traditional export sectors and L.A. was developing comparative advantages in non-traditional sectors.

(e) While trade flows in both directions have been cyclical, U.S. exports have been more cyclical than imports — implying that domestic economic factors in L.A. might be more of a factor in this trade relationship than U.S. domestic economic variables.

(f) The more disaggregated the trade data the more volatile are the trade flows in both directions with U.S. exports always more volatile than imports.

(g) The data revealed two major inflexion points in U.S.-L.A. trade flows associated with the years 1973-74 and 1980-81. In addition another inflexion point emerged for 1969 relating to U.S. imports.

(h) U.S. trade with L.A. was expanding throughout the 1967-85 period with the greatest expansion being with MX and ROLA respectively. Remarkably, U.S. imports from MX and ROLA have grown at a faster rate than those from BR, the acknowledged L.A. export leader.

(i) 1976 emerged as a fourth inflexion point in the U.S.-AR trade relationship with AR domestic factors appearing as the main determinants.

(j) 1977 emerged as a fourth inflexion point in the U.S.-BR trade relationship with BR domestic factors appearing as the major determinants.

### References

Blejer, M., "Liberalization and Stabilization Policies in the Southern Cone Countries: an Introduction," *Journal of Inter-American Studies and World Affairs*, February-April 1983.

*Economic and Social Progress in Latin America: 1982 Report*, 1983, Washington, D.C.

———, *Economic and Social Progress in Latin America: 1984 Report*, 1985, Washington, D.C.

Inter-American Development Bank,

