OBSERVATIONS ON THE TRANSMISSION OF BUSINESS FLUCTUATIONS: THE CASE OF LATIN AMERICA 1972-1989

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ABSTRACT

The business cycle spreads from one country to the next to the extent that there is international trade, international investment, and international financial linkages. Since the Latin American countries are closely linked to the US economy, there should be a close parallel between the performance of the US economy and the economies of Latin America. Under consideration is the extent to which these countries were vulnerable or somewhat less than expected vulnerable to the forces at work in the US economy. The period 1972-1989 is the historical time frame under investigation. Given a changing world economy by the end of the 1980s, generalizations resulting from this study are limited to the study period.

INTRODUCTION

The channels for the international transmission of fluctuations are: (1) international trade, (2) international investment, and (3) the international flow of financial capital (Sherman 1991,321). It is maintained that the downturns in the US economy in the 1970s and early 1980s were echoed by synchronized declines in most countries around the world (Sherman 1991,337). As noted in Table 1, from 1970 through 1982, three cycles were identified with the US economy: 1970-1975, 1975-1980, and 1980-1982 (Sherman 1991, Appendix B). In July 1990 a recession began in the US (Hall, 1991/2,1-2) with a trough in March 1991.

TABLE 1

FLUCTUATIONS IN THE US ECONOMY: 1970-1990

Cycle		Number of Months		Number of Months	
Trough	Peak	Contraction	Expansion	Trough/Trough	Peak/Peak
Nov. 1970	Nov. 1973	11	36	117	47
Mar. 1975	Jan. 1980	16	58	52	74
Jul. 1980	Jul. 1981	6	12	64	18
Nov. 1982	Jul. 1990	16	92	28	108
Mar. 1991		8			

Data Source: *Statistical Abstracts of the United States* (1997,556).

Economic Systems and Changing Conditions

Economic systems are dynamic systems. They differ in operating philosophies and institutional frameworks.[1] Furthermore, each economic system is not the same over an extended period of time, since

there are many structural and operating changes taking place over time.[2] These changes make the system less vulnerable to some instability factors, while making it susceptible to new instability factors.

The Research Issue

In this study, three types of economic systems are considered: Capitalist, Mixed, and Socialist. At the end of the 1980s, changes began to take place in some economic systems in Eastern Europe. In order to get the milieu of operating economic systems needed (Capitalist, Mixed, and Socialist) for a good understanding of the transmission pattern of business fluctuations, the period 1970 through 1989 was chosen.

The concern in this study is to determine, within a limited historical time frame, the extent to which business fluctuations were transmitted by the US to Latin American countries. The direction and magnitude of the movements in the US economy can be compared with movements in the Latin American countries that are more closely related to the US economy. Such results can be compared with movements for other Latin American countries, which are more closely related to other types of economic systems.

ECONOMIC SYSTEMS AND CYCLE FACTORS

Hicks [1950, 2] maintained that: (1) cycles are not uniform; (2) while they do share a family likeness, they differ considerably among themselves; and (3) their common characteristics are difficult to identify. In an attempt to formulate a general theory of business cycles, Salvary [1996, 441] posited that: *"There are families of business cycles, with each family representing a related set of economic systems. Given a family approach to economic systems, then it is conceivable that a general theory can be developed for each family of economic systems by grouping factors identifiable with particular sets of economic systems."* Salvary [1996] maintained that the diffusion of economic fluctuations across economic systems is not uniform since these systems are encompassed within three hierarchical layers: (1) closed, partially open, and open economies; (2) fully developed, developing, and less developed economies; and (3) capitalist, socialist, mixed, and Japanese styled economies. The use of the term "Japanese styled" economies is because that type of economy is driven by a visible hand (The Ministry of International Trade and Industry), instead of the invisible hand of the capitalist economies. South Korea and Taiwan are considered as "Japanese styled" economies [Johnson, 1975, Chap. one; Hayek 1932,628,631-635]. Also, Malayasia and Singapore are to be considered in the family of this type of economic system.

Different operating philosophies are reflected in the various economic styles. For instance, the effect of inventory adjustment will be more severe in capitalist economies than in a Japanese styled

economy, because in the latter manufacturing inventory is held to the economic minimum. In addition, there is the situation of chronic over-production at one time and under-production at another time. In capitalist economies, this condition is witnessed due to a lack of production coordination among business firms; but such a condition will not appear in socialist economies in which there is coordinated production [Lange 1938, 105-106]. However, underproduction is invariably experienced in socialist economies [Nuti 1989, 430]. Furthermore, given the finding by Danthine and Donaldson [1991] that the US labor market does not share the same features with the European markets, Fairise and Langot [1994, 1592] concluded that the US model of the business cycle is insufficient to explain the European business cycle.

Apparently, the many special cases of the business cycle are due to the differing circumstances with each set representing forces of resistance and sources of vulnerability [Salvary 1996]. Therefore, in spite of the existing diversity, it is conceivable that a general theory can be developed by grouping diverse factors associated with the business cycle and identifying each group of factors with particular economic systems. Based upon the information in Table 2, there are thirty-six possible combinations of economic systems. If cycle factors related to each specific family can be identified, then generalization is possible. The classification for the study is as follows:

Open Economy - Imports or exports are, on the average, greater than 70% of GDP for the Years 1972-1986.

Partially Open Economy - Imports and Exports are, on the average, between 15% and 70% of GDP for the Years 1972-1986.

Closed Economy - Imports and exports are, on the average, less than 15% of GDP for the Years 1972-1986.

TABLE 2

PANEL A: MATRIX OF STRUCTURAL TYPES OF ECONOMIC SYSTEMS

Industrialized	Structural Type			Countries Classified
Highly	O-1	P-1	C-1	16
Moderately	O-2	P-2	C-2	103
Less	O-3	P-3	C-3	18
# of Countries				137

(O = Open; P = Partially Open; C = Closed)

TABLE 2 (Continued)

PANEL B: MATRIX OF PHILOSOPHICAL TYPES OF ECONOMIC SYSTEMS

	Philosophical Types			
Factors	**Capitalist**	**Socialist**	**Mixed**	**Japanese**
Initiating:				
Population	Yes	Yes	Yes	Yes
Technology	Yes	Yes	Yes	Yes
Government Policies	Yes	Yes	Yes	Yes
Business Practices	Severe	Mild	Strong	Mild
Activated:				
Multiplier	Yes	Yes	Yes	Yes
Accelerator	Yes	Yes	Yes	Yes
Accentuating:				
Slow response of Interest Rate	Yes	No	Yes	No
Terminating:				
Diminishing Returns on Investment	Severe	Mild	Strong	Mild
Government Policies	Yes	Yes	Yes	Yes
Countries Classified = 137	63	25	44	5

The classification scheme for families of economic systems in Table 2, which was established using data from the United Nations for 137 countries, is as follows: (Foreign investments and overseas export are an inherent part of the classification scheme.)

Socialism State (Government controls all key sectors of the economy including: foreign trade, major industries, production distribution networks, public utilities, banking and credit systems. Direct foreign investment is not welcomed. Light industry and the agricultural sector are often privately owned. Hospitals and health care are usually free of charge and operated by state agencies.

Capitalism Private ownership dominates all key sector of the economy including: all industries, foreign trade, utilities, insurance, banking and agriculture. There is limited government ownership and intervention. Foreign investment is not discouraged. In most cases, fees are charged for health care. Government subsidies are given for those who qualify. Primary, secondary, and higher levels of education are offered at both private and public schools.

Mixed State has nationalized or considerable control on key industries such as: public utilities, petroleum, banking, transportation and major manufacturing. Foreign investment is accepted. There exist many privately owned smaller businesses and light industry. Agriculture and fishing are often operated by private ownership. Health care is free under government sponsorship or subsidies. In some instances, fees are charged.

Japanese Styled This system is characterized by a participatory approach to operating the economic system. All segments of the society are monitored by and supported by government action. The emphasis is on cooperation and not on competitive markets.

It is held [Salvary 1996] that the structure of an economic system and its operating philosophy determine the magnitude and duration of a business cycle in that economic system. The severity of the business cycle is dependent upon the ability of the system to respond to dynamic changes. Systems which accentuate cooperation among labor-management-government will be more responsive to the dynamics of the developing situation than systems that are characterized by labor-management-government confrontation.

While for most economies, the business cycle consist of: (1) an investment cycle and (2) a consumption cycle, the growth path of the economy is directed and redirected by exogenous shocks to the system (e.g., catastrophes and cartelization). As per Cobeljic' and Stojanovic' [1969, 20, chap.11], cyclical fluctuations in socialist countries are caused by technological progress. In socialists economies, the investment cycle has an important role in explaining economic fluctuations. While, due to the rationing process, the consumption cycle, does not have a significant role, shocks, such as population growth, do affect the investment cycle.

THE DIFFUSION PROCESS: A SYSTEM-DEPENDENCE MODEL OF CYCLIC BEHAVIOR

Given the existing trade pattern, countries in Latin America are greatly influenced by the US economy. Yet, this influence does not have to be of the same magnitude across those countries. It is possible that such influence could be diffused differently, since the nineteen countries in Latin America belong to different family groups based upon the classification scheme in Table 2:

Capitalist: Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Panama, Paraguay, and Uruguay.

Mixed: Argentina, Costa Rica, Honduras, Peru, and Venezuela.

Socialist: Cuba and Nicaragua.

Data on gross domestic output (GDP), gross capital formation/investment, and consumption for the countries over the period 1972-1989 were obtained from the United Nations' *Yearbook of National*

Account Statistics (1981 and 1982) and the *National Accounts Statistics Main Aggregates and Detailed Tables*, Parts I and II (1989 and 1991). The data were analyzed to: (a) identify discernible patterns, (b) determine how well those economies, which are identified with the US economy, correlate with the movements in the US economy; and (c) ascertain if there are other established relationships of some Latin American economies with other economies. Also, some important factors, which have to be considered as background in assessing the findings, are presented below.

During the period, Argentina, Bolivia, Brazil, Chile, Mexico, Peru, and Venezuela were highly indebted countries faced with a floating debt rate (Detragiache 1992,1247, 1258). Owing to the high interest rates in the 1980s, the cost of financing debt has had a negative impact on investment. This condition has accounted for the slowing down of foreign investments in developing countries. While on the international scene there was a slowdown in investments, the biggest reduction in investments occurred in the developing countries. Venezuela, Argentina and Honduras experienced the more severe decline (10.3%, 8.9%, and 7.9% respectively) in the average ratio of investment to GDP in the period 1974-1981 versus 1982-1988. Chile experienced difficulties with three phases of development involving privatization (1974-1975), re-nationalization (1975-1983), and privatization (1983-1986); in this process, investment was adversely affected [Vickers and Yarrow 1991,126-127].

While some of the countries were following export growth oriented policies, others were pursuing import substitution policies. In Brazil, the military rule which started in 1964 ended in 1985. During that time, Brazil's strong performance was due to: (1) an aggressive export policy and (2) an import-substituting industrialization policy. The debt crisis was responsible for Brazil's continuation of the import substitution industrialization policy (Skidmore 1988,255). The policy adopted by Brazil, Colombia, and Venezuela is to compete with exports of other Less Developed Countries (LDCs); this policy is to be contrasted with one of competing with products of developed countries pursued by Mexico and Peru. While Chile and Ecuador could be considered following a middle path, no clear policy adoption can be ascribed to Argentina and Paraguay [Faini et al. 1992,874-875]. The Latin American countries, following an export growth policy without the benefit of a reduction in the exchange rate, could not experience significant improvements in their export records since they were competing against the East Asian LDCs which had experienced a decline of almost 30% in their real exchange rates [Faini et al. 1992,872]. For LDCs, the use of currency devaluation to spur trade does pose serious setbacks when many LDCs embark upon such a path. Argentina presented a peculiar situation: an appreciation against the US dollar from 1976-1980; then, a significant devaluation in 1981 [Calvo 1983,199,214,215]. Mexico experienced two currency devaluations, one in 1976 and another 1982 [Cumby and Obstfeld 1983,265].

Discernible Patterns

Examination of the data reveal five discernible patterns of economic activity among the countries: (1) Argentina and Bolivia; (2) Brazil, Mexico, Nicaragua, Peru, and Uruguay; (3) Chile, Colombia, Costa Rica, Ecuador, and Paraguay; (4) Cuba, Honduras, Panama, and Venezuela; and (5) Dominican Republic, El Salvador, and Guatemala. Every pattern identified above is represented in the US affiliated group. Given the three types of economic systems delineated above, *it is hypothesized that the business fluctuation diffusion process is more pronounced among similar types of economic systems than among dissimilar types*.

Correlation with US Economy

Three series of data (in current prices) have been subjected to correlation analysis. Table 3 (Gross Domestic Product), Table 4 (Gross Capital Formation/Investment), and Table 5 (Consumption) provide the results pertaining to the countries in Latin America that are most closely identified with the US economy. Table 3 reveals that there is weak correlation with Bolivia and Brazil. The erratic prices for minerals and the role of mining and processing of those ores in Bolivia (Alexander 1982,27-32) and import-substitution in Brazil are factors that should account for the divergence of those economies' performances from the US trend.

TABLE 3

GDP CORRELATION OF IDENTIFIED LATIN AMERICAN ECONOMIES AND CANADA WITH THE US ECONOMY

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Bolivia	Brazil*	Chile	Colombia	Dominican Republic
0.30413	0.64507	0.97023	0.96885	0.96809
(0.2704)	(0.0094)	(0.0001)	(0.0001)	(0.0001)
Ecuador	El Salvador	Guatemala	Mexico	Panama
0.92264	0.92779	0.96187	0.81388	0.98878
(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Paraguay		Uruguay		Canada
0.95289		0.81570		0.99871
(0.0001)		(0.0002)		(0.0001)

* N = 14** Canada is included since it is the most significant trading partner of the US.

Data in Table 4 reveal that there is weak correlation with Bolivia (negative), Brazil and Panama. This finding suggests that institutional factors affecting investment behavior (e.g., centralized bank control in the US versus decentralized bank control of financial capital flows in Bolivia and Brazil, and to

some extent in Panama) are sufficiently different to warrant a different response patterns. Also, the significance of mining in Bolivia and the price of raw materials on the world market would be factors that would account for the different behavior of Bolivia.

TABLE 4

INVESTMENT CORRELATION OF IDENTIFIED LATIN AMERICAN ECONOMIES AND CANADA WITH THE US ECONOMY

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Bolivia	Brazil*	Chile	Colombia	Dominican Republic
-0.76403	0.65280	0.93023	0.94679	0.96949
(0.0009)	(0.0114)	(0.0001)	(0.0001)	(0.0001)
Ecuador	El Salvador	Guatemala	Mexico	Panama
0.91201	0.70387	0.77895	0.83626	0.59740
(0.0001)	(0.0034)	(0.0006)	(0.0001)	(0.0187)
Paraguay		Uruguay		Canada**
0.94868		0.87498		0.96559
(0.0001)		(0.0001)		(0.0001)

* N = 14 ** Canada is included since it is the most significant trading partner of the US.

Similar to the findings in Table 4, the data in Table 5 reveal a weak correlation of US data with those of Bolivia and Brazil. This finding would suggest that the institutional factors (e.g., possibly credit extension or social assistance programs) in Bolivia and Brazil are quite different to warrant a different response than that of the US trend.

TABLE 5

CONSUMPTION CORRELATION OF IDENTIFIED LATIN AMERICAN ECONOMIES AND CANADA WITH THE US ECONOMY

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Bolivia	Brazil*	Chile	Colombia	Dominican Republic
0.54847	0.60738	0.97960	0.97424	0.91021
(0.0343)	(0.0163)	(0.0001)	(0.0001)	(0.0001)
Ecuador	El Salvador	Guatemala	Mexico	Panama
0.91717	0.95054	0.97054	0.80660	0.99306
(0.0001)	(0.0001)	(0.0006)	(0.0003)	(0.0001)
Paraguay		Uruguay		Canada**
0.95156		0.82570		0.99909
(0.0001)		(0.0001)		(0.0001)

* N = 14 ** Canada is included since it is a significant trading partner of the USA.

Correlation With Socialist Economies

Tables 6 (GDP), 7 (Investment), and 8 (Consumption) provide the correlation results pertaining to two countries in Latin America that are not closely identified with the US economy. During the time period covered by this study, those countries (Cuba and Nicaragua) are better identified with the USSR and China. In Tables 6, 7 and 8, the data for Cuba are well correlated with that of the USSR and China. Data for Nicaragua (a virtual war economy) does not fit. This condition is attributable to the foreign financed insurgency in Nicaragua during that period (Fitzgerald 1985,193; Dore 1986,339).

TABLE 6
GDP CORRELATION OF TWO LATIN AMERICAN ECONOMIES AND CHINA WITH THE ECONOMY OF THE USSR

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Cuba	Nicaragua	China*
0.98698	0.54760	0.91636
(0.0001)	(0.0346)	(0.0001)

* China is included since it is a significant trading partner of the USSR.

TABLE 7
INVESTMENT CORRELATION OF TWO LATIN AMERICAN ECONOMIES AND CHINA WITH THE ECONOMY OF THE USSR

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Cuba	Nicaragua	China
0.83291	0.59484	0.87287
(0.0001)	(0.0193)	(0.0001)

* China is included since it is a significant trading partner of the USSR.

TABLE 8
CONSUMPTION CORRELATION OF TWO LATIN AMERICAN ECONOMIES AND CHINA WITH THE ECONOMY OF THE USSR

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N =15)

Cuba	Nicaragua	China
0.97121	0.54489	0.92689
(0.0001)	(0.0357)	(0.0001)

* China is included since it is a significant trading partner of the USSR.

Correlation with Mixed Economies

Tables 9 (GDP), 10 (Investment), and 11 (Consumption) provide the correlation results pertaining to the five remaining countries in Latin America that are not closely identified with the US economy.

TABLE 9

GDP CORRELATION OF FIVE LATIN AMERICAN ECONOMIES AND ITALY WITH THE FRENCH ECONOMY

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Argentina	Costa Rica	Honduras
0.08217	0.94240	0.98816
(0.7896)	(0.0001)	(0.0001)
Peru	Venezuela	Italy
0.75160	0.98955	0.99349
(0.0076)	(0.0001)	(0.0001)

* Italy is included since it is a significant trading partner of France.

TABLE 10

INVESTMENT CORRELATION OF FIVE LATIN AMERICAN ECONOMIES AND ITALY WITH THE FRENCH ECONOMY

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 15)

Argentina	Costa Rica	Honduras
-0.68894	0.90322	0.82515
(0.0092)	(0.0001)	(0.0002)
Peru	Venezuela	Italy
0.70409	0.65370	0.97462
(0.0156)	(0.0082)	(0.0001)

* Italy is included since it is a significant trading partner of France.

TABLE 11

CONSUMPTION CORRELATION OF FIVE LATIN AMERICAN ECONOMIES AND ITALY WITH THE FRENCH ECONOMY

Pearson Correlation Coefficients - Prob > :R: under Ho: Rho=0 (N = 5)

Argentina	Costa Rica	Honduras
0.47356	0.94619	0.99059
(0.1021)	(0.0001)	(0.0001)
Peru	Venezuela	Italy
0.73506	0.99463	0.99533
(0.0100)	(0.0001)	(0.0001)

For the three cycles during the study period, among the group of seven, France had the lowest average contraction (-3.6%) and fifth highest average expansion (10.9%). These averages are in contrast to the US's 11.2% contraction and 18.9% expansion [Sherman 1991,334]. This condition led to the decision to match up the economies of Argentina, Costa Rica, Honduras, Peru, and Venezuela with France.

Tables 9, 10, and 11 reveal that the data for Costa Rica, Honduras, Peru and Venezuela are well correlated with that of the France and Italy. However, the data for Argentina do not fit in with this group. Argentina has had a peculiar type of experience which may help account for this lack of correspondence. In 1975, there was a fiscal deficit of over 12% of GDP, with revenue at less than 25% of expenditures. The various reforms that were instituted consisted of: (1) the decontrol of the banking system and removal of barriers on international financial capital flows (1976), and (2) the elimination of wage, price and trade controls (1976-1978) (Calvo 1983,201). In addition there was a major devaluation in 1981. Overall, most of the countries relate well to their economic types. The results are consistent with the expectations.

BUSINESS CYCLE TRANSMISSION: THE CASE OF LATIN AMERICA

Tables 12 and 13 (data in constant prices) identify the emergence of fluctuations (x) and their continuation (--) in the Latin American Economies, China, France, Italy, USSR, and the USA. When output is unchanged, **f** is used to indicate such a situation. For the Gross Domestic Product series (Table 12), there is not much diffusion in the first two periods (1970-1973 and 1974-1979). Significant diffusion occurs in the next period (1980-1989); it is experienced in only five--Bolivia, Chile, El Salvador, Guatemala, and Mexico--of the eleven identified Latin American economies identified with the US pattern. The Gross Capital Formation/Investment series (Table 13) is checkered reflecting the reliance of the Latin American countries on foreign investments.

Special Factors To Be Considered

Mexico's export growth oriented policy had exposed it severely to the vagaries of the international slump. The readjustment in investment is reflected over the period 1982-1989. Though it has been maligned, Brazil did enjoy the positive effect of the import-substitution industrialization policy (Balassa et al. 1986,69). The Brazilian industrial structure was completed during the period 1974 through 1979 with the development of the capital goods and intermediate goods sectors (Masiero 1997). Furthermore, during the period 1965 to 1996, a rise in the real exchange rate helped Mexico achieve a higher growth rate of output; whereas, in the case of Brazil, a rise in the real rate of exchange produced a lowering of the growth rate of output (Lopez and Cruz, 2000, 482).

Nicaragua's economic performance was negatively affected by the need to mobilize a war

economy. The heavy emphasis on mining in Bolivia removes that economy from the problems of a manufacturing setting. For the period 1973 through 1985, while at an decelerating rate the following growth in per capita income was experienced: Brazil (29%), Colombia (23%), Ecuador (22%), and Mexico (13%). A decline in per capita income was experienced in Venezuela, Peru, and to a lesser extent in Argentina, owing to adherence to differing economic policies (Balassa et al. 1986,69). Since 1986, the export revenues of Ecuador, Mexico, and Venezuela (heavy exporters of oil) had been affected by falling oil prices. All of these factors contributed to fluctuations since adjustments had to be made to compensate for significant revenue losses.

One of the more pervasive factors was the redirection of foreign capital from the Latin American countries to the U.S. due to the raising of the interest rates in 1980 by the U.S. government. This condition produced a severe crisis of adjustment for most of the Latin American countries from 1980 onwards (Masiero 1997). During the 1970s, Argentina, Brazil, Colombia, and Mexico experienced an upward trend in exports, imports, and real output; however, during the 1980s, the long term rate of growth of output declined in Argentina, Brazil, and Mexico but it was not apparent in Colombia (Lopez and Cruz 2000, 3). That pattern is consistent with the data for those countries as shown in Table 12.

TABLE 12
FLUCTUATIONS IN GROSS DOMESTIC PRODUCT OR NATIONAL MATERIAL PRODUCT: 1970 - 1989

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Bolivia										
Brazil										
Chile						x	-------x	-------x		
Colombia										
Dominican Republic										
Ecuador										
El Salvador										x
Guatemala										
Mexico										
Panama						x				
Paraguay										
Uruguay			x	-------x						
USA					x	---------x				
Argentina						x	---------x		x	
Costa Rica										
Honduras						x				
Peru									x	
Venezuela										
Italy						x				
France										
Cuba (NMP)										
Nicaragua									x	
China							x			
USSR										

TABLE 12
FLUCTUATIONS IN GROSS DOMESTIC PRODUCT OR NATIONAL MATERIAL PRODUCT
(Continued)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Bolivia			x	x	x	x	x	x	x	x
Brazil		f	f	f	f				f	f
Chile			x	x	x	x	x			
Colombia										
Dominican Republic						x				
Ecuador				x				x		
El Salvador	x	x	x	x	x	x	x	x	x	x
Guatemala			x	x	x	x	x	x		
Mexico		x	x	x		x	x	x		
Panama								x	x	
Paraguay			x	x	x					
Uruguay			x	x	x	x				
USA	x		x							
Argentina		x	x	x	x	x	x		x	x
Costa Rica		x	x	x						
Honduras			x	x						
Peru				x	x	x			x	x
Venezuela		x		x	x	x				x
France										
Italy			x							
Cuba (NMP)							x	x	x	x
Nicaragua										
China (NMP)										
USSR (NMP)										

TABLE 13
FLUCTUATIONS IN GROSS CAPITAL FORMATION

Country	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Bolivia				x-------x			x---------x--------x--------x			
Brazil						x---------x---------x--------x---------x				
Chile						x---------x---------x--------x				
Colombia			x-------x			x				
Dominican Republic							x			
Ecuador			x-------x				x			x
El Salvador			x							x
Guatemala			x			x				x
Mexico	x					x---------x				
Panama			x-------x--------x---------x---------x---------x--------x							
Paraguay										
Uruguay			x-------x--------x							
USA					x---------x---------x---------x					x
Argentina				x--------x---------x					x---------x	
Costa Rica			x			x			x	
Honduras		x---------x				x--------x				
Peru			x			x--------x---------x--------x---------x				
Venezuela					x					x
Italy		x---------x				x--------x---------x--------x---------x				
France						x--------x---------x--------x				
Cuba (NMP)		(Not Available)								
Nicaragua			x			x--------x			x	
China					x		x			
USSR										

TABLE 13
FLUCTUATIONS IN GROSS CAPITAL FORMATION
(Continued)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Bolivia	x	x	x	x	x	x	x	x	x	x
Brazil		x	x	x	x	x		f	f	f
Chile			x	x	x	x	x	x	x	
Colombia				x	x	x	x	x		x
Dominican Republic		x	x	x	x	x	x		x	
Ecuador		x	x	x	x	x	x	x	x	x
El Salvador	x	x	x	x	x	x	x	x		
Guatemala	x		x	x	x	x	x	x	x	x
Mexico		x	x	x	x	x	x	x	x	
Panama		x	x	x	x	x	x	x	x	
Paraguay			x	x	x	x	x	x	x	x
Uruguay		x	x	x	x	x	x		x	x
USA			x			x	x			
Argentina		x	x	x	x	x	x	x	x	
Costa Rica	x	x	x	x	x	x	x		x	
Honduras		x	x	x	x	x	x	x	x	x
Peru		x	x	x	x	x	x	x	x	x
Venezuela	x	x	x	x	x	x	x	x	x	x
Italy		x	x	x	x	x	x			
France			x	x	x	x	x			
Cuba			x				x		x	
Nicaragua			x							
China		x								x
USSR	x									

DISCUSSION ON HISTORICAL OBSERVATIONS

The observations in the study are limited; however, the statistical data presented in this descriptive analysis does suggest that the diffusion process is not uniform because its impact was affected, in part, by the varying types of economic systems; also, the observed diffusion is lagged for the first three cycles - the period 1970 through 1980. Although two of the test countries (Argentina and Nicaragua) did not match up well with their economic type models, the comparative analysis did support

the difference in economic types. The exceptions in the two settings were affected by other factors (enumerated above) that prevented them from responding in the same fashion and to the same degree as the other test countries. However, a more robust test would necessitate the use of a more detailed time series data.

There is no simple theoretical solution to enable a country to escape from the transmission of economic fluctuations. Evidently, the transmission process cannot be eliminated; however, it appears that it can be mitigated or exacerbated, depending on industrial, fiscal, and monetary policies. While the policies employed by Brazil may have insulated it in great part from the impact of the US cycles, more intensive analysis of industrial policies has to be undertaken, on a sector by sector basis, to determine the effectiveness of such policies.

For the eighteen year period under observation, there are three major policy implications that are quite apparent: (1) The use of currency devaluation is a means to accentuate trade with potential negative consequences (e.g., an ever-increasing current account deficit). (2) Trade by Latin American countries with Less Developed Countries is less prone to wild swings than is trade with developed countries. (3) Debt management, that is the level of debt and debt service, causes massive adjustments with adverse economic effects that have to be made to compensate for over spending.

ENDNOTES

[1] For a comparison on the differences in institutional effects on economic systems with differing operating philosophies, see Mullins and Wadhwani (1989).

[2] For a discussion of changes in the economy, see Gordon (1969). For changes in the financial structure of the economy between 1914 and 1982, see Friedman (1986).

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