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AN ANALYSIS OF THE INTERNATIONAL MONETARY FUND

AND THE IMPACT OF ITS POLICIES IN LATIN AMERICA

A Dissertation Proposal

Submitted to the
Faculty of the University of Sarasota
In partial fulfillment of
The requirements for the degree of
Doctor of Business Administration

By

Michelle Wendy Hacker

University of Sarasota

Sarasota, Florida

November 17, 2000

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Dissertation Committee Approval:

Peter Simmons, Ph.D., Chair	date
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ABSTRACT

How had the external debt level in Latin America become so unmanageable? What were the causes of these high debt levels? Four nations were studied to determine what a debt crisis event might consist of. Argentina, Bolivia, Brazil, and Colombia were examined for the period 1975 - 1995.

Data was gathered from two main sources, the U.N. and the I.M.F. Statistical Yearbooks. The data were entered into the SPSS statistical program version 8.0 for Windows. Parameters and subsequent testing were set to the programs defaults for simple "t" tests and Pearson correlation tests. However, for linear or 2 stage least squares regression testing, the forward stepwise method of inclusion of variables into the equation was used. Each Null Hypothesis was tested independently of the others. The ".05" level of significance was used for testing Hypotheses 1 - 5. Hypothesis 6 used a 60% level inclusion parameter.

H1 and H2 results show no statistically significant influence by global and external variables on the level of debt. H3 supports the premise that capital inflows, national output levels, inflation and investment levels, influenced debt levels. H4 and H5 conclude that the five internal variables had predictive qualities regarding External Debt as a dependent variable. H6 confirmed that interest rates, capital formation, per capita earnings, capital inflows, and gross domestic product have had an impact on debt level among the four nations in Latin America.

A model of debt crisis in Latin America would appear as a sequence of events. As increased exports generate additional capital, the additional capital is only minimally invested and used for import consumption. Large capital inflows from exports use expendable monies to repay debt. Debt and interest levels outpace expendable capital. Internal savings and reserves are not built up due to frequent currency collapses. Expendable reserves or savings are used to bolster failing infrastructure. The rescue of the failing infrastructure allows insufficient resources to adequately adjust the economic structure. Because of the lack of sufficient internal economic structured expansion abilities are decreased. This decreased expansion potential allows debt to outpace economic ability to repay debt under the existing structure.

CHAPTER I

THE PROBLEM

With the creation of the Bretton Woods agreement in 1944 and the subsequent creation of three institutions; the International Monetary Fund (IMF), the International Bank for Reconstruction and Development (IBRD), and the General Agreement on Tariffs and Trade (GATT), an external source of assistance was created for nations in monetary and fiscal trouble.

In this study, an examination will be made of two of the three external aid institutions, the IMF and the IBRD now known as the World Bank. During the course of this examination, several Latin American countries will be analyzed for trends regarding their debt service abilities.

The problem facing Latin America in the late 1990s is the servicing of its debt to the IMF and World Bank. Loans which were made to Latin America as early as the 1950s totaled $2,213 million, "only a third of the value of its exports" (Martinez and Fierro, 1993, p.2). Between 1960 and 1973, the debt grew to 1.9 times the value of its exports, (see table 1 for some of the debt services of these countries).

Table 1

Loans Classified by Borrowing Country in Millions of US Dollars

	Disbursements										
Country	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	Total
Argentina	17.6	56.6	26.0	10.5	.9	111.6					
Brazil	166.5	2.3	20.6	15.3	26.0	17.5	11.3	6.2	.9	1.3	267.9
Chile	35.2	8.9	6.8	6.3	6.2	8.9	10.5	5.1	13.7	8.7	110.3
Colombia	89.3	7.7	6.8	15.4	23.9	27.5	41.2	52.7	29.3	19.4	313.2
Ecuador	5.7	3.9	8.8	10.3	7.1	6.8	2.2	.7	2.0	.5	48.0
Paraguay	4.4	.1									4.5
Peru	31.6	6.6	3.7	1.5	8.9	12.7	14.1	20.0	18.0	8.3	125.4
Guyana	.9	.2			.7						1.8
Uruguay	43.8	7.7	7.7	2.1	2.0	1.7	2.3	3.9	1.9	4.1	77.2
Venezuela	2.5	13.3		25.8		28.0		20.5			90.1

Note: From International Bank for Reconstruction and Development Statistical Yearbook,(p. 12), by IMF, September, 1966.

This problem, already present in Latin America in 1973, was compounded by large inflows of foreign capital due largely to the oil boom of the early 1970's and liberal foreign aid to the area. These events though, rather than reducing debt, increased both the debt and the inability to pay as interest rates began to rise in the following recession of the late 1970s and early 1980s.

There are many ways to reduce debt, but those proposed by the IMF on a macroeconomic scale did not seem to work in those countries with internal fiscal, monetary, and social stability difficulties. However, those countries which sought and won assistance from the IMF did little to further their own situations. Altimir, (1996) even points out that the debt "crisis itself may be interpreted, with varying emphases, as an unusual combination of external shocks to already fragile structures in a setting of poor management" (p.4).

The problem set before the reader is one of objective concern. Is the current condition in the Latin Americas, of poverty, unemployment and capital flight the result of internal mismanagement alone, or IMF policies, or a combination of both? Further, could the problem have been avoided through any preventive actions, and if so, what would those actions be?

In the following section, a brief history of the IMF, its policies, and effects will be discussed before moving to the literature review.

PROBLEM BACKGROUND

A Brief History of the International Monetary Fund (IMF)

The close of World War Two brought in its wake for participating and non-participant nations alike, economic and social damage, collapsed monetary systems, severed trade routes, and the destruction of physical infrastructures. The forty - four nation conference in Bretton Woods, New Hampshire in the summer of 1944 was an attempt to resolve some of the above. Out of their efforts came three institutions which, although modified, are still in existence to date.

The International Monetary Fund was designated the task of creating and overseeing a new international monetary system. It would also serve as a forum for "discussion and resolution of issues affecting the system" (De Vries, 1995, p.43). The International Bank for Reconstruction and Development was the second institution to arise out of Bretton Woods and was charged with the financing of post war reconstruction and the economic development of emerging nations. The last

institution to arise out of the Bretton Woods agreement was the General Agreement on Tariffs and Trade which was actually concluded in 1947. This general agreement was to "provide rules for international trade." (De Vries, 1995, p.44).

The aim of these three building blocks, which fell under the auspices of the Bretton Woods Agreement, was to rebuild war torn economies, stimulate trade among nations, and stabilize exchange rates based on common criteria (see Table 2). The industrial countries of Europe were encouraged to adopt macroeconomic policies which would improve their overall exchange rate positions, as well as their overall payments position (De Vries, 1995).

Rather than augment these values as originally implemented, the IMF began a program of preventive maintenance. Ensuring that cash flow would be adequate to meet member needs, the IMF introduced the General Arrangements to Borrow, which enabled it to borrow from the ten largest industrial countries if a shortage should occur due to a balance of payments crisis among one or more members. In addition, the implementation of the Special Drawing Rights (SDR) allowed the IMF to ensure international liquidity.

Table 2

International Monetary Fund Time Table of Significant Events

Year	Event
1944	Bretton Woods Conference ratifying the Articles of Agreement of the World Bank and IMF
1946	Camille Gutt appointed IMF Managing Director; Fund's Initial quotas are $7.4 billion (US).
1952	Procedures for annual consultations on exchange restrictions approved Procedures for stand-by arrangements, drawings, and charges are agreed.
1959	First general increase in quotas becomes effective, raising the total to $15 billion (US)
1962	General Arrangements to Borrow (GAB) are formed
1963	Compensatory financing facility is approved
1966	Review of quotas increases total to $21.2 billion (US)
1969	Buffer Stock financing facility is established. Special Drawing Account and the Special Drawing Right is created
1970	Review of quotas increases total to $28.9 billion (US)
1971	Dollar convertibility into gold is suspended
1974	Guidelines for the management of floating rates is established. First oil facility is established; Extended Fund facility is established
1975	Second Oil facility is established
1976	Quota raised to $44 billion (US); four year gold sales program announced; Trust Fund established
1977	Supplementary Financing facility is established
1978	Quotas raised to $73.4 billion
1981	SDR is reconstituted as a basket of five major currencies
1982	Stand by arrangements are negotiated for Mexico, Argentina, and Brazil
1983	Quotas raised to $96 billion (US)
1985	Arrears strategy is adopted, declaring countries in arrears ineligible for IMF resources
1986 - 1995	Structural Adjustment facility established, contingency financing facility established, Quotas raised to $183.4 billion (US)

Note: From " The IMF Fifty Years Later," by De Vries, M. G. , 1995, Finance and Development, June, (p. 47),

The IMF also implemented an additional two mechanisms for lending, targeted to developing countries; the compensatory financing and buffer stock. These were designed "primarily to help developing countries deal with temporary declines in their export earnings stemming from fluctuation in the prices of primary products" (De Vries, 1995, p.44).

Organization and Strategies of the IMF

In 1971, the par value system of currency based on the gold standard content of the 1944 US Dollar was suspended. This par value had sustained developing economies for twenty - seven years. The suspension of this standard would prompt the IMF to adopt new policies to accommodate the floating exchange rate system. One of these policy changes was the implementation of increased monitoring of member fiscal and economic policies. A further change in administrative organization was effected; the creation of two policymaking bodies which were intended to increase the IMF response time for decision making issues as they arose.

The IMF response to this was short term macroeconomic stabilization and the support of flexible monetary structures. With expanding lending activities in the 1970s, and 1980s, the IMF instituted the SAF [the structural adjustment facility was a financial assistance program

designed to reshape a less developed economy from an import based economy to one which is export based] aimed at poorer countries and designed to support moderate macroeconomic and structural adjustments to the emerging economies. These structural adjustment programs were combined with concessional loans.

De Vries (1995) points out that the oil shocks of the 1970s forced many countries into borrowing scenarios. The sudden demand for funding drove interest rates up. Combined with individual countries' attempts at inflation control, a debt crisis emerged in the early 1980s. Although the IMF attempted to mitigate these circumstances, the assumption that the recession was short term proved to be in error and many of the policies geared toward a short term solution were inappropriate, as the recession lasted a full ten years.

It is at this point in the history of the IMF, that it's programs came under attack. Many of the structural adjustment programs initiated in poor countries went astray as unemployment continued, economic growth stalled, and debt service continued to rise. Social conditions also began to fall to even lower levels than those prior to the initiation of the structural adjustment programs (Martinez & Fierro 1993).

What has become the heart of the problem, however, is not the loans made, nor the structural adjustment programs themselves, but the distribution of income [the apportionment of incoming public and private revenue through both the upper and lower layers of society] which has traditionally been left to the individual countries' governments.

Purpose of the Study

The purpose of the study is to provide a comprehensive, research based study of the Latin American debt problem as it arose in the 1960s, grew in the 1970s, and culminated in the collapse of currencies across the Latin American region in the early 1980s. Further, the study proposes to assess global, internal, and external forces within the specifics of four economies; Brazil, Argentina, Colombia, and Bolivia, to gain insight into the common factors that occurred and impacted the economies.

Specifically, the study seeks to determine whether the International Monetary Fund and its policies were chiefly responsible for the large level of debt which now exists in the region. The present study also seeks to determine whether internal factors in these four countries caused or helped determine the current level of debt.

Finally, the study seeks to determine if any of the internal factors are shared among the four economies, and if so, whether these factors can be shaped by policy in order to avoid a debt crisis in other regions in similar circumstances.

Research Questions

Research question one: Did Interest Rates rise from the period 1975 - 1995, and if so were the changes in interest rates [as a global variable] significant enough to impact the four [Colombia, Bolivia, Brazil, Argentina] economies and contribute to the debt crisis as defined?

Research question two: Were the IMF policies of structural adjustment, lending, and capital formation present in the four [Colombia, Bolivia, Brazil, Argentina] economies, and if so did these programs foster lowered social standards, increased debt, and the eventual collapse of their respective currencies?

Research question three: Did the internal factors [capital inflows, unemployment, population, inflation, imports, economic growth, national output, exports, savings, investments, per capita earning power] present in the four [Colombia, Bolivia, Brazil, Argentina] economies show common trends?

Research question four: If any trends in the internal [see Table 8] variables in the four [Colombia, Bolivia, Brazil, Argentina] economies existed, were they significant enough to contribute to the debt crisis as defined?

Research question five: The statistically significant internal [shared] factors among the four (Colombia, Bolivia, Brazil, Argentina] economies which contributed to the debt crisis in the

region indicate policy making objectives which could alleviate future crises in the region?

Research question six: If the IMF policies were responsible in part or in whole for the debt crisis in the four [Colombia, Bolivia, Brazil, Argentina] economies, were there feasible alternatives to the policies initiated?

Limitations/Delimitations

The limitations of the study are determined by the completeness and accuracy of the data reported by the IMF and tabulated in their monthly and annual reports. As stated by Gavin and Perotti (1997): "The standard data source is the International Monetary Fund's Government Finance Statistics, whose coverage of Latin America is, however, largely limited to central governments, and even there has important gaps" (P.51).

Further, the study will be limited in its scope to four countries in Latin America; Brazil, Argentina, Bolivia, and Colombia. Further time constraints will be placed upon the analysis by limiting the time of study to encompass the years 1975 through 1995.

Finally, this study is not an experimental study, but an "after the fact" study which limits the study's applicability.

Definitions

The definitions used within the context of this study are supported by current literature or common definition and are listed below in alphabetical order.

Credit Tranche Position "The excess of any amounts available under stand-by over the member's Gold Tranche Position" (IFS, 1965, P.8).

Debt Debt referred to in the body of this work constitutes external national debt which has originated through a financial transaction with an international monetary authority. In most instances throughout this work, debt is referred to as the existing loan balance payable by an individual nation to the International Monetary Fund.

Debt Crisis This term refers generally, to the period from 1977 through 1982, when many nations already in debt experienced the need to borrow more to support failing currencies which ultimately collapsed. Although this work specifically addresses the debt crisis in Latin America, the overall crisis was not limited to this region.

Foreign Exchange Foreign Exchange is defined in IFS as holdings by monetary authorities (central banks, currency boards, exchange stabilization funds, and treasuries to the extent that they perform similar function) of claims on foreigners in the form of bank deposits, treasury bills, short and long-term government securities, and other claims usable in the event of a balance of payments deficit, including non-marketable claims arising from inter-central bank and inter-governmental arrangements without regard to whether the claim is denominated in the currency of the debtor or the creditor (IFS, 1975, P.4)

Fund Borrowing In the General Arrangements to Borrow which became effective in 1962 the main industrial countries undertake to lend to the Fund specified amounts of their currencies (aggregating to the equivalent of $6.0 billion) if supplementary resources are needed to forestall or cope with an impairment of the international monetary system. Generally speaking, amounts lent to the Fund are repayable when the member whose drawing they financed repurchases its currency from the Fund or when the lending country itself experiences a balance of payments deficit (IFS, 1965, P.7).

Gold Sales The Fund's sales of gold to acquire currencies are recorded . . . In addition to sales of gold to acquire currencies, the Fund has also sold gold to the US to the amount of 800 million US dollars in order to acquire income-earning US Treasury bills and short term notes (IFS, 1965, P.7).

Gold Tranche Position Under the Fund's gold tranche policy members are given the overwhelming benefit of any doubt with relation to requesting transactions that do not bring the Fund's holdings of a member's currency to a level above its quota" (IFS, 1965, P.4). A member's position is determined by measuring "a member's quota minus the Fund's holdings of its currency, if this amount is positive. . . this is the same amount, if positive, of the member's gold subscription, plus its repurchases of currency subscription, minus its net drawings (IFS, 1965, P.7)

Gross Fund Position "The sum of a member's Reserve Position in the Fund and its Credit Tranche Position, i.e., twice the member's quota minus the Fund's holdings of the member's currency and plus lending to the Fund, if this amount is positive" (IFS, 1965, P.8).

IBRD International Bank for Reconstruction and Development as instituted at the Bretton Woods agreements in 1944.

IFS International Financial Statistics as published by the International Monetary Fund Authority.

Internal Forces Internal Forces referred to in this work are generally concerned with Privatization, Foreign Capital Use and Investment, the Central Bank's Role, Monetary Policies, Economic Growth, Trading Partners, and Other Variables, such as Population growth, Unemployment, and Capital (human) flight. These forces, here primarily economic and social, if not observed and managed, can seriously impact the nation's internal structural balance. For instance, population growth and unemployment, if gone unchecked will produce widespread poverty. Although none of these forces acts alone, each must be balanced to some extent, with the remaining, in order to produce and environment for overall prosperity and growth.

IMF International Monetary Fund as instituted at the Bretton Woods agreements in 1944.

International Reserves "The country pages report the US dollar value of holdings of gold, Special Drawing Rights (SDRs), Reserve Positions in the Fund, foreign exchange, and the totals of these items" (IFS, 1975, P.4).

Lending to the Fund "Claims on the Fund arising from lending under the General Arrangements to Borrow" (IFS, 1965, P.7).

Quotas "Each member of the Fund has a quota. These determine the voting power and subscription of each country and the normal quantitative limitations on the member's use of the Fund resources" (IFS, 1965, P.2).

Reserve Position in the Fund The sum of a member's Gold Tranche Position and outstanding lending to the Fund. The Reserve Position in the Fund represents the amount that a member, experiencing a balance of payments deficit, may draw essentially automatically under the Fund's Gold Tranche policy or the provisions of the General Arrangements to Borrow (IFS, 1965, P.8).

SDRs . . . are unconditional international reserve assets created by the Fund. Reserve Positions in the Fund are unconditional assets that arise from countries' gold subscriptions to the Fund and from the Fund's use of members' currencies to finance the drawings of others (IFS, 1975, P.4).

Standby Arrangements Arrangements entered into by members with the Fund to assure drawing limits remain at a specified limit within an agreed upon period.

Subscriptions ". . . are equal to quotas. They are payable partly in gold and partly in the member'' currency. Normally the gold subscription is 25 per cent of the quota" (IFS, 1965, P.3).

World Bank The name given commonly to the institution Arising from Bretton Woods and known as the International Bank For Reconstruction and Development.

Importance of the Study

The importance of the study lies in the value the information may have for analysts studying the effects of external funding on Latin American countries specifically, and small to moderate economies generally. Although current research into the Latin American region has focused on the impact of external capital on creation or reduction of debt

in certain nations, the role of the International Monetary Fund in that venue has been largely limited to criticism of the policies without an in-depth analysis of the major factors that may have contributed to these situations.

This study seeks to fill that gap by providing a comprehensive analysis of the role of the IMF in the creation or reduction of current Latin American debt. The IMF policies will be studied in conjunction with the internal economic forces each nation faced in an effort to ascertain whether external funding or internal mismanagement of the sampled countries has been the source of the present Latin American debt.

This study targets specific variables, which have affected Latin American economies; contributing to the collapse of their currencies, escalating debt, and reducing the quality of life overall in the region.

CHAPTER II

LITERATURE REVIEW

Introduction

This section sets forth those forces, which have impacted developing economies. These forces which, for the purposes of this paper, will be labeled variables, are

divided into three major categories: Global, External, and Internal.

Global variables are further broken into subcategories, such as Economic Shocks, Monetary Shocks, Social Shocks, and Fiscal Shocks. External variables are also broken down into subcategories, such as, US Policies in Latin America, IMF Policies and Programs, World Bank Policies and Programs, and Regional Forces. Internal variables are broken into subgroups, such as Privatization, Foreign Capital Inflows, Central Bank actions, Monetary Policies, Economic Growth, Trading Partners, Population Growth, Unemployment, Capital (currency) flight, and Capital (human) flight.

This section seeks to introduce and review the current Literature regarding these variables as they have impacted Latin America in general, and Colombia, Argentina, Brazil, and Bolivia, in particular. The purpose of this section is to illustrate current research into Latin America, with an aim toward developing a model of debt crisis.

The development of this model will be based on the literature discussing those variables which impacted Bolivian, Colombian, Argentinean, and Brazilian economies. Further, it will be tested to ascertain whether the IMF, and it's policies, was a contributor to further debt, (or

the maintenance of that debt), or whether the internal economic, political, and social variables were significant contributing factors.

The studies to be included in this review will be those, which examine, analyze, illustrate or offer Latin American [South American and Central American nations, excluding Mexico and the Caribbean] models of economic behavior. In addition, those studies, which clearly state global, external, or internal forces without resorting to modeling, will be included in this review.

Those studies which will not be included in this review will be those which offer models of economic behavior, but whose sample consists of nations outside the Latin American context. In addition, those studies which offer additional variables, or an explanation for variables outside those specified here (as external, internal, and global) will not be included in this review. The literature review will encompass those current and non -current, (but relative) studies following the parameters previously set forth. The discussion will go from the greater in scope to the lesser in scope; from global forces, through external forces, to internal forces.

Overview

In reference to Latin America, there are three distinct categories into which economic variables can be grouped; these are global economic conditions which externally impact the Latin American economy, IMF policies and other external factors which impact the Latin American economies externally and internally, and internal government, social, and economic factors which impact the Latin American economies.

Global Factors

Global factors, as a group can be defined as the role and movement of private capital, the prevailing macroeconomic policies of those countries who possess large amounts of private capital, and unforeseen economic shocks.

Bernstein and Boughton (1994) point to three global developments, which converged in the 1970s and increased any existing debt burden. The first is the role of private capital. This began expanding within the more developed economies. This private capital began to play a more important role in financing international payments.

The second global event was the "conflicting approaches to macroeconomic policy among the large industrial countries [which] first weakened and then pulled down the par value currency system that had prevailed since

the end of World War II" (Bernstein & Boughton, 1994, P.44).

Third, the occurrence of a combination of industrial slowdowns, deteriorating trade arrangements, and the failure by many nations to promptly and adequately adjust their economies to global shocks, which led to the rapid rise in oil prices and initiated unexpected borrowing (Bernstein & Boughton, 1994).

Either singly, or collectively, these three main forces may have exerted sufficient external market pressure on the internal structure of a developing economy to alter or adjust the economic structure. This structural adjustment may have helped or hindered debt repayment. If the adjustments were made to accommodate the market and not the economy itself, it is possible that the adjustments made were not in the best interest of long term growth, debt repayment, and future financing.

Models using global variables

Alan Knight (1996), cites three main external shocks in the 1970s. An oil price increase, the failure of the gold standard, the slowdown of the previous post war (W.W.II) activity, and US policies toward Less Developed Countries (LDCs)such as those in Latin America.

In addition, Knight points out that perhaps the threat

of Communist invasion of South America had been superimposed on items of real concern for the US. Using combinations of financial aid and trade policy, propaganda and diplomacy, and military operations both overt and covert, the US sought to bolster its economic and political interests further in Latin America.

Within the 1970 - 1995 constraints of his study, Knight cites the invasion of Grenada and Panama as examples of US use of intervention in the Caribbean, stating as well, that nations such as Argentina and Chile, (where events may have been troublesome to US interests), were simply too far away to sustain any kind of intervention by the US.

In line with this is the concept of Core and Periphery nations as formed by Kowalewski (1991), with which he establishes core nations as industrialized centers of interest whose influence is extended to periphery nations. Among these core nations would be the United States whose influence could be said to extend to the periphery nations of Argentina, Bolivia, Brazil, Chile, and Colombia.

Nine or 27% of the periphery nations cited by Kowalewski exist in Latin America. Of all the groups of periphery nations, Latin America represents the largest

group of periphery nations. (Hacker, 1997).

Finally, Ghosh and Tanski (1996) cite 1981 - 1983 as the onset of a world wide recession, which led to a drop in exports in many developing countries including those of Latin America. This global factor clearly had far-reaching implications.

Thus, Hacker's (1997), Knight's (1996), Kowalewski's (1991) and Ghosh and Tanski's (1996) studies provide evidence of global actions which may impact a nation's economy either directly or indirectly. The oil price increases in the 1970s, the failure of the Bretton Woods Agreements in the same time period, the world wide recession of 1981 - 1983, and as well, the armed and unarmed (political and economic) interference by the U.S. in Latin American nations are all thought to be sufficient in scope to impact a nation's economy. The issues above provide some global variables that may have had significant impacts on the Latin American economies.

External Factors

The IMF policies in Latin America as an impacting factor in their economies can be divided into macroeconomic policies governing exchange rates, creation of credit markets, and tax restructuring, (De Vries, 1995), and structural adjustment programs.

Bernstein & Boughton (1994) discuss several studies regarding IMF policies. Omotunde Johnson and Joanne Salop analyzed the effects of IMF policies using a simple tradable/ non-tradable model. The conclusion was that stabilization programs can affect distribution within an economy in positive and negative way, depending on the scope of the economy.

Borpujari (1986), incorporated financial constraints into his model in which development depends on an economy's ability to provide for the population's basic production and consumption needs. The conclusions found in this model point to purely macroeconomic financial programming being appropriate only for economies sufficiently developed to overcome any production and consumption constraints. Those economies so constrained, show a strengthening of developmental potential with an inflow of foreign exchange used to import investment goods or basic consumption goods.

Bernstein, et.al, also cites in the same paper, a later study conducted by the IMF's Fiscal Affairs Department, (1985). Using the typical adjustment experience of 78 countries, and using synthetic situations with the absence of a short term stabilization program, the study concluded that IMF programs are no more damaging than other

alternatives.

Among the beneficial policies were "the elimination of restrictive exchange practices, expanding access to credit markets, broadening the tax base, restructuring indirect taxes, limiting expenditures on defense and 'grandiose public works' [projects]" (De Vries, 1995, P.43).

There were many criticisms of the IMF policies in the 70s and 80s. The main thrust of the criticism seems to be the unexpected trade off between stabilization at the cost of the lowering of social standards. Ramirez (1991, p.1) went as far as labeling the 1980s in Latin America at the hands of the IMF, a "lost decade". Citing the IMF policies, which have taken the form of currency devaluations, removal of tariffs, quotas, implementation of wage freezes, and government subsidy cuts as reducing living standards to the level of the 1930s.

Gavin and Perotti (1997, p.2) point to fiscal shocks in Latin America which have been "more disruptive than is typically observed in the industrial economies, uncovering evidence that in Latin America, fiscal expansions have been significantly associated with exchange rate collapses".

Ann Helwege (1990) even spoke of the agricultural sectors in Latin America as a possible antidote to the trend toward poverty under typical IMF structural

adjustment policies. Citing one of the mainstays of IMF policy: conditionality or devaluation, although essential to promote exports, it also raises the domestic price of food and lowers urban wages. Her conclusions were that "devaluation often leads to more egalitarian income distribution, since it transfers income from the urban sector to the poorer rural sector". Politically, though, this is resisted in Latin America as urban workers can exert more political influence than their agrarian counterparts. In the context of macroeconomic contraction however, devaluation has failed to excite agricultural production.

Models using external variables

Badrul Haque (1992) conducted a study, which encompasses 14 countries, 9 of which are in South America with the remainder spread across Africa, Central America, the Phillipines, and Central America. "Results for IMF programs indicate that if they were implemented fully the effects have been detrimental to capital formation or, alternatively, new programs were negotiated repeatedly even though previous programs were not implemented fully" (Haque, 1992, p. 2).

Hague defines the debt overhang condition as a country's available international reserves relative to

import and debt servicing needs. The measure of debt overhang is treated as an independent explanatory variable for the outcomes of savings and capital formation rates.

The results here are broken down into short term and long term effects for specific countries. The debt overhang hypothesis of low capital formation in the long run was accepted for Bolivia for the period 1963 - 1986 (Hague, 1992). The hypothesis was rejected, capital formation was promoted, for Colombia, at least in the short run.

In addition, Hague's hypothesis that IMF policy promoted capital formation was also accepted for Bolivia in the short run, but was rejected (capital formation was adversely affected) for Brazil in the short run, and Bolivia and Colombia in the long run. Overall then, IMF programs have been either neutral or have adversely affected gross fixed capital formation and national savings performance.

It is interesting to examine IMF data available for the same period (see Table 3) for Argentina, Bolivia, Brazil, and Colombia. Gross Fixed Capital Formation continued to rise through the period 1963 - 1983, despite a parallel increase in imports and a downturn in International Reserves for Argentina, Brazil, and Colombia

between 1981 and 1983. Even after the 1982 debt crisis and the devaluation of currencies for Argentina and Bolivia, gross fixed capital formation continued to increase. Argentina saw small gains in this area in 1987 and 1988 only. Bolivia has no data between 1984 and 1991, whereupon it resumes as a steady rise. Colombia experienced an uninterrupted rise in gross fixed capital formation throughout the 1983 through 1995 period. Thus, an examination of the data shows no support for Hague's conclusions unless the phrase 'adversely affected' is taken to mean a mitigation of potential growth.

Similarly, Guell and Richards (1998) used a Heckman two-Stage [essentially a regression technique] estimator to conclude that high levels of industrial sophistication are associated with high levels of economic integration. High levels of external debt also appear to spur economic integration. These authors also point to the external debt burden as a discouragement to regional integration except among the larger countries with greater resources (Aggarwal & Cameron (1994).

To summarize then, IMF policies, specifically those policies aimed at restructuring the economies of debtor countries adversely affect debt overhang, capital

Table 3

International Reserves, and Imports, on Nations as reported in Millions of Dollars(US), and Gross Fixed Capital Formation as reported per notes for 1963 - 1983.

Argentina

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Intl. Res	270	153	236	216	727	760	538	673	290	465	1323	1315	329	1536	3244	5177	9715	7046	3672	2506	1172
Imports	981	1077	1199	1124	1095	1169	1576	1694	1887	1905	2241	3570	3512	2743	3803	3492	6060	540	9430	5337	4504
GFCF	3 28	4 24	6 17	7 90	10 71	13 04	15 72	18 9	25 5	43 9	–	100	287	—	—	—	3 3	6 3	10 2	24 4	122
	BILLIONS OF PESOS																MILLIONS OF AUSTRALES				

Bolivia

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Intl. Res.	10	22	37	41	38	39	42	45	54	60	72	194	139	151	211	170	178	106	99	156	160
Imports	98	97	126	138	151	152	167	158	171	173	196	390	558	587	666	848	1011	814	975	577	545
GFCF	924	958	1051	949	1155	1770	1543	1666	1925	1848	2254	6468	8830	10597	12374	16493	15	17	18	71	226
	MILLIONS OF PESOS																BILLIONS OF PESOS BOLIVIANOS				

Brazil

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Intl. Res	219	246	484	425	199	257	656	1187	1746	4183	6417	5252	3980	6488	7192	11826	8966	5769	6604	3928	4355
Import	1487	1263	1096	1496	1667	2132	2265	2849	3699	4786	6999	14039	12210	12383	12023	13683	18084	22955	22091	19395	
GFCF	2	3 8	5 4	8 2	10 3	16 6	21 9	43 4	59 6	79 1	108	174	256	370	516	767	1409	2864	5441	10798	20414
	BILLIONS OF CRUZIEROS																				

Colombia

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Intl. Res	87	104	98	77	83	173	221	206	203	325	534	449	475	1101	1747	2366	3844	4831	4801	3861	1901
Imports	505	586	453	674	497	643	685	844	929	859	1061	1337	1494	1702	2028	2927	3364	4739	5199	5477	4968
GFCF	7	8	9 5	12 3	14 7	18 8	21 2	25 8	31	34	44	64	77	97	135	181	183	265	350	436	525
	BILLIONS OF PESOS																				

Source: International Monetary Fund Yearbooks (1963 - 1983); Economic Data Tables

formation, and economic integration. The use of these strategies combined with the sheer volume of money directed into the repayment of debt leaves little funding left for other funding.

Internal Factors

Internal factors, as a group, can be defined as Government privatization, use of foreign capital, the role of the central bank, monetary policies, economic growth, the role of trading partners, unemployment, labor mobility, labor skills, and government management skills.

Privatization Of Government Owned Companies

The approach to privatization is fundamentally the same, no matter where it occurs, and involves either the divestiture of a State Owned Enterprise (SOE) to employees, local investors, or foreign investors, or a lease or contract to manage the enterprise for the state. Privatization also involves the creation of new private enterprises by the state to fill gaps in the infrastructure. Franchising, contracting, and leasing are some of the techniques used in privatizing SOEs.

Privatization can be brought about by the pursuit of economic, political, and social objectives (Bornstein, 1992, p.470). The act of privatizing may be part of the momentum of a larger change.

Ramamurti (1992) discusses two phases of privatization in Latin America, Phase one, which lasted from 1980 - 1987, and Phase two, which lasted from 1988 onwards. Prior to 1987, most of the privatization efforts in Latin America were limited to the sale of small enterprises, a few basic services such as trash collection, etc, (see Table 4). After 1987, however, privatization can be said to have impacted the individual nations' debt problems. Argentina, Chile, and Mexico seemed to lead the way in divesting themselves of their SOEs. Argentina sold most of its stock in the national airline and the telephone company. Mexico privatized two of its airlines and TELMEX, the phone company. Venezuela targeted its airlines and telephone companies, and Brazil targeted its steel and petrochemical industries. The divestiture of these SOEs meant a reduction in expenses to these governments. By privatizing, the governments were able to collect a portion of the revenue through taxation, without the additional expense of operating and administrative costs. In this way, government funds were freed up to repay some of the existing debt.

As Bornstein (1994) points outs, privatization has links to other areas of the economy. Although his article references Eastern Europe, some similarities can be seen in

Table 4

New Privatization Completed or Underway in Latin America as of December 1987 by Country and Type of Transaction (Numbers).

Country	Public Offering	Private Offering	Leases	Management Contract	Others	Total
Argentina	2	12				14
Bolivia					1	1
Brazil	10	56	1		14	81
Chile	16	26			1	43
Colombia					1	1
Venezuela			1			1

Note: From "The Impact of Privatization on the Latin American Debt Problem," by Ramamurti, R. 1992, Journal of Interamerican Studies & World Affairs, 34, p. 9.

Latin America. Macroeconomic adjustment, reduction of revenue to government from former SOEs, absorption of monetary overhang, [the excess cash belonging to the citizens which is not taken up in spending, savings, taxation, or investment] are reflected in both Eastern Europe and Latin America. Also, restraints on wage growth, improvements in the balance of payments position, and marketization are other similarities which produce directly, [through the creation of new markets and new areas of employment] or indirectly, [as an increase in economic activity and an associated increase in per capita income and disposable income], through a restructuring of labor and financial markets, the eventual liberalization of trade.

The effect of privatization on the reduction of debt can be divided into short term and long term effects, however, (Ramamurti, 1992). The foremost, and most direct short term effect on debt is the use of swaps, in which debt is retired in exchange for an equity interest in an SOE. The change in the country's foreign exchange holdings do not change, only the amount of debt is impacted.

A second short term effect is also direct, and comes about through the introduction of new equity investments from foreign investors (FDI), in which the nation's

"foreign exchange balance, as well as its foreign equity obligation, rise by the amount of the foreign investment" (Ramamurti, 1992, p.5).

A final effect is the use of offshore capital holdings as a source of foreign exchange. An indirect short term effect of privatization comes from the use of donor agencies such as the IMF, USAID, or the World Bank, which encouraged the privatization of some government services in exchange for loans. Consequently, the roles of privatization can, at once reduce debt while encouraging further debt.

Use Of Foreign Capital and Investment For Development

As privatization begins and the governments undergoing the divestiture of their SOEs demonstrate the commitment necessary to stabilize their economies, restrain the fluctuation of their exchange rates, and reduce their external debt, a level of confidence begins to grow among international investors.

"The conventional view that capital moves from countries with lower rates of return to countries with higher return rates until, in the long run, the rates of return equalize does not have empirical support, and as such cannot help explain the present surge in foreign investment" (Nazmi, 1998. P.6). The presence of moderate

foreign investment may contribute to the growth of a developing economy, however, excessive foreign investment may simply flood the economy with currency, devaluing national currency and weakening the economy.

Nazmi concludes that intangible assets, such as superior technologies, or particular production or marketing techniques may better explain a surge of foreign investment rather than the traditional flow of capital as explained above. It may be these intangible assets which helps multinational entities and their capital penetrate new markets (Nazmi, 1998).

Urniztondo, (1998, p. 4) explains some of the surge in foreign portfolio investment as "The reduction in the mobility (transaction) costs of capital around the world". Some of the increased foreign capital inflows to developing countries may also be attributed to by-products of their change in member attitudes from short term and opportunistic strategies, to long term investment strategies, (see Table 5).

In regard to Argentina, for instance, which has had a long and difficult history with external investors, one of the key features of its change in behavior was signaled by the passage of the Convertibility Law of 1991, which effectively retired the government from control of the

Table 5

US Direct Investment in Latin America in thousand dollars (US)
Direct Investment Position on a Historical - Cost Basis

Countries	Years 1992	1993	1994	1995	1996
Argentina	3,327	4,442	5,436	7,496	8,060
Brazil	16,313	16,772	18,400	23,706	26,166
Chile	2,544	2,749	4,601	5,878	6,745
Colombia	3,053	2,930	3,283	3,352	3,468
Ecuador	295	555	730	833	855
Peru	620	622	890	1,279	2,075
Venezuela	1,972	2,362	2,870	3,220	3,592

Capital Outflows (Inflows (-)) in thousand dollars (US)

Countries	Years 1992	1993	1994	1995	1996
Argentina	558	1,079	931	2,291	415
Brazil	2,054	3,263	3,517	4,899	3,064
Chile	106	198	1,554	1,406	994
Colombia	406	4	368	195	138
Ecuador	12	253	182	136	25
Peru	- 8	231	--	317	800
Venezuela	692	555	644	554	390

Note: From "The Impact of Foreign Capital on the Brazilian Economy," by Nazmi, N. , 1998, The Quarterly Review of Economics and Finance, 38, p. 139

money supplies and established a currency board. Turning control over to a Central Bank required to hold reserves for currency then in circulation established control over capital inflows and limited the accessibility of capital to commercial interests, (Urniztondo, 1998). In Mexico, on the other hand, the inflow of capital caused a crisis response, which ultimately ended in the collapse of the Mexican peso. With the promise of NAFTA and the foreign exchange risk reforms, many investors flocked to Mexico. However, the inflow of capital "forced the Mexican central bank to decide between the exchange rate objective and the debt objective." (Kildegaard, 1997. p. 9). Capital inflows often expand the monetary supply and can cause inflation, overvaluation, or speculative attacks on the currency which can collapse the floating exchange rate regime.

Sterilizing the inflows can cause further debt, however, as interest rates are pushed up. The inflationary effect of un-sterilized capital inflows follows from simple balance-of-payments accounting relationships: the difference between net private capital inflows and the current account is equal [as an identity] to the change in official reserves of the central bank. Official reserves, together with net domestic credit, comprise the monetary

base, and so an increase in the former without a decrease in the latter is inflationary (Kildegaard, 1998).

In Mexico's case, capital outflows were sterilized. Although this threatened the exchange rate regime, it does not seem to have been directly responsible for the eventual collapse of the exchange rate (Kildegaard, 1998). The rate collapse, in turn caused business failures, most of which were put back onto the public debt. The main problem above seems to have been the lack of a robust private banking system which could have absorbed some of the gains and losses and stabilized the situation (Kildegaard, 1997). This proved fatal for Mexico.

Another part of the problem was trying to enforce a policy of low-debt and stable exchange rates while faced with an expanding monetary supply due to the inflow of capital and the inability of the economy to absorb it (Kildegaard, 1997).

Both Nazmi (1998) and Kildegaard (1997) agree that the use of "hot money" [nations which have been heavily invested in for trade purposes, and whose national currencies, speculators have monitored and invested in, as a means to garner profit] to finance development can be destabilizing to economies. It is not the influx of money itself that is the problem, but the fact that it enters the economy and

circulates unchecked through the monetary system. "The Mexican 1994 experience and the recent debacles in Southeast Asia as well as southern cone debacles of the 1970s and 1980s all point to risks associated with unchecked movements of 'hot money' in emerging markets" (Nazmi, 1998. p. 10).

There is some evidence however, that properly regulated foreign investment, as in the case of Brazil from 1995 onward, can help expand domestic investment (Nazmi, 1998).

Role Of The Central Bank

The economies of nations are also affected in part by the existence of a central bank and it's independence from the government in setting monetary policies. The purpose of this section is to discuss the role of central banks to arrive at some conclusions based on current research in the area.

As monetary flow capabilities expand, that is, as money is enabled to move faster through the global economy, the more responsive to these changing conditions the central bank needs to be (Johnson, 1996). The increasing mobility of capital has led some countries to impose capital controls and foreign investment restrictions to

limit their exposure to overwhelming external market forces.

Many developing countries, however, find their central banks torn between salvaging the exchange rate and reducing current and capital account deficits. Although still subject to the overall fiscal and monetary policies of the government, central banks are finding themselves increasingly able to regulate the economy through their own devices. The lack of central bank experience with designing strategies to deal with external market forces can seriously impair a nation's ability to resolve its financial difficulties. Regulatory statutes need to be in place if capital controls are not. Privatization of banks, as in the creation of financial markets is seen as a way to ease pressure off of the central banks, enabling these privatized forces to absorb excess capital inflow, and create adequate situations for safe capital outflow. Where domestic credit has been severely or entirely restricted, domestic growth ceases, output drops, and the trade deficit begins to climb. As well, domestic savings, the life blood of investment, begin to drop as domestic expenses are funded through external loan sources.

If banks cannot loan at a level to meet costs and attain a profit, whether they be central banks, or

commercial banks, capital flow slows down. Once this occurs, current and capital account deficits begin to climb, (Johnson, 1996).

Monetary Policies

DeGrauwe (1997) points out that the popular target for monetary policies up until the end of the 1970s, was the money supply itself. The use of this targeting device has waned due to three causes; 1), the concept of money stock is an elusive one, 2) a delay of several weeks can occur before money stock figures are released, and 3) money stock is an intermediate target with inflation being the ultimate one. According to De Grauwe, central banks use other intermediate targets, such as the interest rate together with money supply to achieve their monetary policies.

Eichengreen (1994) seems to agree that a monetary policy works most effectively under a flexible exchange rate regime. Under a fixed rate regime, the use of monetary policy becomes ineffective, as interest rates climb speculation evolves and erodes the fixed rate regime anyway.

Parry (1998) explains that flexible exchange rate regimes dictate that monetary policy be pursued through the manipulation of interest rates to achieve price stabilization. However, in pegged [essentially fixed]

exchange rate regimes, independent monetary policy is not as easily pursued because of cross-border capital movement, which interferes with domestic price setting initiatives.

As with anything else, there are limitations to a monetary policy, and the preference of one exchange rate over another greatly decides the amount of control a central bank can have over the monetary policy. Parry (1998) speaks of the unholy trinity made up of freely mobile cross-border capital flows, a fixed or managed exchange rate, and an independent domestic monetary policy. Parry maintains that a country cannot control all three of the above simultaneously. This constraint opens countries up to choices regarding exchange rates and interest rates.

Parry (1998) further asserts that central banks have tried to manage two of these factors [exchange rates and independent domestic policy] using sterilized intervention involving the sale of foreign reserves, and the purchase of domestic currency bonds, leaving the domestic money supply and the monetary policy unaffected.

Ffrench - Davies (1998) concludes that the presence of incomplete or poorly supervised financial markets, combined with lags or absences of productive investments and the absence of clear fiscal boundaries prompt monetary authorities to regulate aggregate demand through the

monetary policies, that is through the exchange rate mechanisms.

Impact On Economic Growth / No-Growth During Crises

Capital accumulation, measured for this paper's purposes as net accumulation, (as a better indicator of actual growth), is an indicator of how much the stock of capital goods has been increased. Associated with this concept are four other concepts: 1) Capital-output ratio, 2) Capital deepening, 3) Human capital, and 4) Social Overhead Capital (The Economics Problem Solver, 1995). The capital-output ratio measures the increases in net investment and the resulting increases in the productive capacity of the society. The deepening of capital is a measure of the capital rise to labor ratio. Human capital is the investment made in people in terms of training, benefits, etc. Social Overhead capital refers to infrastructure investments in roads, dams, etc. Capital accumulation will insure (assuming it is properly invested) a higher standard of living, whereas a rise in population will not (Hacker, 1998).

Three stages of technological implementation are offered by the model:

1) Research; Investment in resources and ideas to acquire or refine a technique,

2) Innovation: Implementing the technique in terms of production,
3) Diffusion: The point at which the technology is reproduced, or imitated in other sectors of society.

Here again, with the concept of technology, the gains made in growth by the use of economies of scale are limited to a certain level at which point, using fixed natural resources and a fixed technology, the law of diminishing returns comes into play (Batiz & Batiz, 1994).

Under debt crisis, developing countries channeling incoming funds into social overhead capital infrastructure) rather than into productive capital, failing to accumulate capital in some form of internal savings or investment programs, combined with low export agendas seemed to have sealed their fates. (Hacker, 1997). This lack of capital control and long term vision has made many of these areas unattractive to large capital intensive projects. Instead, they have attracted service industries in search of low wages such as the garment and tourist industries.

The Role Of and Impact On Major Trading Partners

Trading partners can pursue several strategies in a debt crisis. The partner can back away from further trade, meaning that the trading partner would pull its investments

out, stop imports into the troubled country, and hope any remaining links don't do any further damage to itself or the partner (The Economics Problem Solver, 1995).

Another strategy would be to watch and wait (The Economics Problem Solver, 1995). This too implies that trade would slow to the troubled country. A wait and see approach can also mean business as usual, but with an eye to caution.

A last strategy would be to rush to try to save the ailing country. This need not be only a reactive stance, but it could also be a proactive stance. If the trading partner sees that exports are shrinking, that the country is not paying down it's debt service, and that the currency reserves are slowly being drained, it could sponsor an initiative to bolster the economy.

NAFTA, CARICOM, the Uruguay rounds, etc. are all trade initiatives that are designed to tear down barriers between trading partners in an effort to stimulate their exports (Hexner, 1950). The "big brother" or "big sister" role of the initiating trade partner can have an enormous impact on the troubled region. As has been pointed out above, the impact can be positive and/or negative in some cases.

To further complicate the picture, Krugman (1995) notes that the 45 - degree rule [an empirical regularity in

which substantial shifts in equilibrium real exchange rates do not in fact occur due to the income elasticities] is best explained by resorting to the theory that countries trade with those that provide the most return on the investment. If this is true, debt ridden countries may be abandoned one by one, as trade drops, isolation ensues, and more debt relief occurs through more lending to support national budgets.

Consequently, these trading partner arrangements may increase the risk of default which should affect world interest rate levels (Islam, 1998). If this is true, everyone will eventually wind up paying for these additional loans.

Other Internal Variables

The last area to be discussed under the umbrella of debt crisis is unemployment. In light of some of the earlier discussions, structural adjustment produces a great many side affects which are only lightly touched upon in the general research literature. Among them are poverty, high unemployment, the rise of informal economies, rising populations, and human capital flight. Poverty has been discussed as being a part of the low-income environment that characterizes developing countries. This is aggravated even further as traditional farming is abandoned by the

younger generations in the hopes of better money earned in the urban areas, (see Table 6).

Once arriving in these urban areas, without technical or industrial and/or trade skills, these new arrivals have essentially nowhere else to go, save back to the farm. However, this may not be an option as it is quite probable that as the entire nation moves away from traditional land based economies toward a more industrialized and service economy, crop prices may have dropped to the point where a living can not be earned (Dore-Cabral, Itzigsohn, & Portes, 1993).

Another reason for high unemployment in Latin America is the fact that at least 50% of the population is under 18 years of age (Knight and Palmer, 1989). As child labor in the factories (assuming they exist) is still frowned upon (Knight, et. al, 1989), only 50% of the population remain to be employed.

Given the traditional roles of men and women in Latin America, although this may be changing, only a very small percentage of the population will be working to generate their own livelihood as well as providing income for their families, revenue for their employers, and GDP for their countries.

Table 6

Change in Agricultural Output (in percentages)

Country	1974 – 1976 to 1979 – 1981	1979 – 1981 to 1984 – 1986
Argentina	11.6%	6.5%
Uruguay	- 0.5%	7.4%
Ecuador	10.6%	14.9%
Paraguay	32.0%	19.6%
Brazil	18.9%	17.3%
Chile	12.3%	9.4%
Colombia	23.1%	4.4%
Peru	- 1.5%	11.3%
Bolivia	5.1%	4.5%
Latin America	16.8%	10.6%

Note: From "Latin America Agricultural Performance in The Debt Crisis," by Helwege, A., 1990, Latin American Perspectives, 17, p. 14.

Without them, the prospect for development of human capital, without incentives to restrain human capital flight, and most importantly, without programs to mobilize employment forces, investors will look elsewhere, debt service will continue, and the region will remain as it has been, dependent upon U.S., IMF, and World Bank policies to dictate their futures.

Models using internal variables

Taxes

Joan O'Connell (1995) extends the Cambridge model of growth and distribution (Kaldor, 1955-1956) to account for indirect taxation and the inclusion of government activity. The model assumes a balanced budget, no direct taxes, full employment, and the levy of taxes on government purchases and private consumption.

The Cambridge theorem consists of the following equation:

Net (**Y**) = **W**ages + **P**rofits + **T**axes = **C**onsumption + **I**nvestment + **G**overnment
National Product (Private) Purchases

Her study showed that the introduction of an investment [or indirect] tax does not violate the validity of the theorem; that is, the introduction of the tax does not affect profit or net national product. The viability of the tax depends instead on the investment and the capital

stock being evaluated. This is important as an argument in favor of establishing indirect taxes in developing countries, where oftentimes the governments are reluctant to establish import tariffs, or other revenue generating forms of taxation.

O'Connell also concludes that the introduction of the public sector into the Cambridge model does not affect the equation unless capitalists [as opposed to wage earners] stop consuming. If capitalists stop consuming, wage earners' consumption drops as well.

Both of the above conclusions seem to be independent of whether a budget deficit exists or not. Thus, whether a nation overspends, (an essential source of deficit),or not, the implementation of an indirect tax can not only fund those deficits but mitigate the effects of under-spending as in the case where capitalist consumption drops and the economy stalls. Thus, indirect taxes can be redirected into new or other industries in which spending can be initiated with the intent to re-start a stalled economy.

Savings and Investment

Sinha and Sinha (1998) examine the long term savings and investment ratios in Latin American countries using data from 1950 - 1995 in order to determine the impact of long term savings and investment ratios in Latin America.

The data were subjected to statistical "cointegration tests using the Johannsen-Juselius framework (Sinha and Sihna, 1998, p.4)." Ten nations' data were tested, with four of the ten nations, Ecuador, Honduras, Jamaica, and Panama showing a long term, significantly positive relationship between savings and investment.

Sihna, et.al. conclude that other than these four countries, the remaining five nations, Colombia, Dominican Republic, Guatemala, Honduras, and Mexico, show a divergence rate between savings and investment, suggesting possible future macroeconomic instability for these regions.

Sinha & Sinha (1998) even cite Colombia as having divergent rates between savings and investment in the 1970s and again in the 1980s. All of this information suggests that a positive long term savings and investment ratio may support economic stability in Latin America. Where such a long term relationship fails to exist, Latin American countries exhibit a potential for instability.

Structural Adjustment

Structural adjustment, at least within the context of the present study, occurs when a financial assistance program reshapes a less developed economy from an import

based economy to one, which is export based. Structural adjustment has been aimed at poorer countries and designed to support moderate macroeconomic and structural adjustments to the emerging economies. These structural adjustment programs have usually been combined with various types of concession loans.

Ghosh and Tanski (1998) have developed an economic model to determine the impact of three structural adjustment variables on four Central American countries. Costa Rica, El Salvador, Guatemala, and Honduras were examined with data from the period 1960 - 1992. The authors used a time series methodology to analyze the effects of money supply changes, government deficit changes, and exchange rate changes on domestic currencies. These three variables were considered independent in that study. The conclusions brought forth by the authors are as follows:

A rise in the supply of money often leads to and can be equated with inflation, capital flight, more borrowing and a greater debt to Gross Domestic Product ratio. This rise in the Debt / GDP ratio leads to an increase in public debt. The relationship can be expressed as follows:

Money supply ↑ ≅ inflation ≅ capital flight ≅ more borrowing ≅ ≤ Debt / GDP Ratio ≅ P debt increase.

A rise in government deficit can be equated with a rise in debt if external or foreign borrowing is the source of the funding, rather than internal fund raising through taxation. The equation below summarizes this concept:

Government Deficit ↑ ≅ Greater debt, if foreign borrowing to finance internal capital.

Other conclusions offered by the Ghosh and Tanski (1998)Analysis, are summarized below as equations.

Government Deficit ↑ ≅ If financed through foreign aid ≅ stimulated economy ≅ ↑ tax revenue ≅ better debt service.

Exchange Rate ↑ ≅ more exports ≅ better debt service

Exchange Rate ↑ ≅ more exports ≅ ↑ GDP ≅ Debt / GDP ratio ≅ better debt service.

Of course, a change in one of these variables [government deficit, money supply, exchange rates], either as an increase or a decrease, causes or can be equated with, a change in the other associated variables.

Summarized below are conclusions arrived at in similar studies, as related by Ghosh and Tanski (1998). The translation of these conclusions into equations are offered to assist the reader.

Gallard and Duran (1998) conclude:

IMF Policies which ≅ domestic demand cutbacks, import cutbacks, export expansion ≅ inadequate results for Latin American debt service.

Lamdamy (1989) concludes:

Bolivian debt reduction ≅ diversion of internal funds ≅ non - domestic investment.

Krueger (1990) concludes:

Use of internal investment to retire debt ≅ lower long term growth rates.

Edwards (1989) concludes:

Countries using export oriented strategies ≅ debt service

Using import limiting tariffs ≅ less debt service

Tariff elimination without taxes ≅ less debt service

Tariff elimination with taxes ≅ more debt service

In summary, then, macroeconomic adjustments to a nation's economy come as a result of the implementation of both monetary and fiscal, trade, and overall government management policies which were not in place previously. A change in these policies can result in the achievement of some macroeconomic goals, [such as the creation of an export based rather than import based economy], but often their achievement may be at the cost of greater debt, or the creation of debt.

For instance, a change in monetary policy aimed at increasing [ready, or "at hand"] investment capital may be achieved through an increase in the money supply. However, this increase can lead to inflation or even greater debt. This in turn can shorten the ready cash available and

prompt more lending. What initially was a well intended policy change becomes an economic and social disaster.

As Gosh and Tanski (1995) point out above, greater government deficit can result in better debt service if the appropriate combination of policies [foreign aid finance, greater tax revenue controls] are also put in place.

What is pertinent to this study is the fact that structural adjustment programs as implemented by the IMF, tend to reduce domestic demand (Gallard and Duran, 1998), divert internal funds for non-domestic purposes (Landamy, 1989), and lower long term growth rates (Krueger, 1990).

Politics

Thorp & Lowden (1996) review two long standing, post - war (WW II) economic models as applied to Latin America. The Import Substitution Industrialization (ISI) model, and the Neo - Liberal Model (NLM) are examined for their viability in Latin America as well as their suitability for examining economic activity in general in Latin America.

Thorp & Lowden concluded that these models may be too static to accurately reflect current conditions in Latin America. They believe that a new explanatory economic model should be implemented which reflects the changes in Latin America since the Bretton Woods agreements.

The ISI model, like any economic model has been constructed on the basis of observable behaviors. What may have been observed economic behavior in the past, however, should not be assumed presently. Using established models based on past behaviors may not be suitable when applied to current conditions (Thorpe, et.al., 1996).

The ISI model, then, was constructed on the basis of establishing high tariffs to protect import dumping. These high tariffs also inflated exchange rates. Firms seeking to invest capital were readily accepted and local firms seeking financing were turned away. These actions, according to the model, led to foreign lending at higher rates which led to increasing amounts of debt over time. Thus, the application of tariffs only increased already existing debt. In similar situations with low debt liability, the application of tariffs, [or the raising of existing tariffs], may be an appropriate response to an import based economy seeking to become an export based economy. However, in situations in which high debt liabilities already exist, the application of tariffs is inappropriate.

As the internal mechanisms for efficient industrialization were not in place in these countries, (Thorp, et. al., 1996), poor production and inefficient

distribution methods resulted in more capital in than out. Such poor return, according to this analysis, siphoned off available dollars for repayment of debt instead of reinvestment in more efficient operations.

An indirect effect of this industrial concentration, was the forsaking of traditional agricultural production. This "implicit bias against agriculture" (Thorp, et. al., 1996, P3) placed farmers in the precarious position of producing the same yields, accepting lower prices for their crops, and paying higher than world prices for seed, fertilizer, and the like. According to these authors, this long, slow death of agricultural interests in Latin America was evident specifically in those nations which existed with large sector gaps between industry and agriculture.

For instance, Thorp, et. al. (1996) further point out that Colombia achieved a sense of harmony between the agricultural production of coffee and the industrial processing and exporting of the same. One of the reasons for this success stems from the small - scale, localized nature of the industry. Small coffee houses throughout Colombia contributed to the final gross export. This left satellite industries supporting coffee planting, growing, harvesting, drying, etc., all in the hands of locals.

Rather than develop a national economy and hoping for local integration, Thorp, et. al. believe that the local economies developed into a national economy, which was already integrated.

Thus, the Colombia situation, as an example of the ISI model, shows the importance of bolstering all sectors of the economy as equitably as possible. Also, the restrictions on foreign capital and the consistent and reasonable valuation of the exchange rate helped maintain a balanced economy (Thorp, et. al., 1996). On the other hand, Colombia's success is due to the pressure and already deep integration of the coffee interests into politics and government institutions (Thorp, et. al., 1996). With these internal forces in place, it was easier for Colombia to focus on the internal success of the nation and ignore the external market pressures. This has put Colombia, however, in a unique position in comparison to other Latin American countries.

The Neo-Liberal Model was based on the 1990 'Washington Consensus' (Thorp, et. al., 1996), which stressed the liberalization of trade and finances, the adoption of a macro - economic perspective toward development, reducing the role of the state, and reforming fiscal policies. Eventually, Brazil and Argentina adopted

this model in some form or another (Thorp, et. al., 1996).

The Chilean approach, although distinctive in it's attempts "to move the system in a more equitable direction" (Thorp, et. al, 1996,p. 8), is another example of the Neo-Liberal Model. To achieve this equitability, the government has focused on a long-run competitive exchange rate, fiscal reform, and capital restrictions. These authors point out that although the Chilean approach is working, the continued concentration of authority in the hands of a few has been a stumbling block to continued growth in this economy.

The Argentine effort, another example of the Neo-Liberal economic Model, has concentrated on judicial, tax, and institutional reform. A non-interventionist stance has been taken, however, by this government with respect to fiscal policy (Thorp, et. al., 1996).

Thus, the ISI models proposed in the post war (WWII) period for Latin America are no longer applicable to current conditions in nations such as Argentina, Colombia, or Chile, in which trade initiatives have been sanctioned through such efforts as the lowering of external trade barriers, the promotion of export based economies, and the internal integration of these economies.

Although these are gradual changes which occur over several decades, an eventual evolution of a market based exporting economy has occurred in a number of these Latin American nations. However, the evolution of these economies from isolated importing nations, to highly integrated exporting nations has placed them in the position of being exposed to a greater number and frequency of external and global forces. It is this exposure to these external and global forces which has rendered some of these nations susceptible to instability, the incurring of debt to offset sudden instability, and the onset of crisis as debt mounts, instability continues, and the ability to repay initial and subsequent loans dwindles.

Summary of Literature Supported Models

The above has been a review of those current literature models which have focused on some aspect of internal variables as relates to economic stability in Latin American countries.

The present study will limit it's discussion to those four Latin American countries already mentioned; specifically, Brazil, Argentina, Colombia, and Bolivia.

For the convenience of the reader, and as a step toward outlining the methodology of this study, Table 7 is

Table 7

Table of Variables as Delineated by Global, External, and Internal

Models using global variables

1. Global actions ≅ oil price increases + gold standard failure + world recession + armed / unarmed (political and economic) interference with Latin American nations = lower consumption + unstable exchange rates + reduction in purchasing power + less debt service. (Knight, 1996).

Models using external variables

2. IMF programs, if implemented fully ≅ detrimental to capital formation (Hague, 1992).

3. IMF policies ≅ promotion of capital formation for Bolivia in the short run + long run (Hague, 1992).

4. IMF policies ≅ adverse capital formation for Brazil in the short run (Hague, 1992).

5. IMF policies ≅ Bolivia in the long run (Hague, 1992).

6. IMF policies ≅ Colombia in the long run (Hague, 1992).

7. IMF expansionary fiscal policies ≅ exchange rate collapses (Borpujari, 1998).

8. IMF devaluation policies ≅ ↑Food Prices + ↓Urban Wages (Helwege, 1990).

9. ↑Unemployment + ↓Economic Growth + ↑Debt Service ≅ poor Structural Adjustment Performance (Hacker, 1997).

10. High levels of industrial sophistication ≅ high levels of economic Integration (Guell & Richards, 1998).

11. High levels of external debt ≅ initiation of economic integration (Guell & Richards, 1998).

12. External debt burden ≅ discouragement to regional integration in larger countries with greater resources (Guell & Richards, 1998).

Models using internal variables

Privatization

13. High tax rates + ↓Domestic Lending + ↓Foreign Lending = government Privatization (Ramamurti, 1992).

14. Poor performance → ↑Privatization + ↑Subsidies = ↑Government Debt (Ramamurti, 1992).

Investment

15. ↑Confidence ≅ ↓Risk of Investment (Ramamurti, 1992).

Table 7 (continued)

Table of Variables as Delineated by Global, External, and Internal

16. Moderate Foreign Investment ≡ Economic Growth (Nazmi, 1998).

17. Excess Foreign Investment ≡ Economic Weakening (Kildegaard, 1998).

Capital Flows

18. ↑Foreign Investment Liberalization → Equity Market Integration + ↑Liquidity + ↓Volatility (Hargis, 1998).

19. ↑Monetary Supply ≡ ↑Monetary Supply ≡ ↑Inflation → ↑Overvaluation ≡ Speculative attacks → ↓ Exchange Rates (Krugman, 1995).

20. ↑Official Reserves + ↑Domestic Credit ≡ ↑Inflation (Krugman, 1995).

Central Banks

21. ↑Domestic Credit restrictions ≡ ↓Domestic growth + ↓Output + ↑Trade Deficit (Gruben & McComb, 1997).

22. ↓Central Bank Performance → Failure ≡ ↑InterAmerican Development Bank + ↑World Bank Assistance (Scheman, 1987).

Monetary Policies

23. Tight Monetary Policies + Central Bank Independence ≡ ↑Interest Rates (Eichengreen, 1994).

24. Demand for domestic assets → ↑Capital Inflow → ↑Currency Value ≡ ↑Import Spending + ↓Export Spending (Perry, 1998).

25. ↑Capital Accumulation ≡ ↑Rate of Technological Progress + ↑per capita growth rate (Problem Solvers' Economics, 1995).

Trade

26. ↓Trade → ↑Isolation → ↑More Loans (Krugman, 1995).

Taxes

27. The introduction of an investment [or indirect] tax does not affect profit or net national product (O'Connell, 1995).

Savings and Investment

28. A divergence rate between savings and investment was observed pointing to possible future macroeconomic instability (Sihna and Sihna, 1998).

Structural Adjustment

29. Money supply ↑ ≡ inflation ≡ capital flight ≡ more borrowing ≡ ≤ Debt / GDP Ratio ≡ P debt increase (Ghosh & Tanski, 1998).

30. Government Deficit ↑ ≡ Greater debt, if foreign borrowing to finance internal capital (Ghosh & Tanski, 1998).

31. Government Deficit ↑ ≡ If financed through foreign aid ≡ stimulated economy ≡ ↑ tax revenue ≡ better debt service (Ghosh & Tanski, 1998).

Table 7 (Continued)

Table of Variables as Delineated by Global, External, and Internal

32. Exchange Rate ↑ ≡ more exports ≡ better debt service (Ghosh & Tanski, 1998).

33. Exchange Rate ↑ ≡ more exports ≡ ↑ GDP ≡ Debt / GDP ratio ≡ better debt service (Ghosh & Tanski, 1998).

34. IMF Policies which ≡ domestic demand cutbacks, import cutbacks, export expansion ≡ inadequate results for Latin American debt service (Gallard & Duran, 1998).

35. Bolivian debt reduction ≡ diversion of internal funds ≡ non - domestic investment (Lamdamy, 1989).

36. Use of internal investment to retire debt ≡ lower long term growth rates (Krueger, 1990).

37. Countries using export oriented strategies ≡ debt service (Edwards, 1997).

38. Using import limiting tariffs ≡ less debt service (Edwards, 1997).

39. Tariff elimination without taxes ≡ less debt service (Edwards, 1997).

40. Tariff elimination with taxes ≡ more debt service (Edwards, 1997).

Politics

41. The ISI model = high tariffs ≡ inflated exchange rates ≡ to foreign lending at higher rates ≡ decreased agricultural enterprise
(Thorp & Lowden, 1996).

42. Colombia = localized industry ≡ rise of satellite industries + foreign capital restrictions + reasonable valuation of the exchange rate + deep integration of industrial / agricultural interests into politics and government institutions ≡ focus on internal variables and ignore the external market pressures = stabilization and growth with debt service (Thorp & Lowden, 1996).

43. The Neo-Liberal Model = liberalization of trade + finances + macro – economic development + state role reduction + fiscal policy reform (Thorp & Lowden, 1996).

44. The Chilean model = focus on long-run competitive exchange rate + fiscal reform + capital restrictions (Thorp & Lowden, 1996).

45. The Argentine model = judicial + tax + institutional reform + State non-intervention (Thorp & Lowden, 1996).

Note: Table is summary of current literature with cites.

a summary of variable events and responses in equation form. The summary is a step toward the development of a summary matrix of the effects of global, external, and internal forces.

The forty five relational variables are again, summations of the current literature examined and reviewed. The reader will note that the above forty-five equations are relational statements, illustrating the affects that multiple variables can have upon other variables. In order to construct a comprehensive model which can be statistically tested, several preliminary steps must be completed.

Accordingly, a definition of debt crisis must be stated to determine it's scope and to set parameters for a proposed model to test. Further, the applicability of the existing pertinent variables in the model, as related to the term debt crisis, must be ascertained.

Finally, variables which are considered applicable to the term debt crisis, [as defined below], will be incorporated into the proposed model. Variables which are either not applicable to the term debt crisis, [as defined below], or are of such nature that they can not be tested statistically will not be incorporated into the model.

Debt Crisis Defined

A definition of debt crisis is arrived at here through an examination of those forces related to the formation of debt crises in Latin America. It is thought that independent variables impact the measurable dependent variable used in this study to define the debt crisis event.

Altimir, (1996) states that debt crisis consists of three elements: external shocks (drop in export prices, rise in necessary import prices, etc.), a fragile internal infrastructure (low economic growth, falling wages, rising unemployment, a rising population), and/or poor management [delayed privatization, continuous loaning without repayment, inappropriate fiscal and monetary policies].

De Vries (1995), also explains that debt crisis is a result of another set of elements: rising fund demands, rising interest rates [as a result of rising fund demands], and inflation controls placed by individual nations upon their economies, [either as a fiscal or monetary policy].

Similarly, Martinez and Fierro (1993) attribute the onset of debt crisis to a result of rising unemployment [accompanied by falling social conditions], falling economic growth, and continued rising debt. These authors also point out that the IMF's structural adjustment

programs tend to aggravate falling social conditions.

Barro (1994) further drives home this point by emphasizing that the external application of macroeconomic policies [attributed to the IMF] to those nations with serious internal structural imbalances can render the programs ineffective.

Related to these ideas, Braga & Ziegler, (1998) note that a delay in the privatization of deteriorating SOEs prompted governments to use loan receipts to operate these utilities. Maintaining these utilities, but not upgrading them toward more efficient use, simply siphoned off loan dollars into unrecoverable institutions. All of which might contribute to further debt crises.

Finally, Ffrench-Davies (1998) conclude that the inflow of large amounts of external capital into a poorly managed economy produces inflationary pressures, currency overvaluation, and eventual currency collapse. Currency devaluation in turn, lowers social standards [business failures when unable to meet sudden bank demands for payment, rising unemployment, lower per capita earning power, lowered savings and investment, decreased national output and accompanying lowered exports], and reduces the nation's overall capacity to meet internal

needs and external debt.

A definition of debt crisis specific to this paper will encompass the impact of related external [Global] shocks [addressed within this paper as independent global variables], for instance a rise in oil prices, and/or a rise in international interest rates. Also, the impact of external [Nation specific] events, specifically the application of IMF structural adjustment policies, IMF capital formation policies, IMF lending policies, and capital inflows as independent variables are thought to be related to debt crises.

Finally, an examination of internal variables, specifically, rising unemployment, rising population, rising inflation, rising currency valuation, rising imports, rising external debt, falling economic growth, falling national output, falling exports, falling savings and investments, and falling per capita earning power will be conducted as related to debt crisis.

Debt Crisis as defined by the literature, and specific to the intent of this paper, consists of an event which is the result of a combination of global, external, and internal forces [independent variables]. Debt crises become apparent as historically continuous and measurable trends. These trends occur either singly or in combination,

and are of such impact and substance as to render a national government and its populace incapable of maintaining an expected standard of living. Debt crisis [here] implies the government's inability to support its currency either through monetary and fiscal programs, or through adequate international reserves. Debt crises also imply that the government is unable to meet or reduce current external debt contract expectations.

Further, a debt crisis within this paper consists of global shocks, such as a rise in oil prices, and/or a rise in international interest rates. It also involves external events such as the application of IMF structural adjustments, capital formation, lending policies, and capital inflows. Finally, the reader is reminded that it involves internal variables such as rising unemployment, a rising population, rising inflation, rising currency valuation, rising imports, rising external debt, falling economic growth, falling national output, falling exports, falling savings and investments, and falling per capita earning power.

A final consideration involves the nature of a debt crisis itself. Although the above definitions suffice for descriptions of a debt crisis, they are not measurements of

a debt crisis itself. A continuous variable such as level of debt or some indication of the value of a currency must be selected as an instrument to determine when a debt crisis is at hand. Currency valuation and level of debt as variables measuring debt crisis can be both continuous and measurable as indicators of a debt crisis. High levels of debt, as indicated by Martinez and Fierro (1993), and the rising overvaluation of currency as illustrated by (Ffrench-Davies, 1998) will be used in this study as indicators of a debt crisis; debt level as the dependent variable to be explained in the methodology section.

Variable Selection

The variables selected for the proposed model (see Table 8) must be statistically measurable; accordingly, only quantitative data will be collected, as the independent and dependant variables, from the four sample countries of Brazil, Bolivia, Colombia, and Argentina. The period under examination will be the period 1975 - 1995, inclusive.

Development of the Model for Testing

Table 8 summarizes the selected variables and their expected direction of movement for the proposed economic model. It is predicted that the global, external, and

Table 8

Table of Expected Variable Movements and Data Sources

Variable Scope	Variable Name	As Measured By	Expected Movement	Data Source
Global (1)				
	Interest Rates	Yearly Avg. Rates	Increase	IMF Yearbook
External IMF				
structural (2) adjustment,	SAP	Yearly Account Changes	Increase IMF	Yearbook
capital (2) formation	CAPFO	Yearly Recorded Amounts	Decrease IMF	Yearbook
lending (2) policies	LENDP	Year End Totals	Increase IMF	Yearbook
Internal				
capital inflows. (3)	CAPIN	Year End Totals	Increase IMF	Yearbook
unemployment, (3)	UNEM	Year End Totals	Increase Country	Yearbook Data
population, (2)	POP	Year End Totals	Increase Country	Yearbook Data
inflation, (3)	INFL	Year End Totals	Increase Country	Yearbook Data
currency valu (3)	CURR	Year End Totals	Increase Country	Yearbook Data
imports, (3)	IMPOR	Year End Totals	Increase Country	Yearbook Data
external debt, (3)	DEBT	Year End Totals	Increase Country	Yearbook Data
economic growth, (3)	ECONGR	Year End Totals	Decrease Country	Yearbook Data
national output, (3)	NATOUT	Year End Totals	Decrease Country	Yearbook Data
exports, (3)	NATEXP	Year End Totals	Decrease Country	Yearbook Data
savings (3)	NATSAV	Year End Totals	Decrease Country	Yearbook Data
investments, (3)	INVEST	Year End Totals	Decrease Country	Yearbook Data
per capita (3) earning power.	GDP	Year End Totals	Decrease Country	Yearbook Data

Source: Literature Review Summary
Notes:
(1) Hypothesis One
(2) Hypothesis Two
(3) Hypothesis Three

internal variables mentioned above have had an impact, to some extent, on the creation of debt crisis [as defined in this study] in Latin America; specifically Colombia, Bolivia, Brazil, and Argentina. However, what is distinct about the present study, and not found among the reviewed literature, is the amount [as a percentage] of impact each variable has had on an economy's debt crisis.

The proposed model encompasses global, external, and internal variables from one year to the next [from 1975 - 1995], which may have impacted these economies in a manner significant enough to establish a relationship between the independent variables and the creation of debt crises.

The research questions for the present study are stated below, with the associated hypotheses. The hypotheses will test whether a significant relationship exists between the increasing, decreasing, or fluctuating values of independent variables [global, external, or internal] and the amount of debt (dependent variable as measured by currency valuation and level of debt) an individual nation may hold.

Research question one: Did Interest Rates rise from the period 1975 - 1995, and if so were the changes in interest rates [as a global variable] significant enough to impact

the four [Colombia, Bolivia, Brazil, Argentina] economies and contribute to the debt crisis as defined?

Hypothesis One: There is a no statistically significant relationship between rising levels of debt, (as a dependent variable) and rising interest rates (as independent variables).

First Alternate Hypothesis One: There is a statistically significant relationship between rising levels of debt, (as a dependent variable) and rising interest rates (as independent variables).

Second Alternate Hypothesis One: There is a direct relationship between rising levels of debt and rising interest rates such that an increase in debt levels will be paralleled by rising interest rates.

Research question two: Were the IMF policies of structural adjustment, lending, and capital formation present in the four [Colombia, Bolivia, Brazil, Argentina] economies, and to what level, and if so did these programs foster lowered social standards, increased debt, and the eventual collapse of their respective currencies?

Hypothesis Two: There is no statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital formation (as independent variables) as measured by changes in these IMF accounts.

First Alternate Hypothesis Two: There is a statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital formation (as independent variables) as measured by changes in these IMF accounts.

Second Alternate Hypothesis Two: There is a direct relationship between debt level and structural adjustment, lending, and capital formation such that as debt levels rise, capital formation decreases, structural adjustment funding rises, and lending is increased.

Research question three: Did the internal factors [Table 8] present in the four [Colombia, Bolivia, Brazil, Argentina] economies show common trends across the countries?

Hypothesis Three: There is no correlation between the internal factor trends in Colombia, Bolivia, Brazil, and Argentina.

First Alternate Hypothesis Three: There is a positive correlation between the internal factor trends in Colombia, Bolivia, Brazil, and Argentina.

Second Alternate Hypothesis Three: There is a direct relationship among the internal variables such that common directional [increase or decrease in values] trends are observed among the four countries.

Research question four: If any trends in the internal [Table 8] variables in the four [Colombia, Bolivia, Brazil, Argentina] economies existed, were they significant enough to contribute to the debt crisis as defined?

Hypothesis Four: There is no statistically significant relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three.

First Alternate Hypothesis Four: There is a statistically significant relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three.

Second Alternate Hypothesis Four: There is a direct relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three, such that common internal variable trends in one country are reflected in the remaining three nations.

Research question five: The statistically significant internal [common] factors among the four [Colombia, Bolivia, Brazil, Argentina] economies which contributed to the debt crisis in the region might suggest policy making objectives which could alleviate future crises in the region.

Hypothesis Five: There is no relationship among the common variables which enable the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables.

First Alternate Hypothesis Five: There is a statistically significant relationship among the common variables which enable the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables.

Second Alternate Hypothesis Five: There is a direct relationship among the common variables, such that directional trends and percentage of impact enable the discovery of patterns or trends which may lead to the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables.

Research question six: If the IMF policies were responsible in part or in whole for the debt crisis in the four [Colombia, Bolivia, Brazil, Argentina] economies, were there feasible alternatives to the policies initiated?

Hypothesis Six: As measured by percentage of impact on debt, IMF policies [external variables] did not significantly contribute to debt levels among the four economies to a greater or lesser degree than global variables, or common internal factors.

First Alternate Hypothesis Six: As measured by percentage of impact on debt, IMF policies [external variables] significantly contributed to debt levels among the four economies to a greater degree than global variables, or common internal factors.

Second Alternate Hypothesis Six: As measured by percentage of impact on debt, IMF policies [external variables] significantly contributed to debt levels among the four economies to a lesser degree than global variables, or common internal factors.

Summary

As a result of the literature review, a prospective model of debt was developed. The relationships between the global [interest rates], external [structural adjustment policies, IMF lending, capital formation], and internal variables [capital inflows, unemployment, population, inflation, currency valuation, imports, external debt, economic growth, national output, exports, savings, investments, and per capita earning power], and the level

of debt (as defined here) for each nation [Colombia, Bolivia, Brazil, Argentina] will be detailed within the next section, along with the appropriate statistical tests.

It is hoped that this analysis will yield a model of factors contributing to debt crisis among the four nations. This should lead to a better understanding of the debt crisis phenomenon in developing countries.

CHAPTER III

Methodology

A restatement of the hypotheses which will be tested in the present study is found below.

De Vries (1995) explains that debt crisis [defined as high levels of debt] is the result of a set of elements, among them rising interest rates. Based on this, Hypothesis One is stated in the Null form.

Null Hypothesis One: There is a no statistically significant relationship between rising levels of debt, (as a dependent variable) and rising interest rates (as independent variables).

An alternate hypothesis proposes that a rise in interest rates would influence the rise in debt levels, such that both variables would show a statistically significant relationship between them. This implies that

the rising levels in interest rates can predict the rising levels in debt when statistically tested.

First Alternate Hypothesis One: There is a statistically significant relationship between rising levels of debt, (as a dependent variable) and rising interest rates (as an independent variable).

The second alternate hypothesis proposes that a rise in interest rate levels preclude a rise in debt level. Although similar to the first alternate, this hypothesis seeks to determine a direct, but not necessarily a statistically significant relationship between rising interest rate levels and rising debt levels.

Second Alternate Hypothesis One: There is a direct relationship between rising levels of debt and rising interest rates such that an increase in debt levels will be paralleled by rising interest rates.

Similarly, Knight (1996) explains debt crisis [defined as high levels of debt] as the result of economic interference in Latin American Nations. De Vries (1995) explains debt crisis as a result of rising fund demands [reflected as increasing levels of debt]. Martinez and Fierro (1993) also emphasize the role of the IMF structural adjustment policies in the formation of debt crisis. Hague (1992) concludes that debt crisis is the result of IMF policies regarding capital formation [both long term and short term] for Bolivia. It is thought that these ideas can be extended to the remaining nations under study [Brazil, Colombia, and Argentina].

Based on the above ideas, Hypothesis Two is stated in the Null form as follows:

Null Hypothesis Two: There is no statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital formation (as independent variables) as measured by changes in these IMF accounts.

An alternate hypothesis proposes that there is a relationship between the level of debt and the previously identified external variables, such that the levels of these accounts significantly influence the levels of debt in each of the four nations within this study. The use of debt level as a dependent variable should allow the independent variables of structural adjustment, lending, and capital formation to act as predictor variables, should statistically significant relationships exist.

First Alternate Hypothesis Two: There is a statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital formation (as independent variables) as measured by changes in these IMF accounts.

The second alternate hypothesis proposes that a rise in debt levels is influenced by accompanying changes in structural adjustment accounts, lending accounts, and capital formation. This alternate hypothesis seeks to measure whether the rise and fall in debt levels is matched by similar rises and falls in the accompanying IMF accounts.

Second Alternate Hypothesis Two: There is a direct relationship between debt level and structural adjustment, lending, and capital formation such that as debt levels rise, capital formation decreases, structural adjustment funding rises, and lending is increased.

As a test to determine if the four nations [Brazil, Bolivia, Colombia, and Argentina] are representative of Latin America regarding internal factors [capital inflows, unemployment, population, inflation, currency valuation, imports, external debt, economic growth, national output, exports, savings, investments, and per capita earning power as defined within this study], and that definite common factors exist among the four nations, Hypothesis Three is proposed, and stated in the Null form as follows:

Null Hypothesis Three: There is no correlation between the internal factor trends in Colombia, Bolivia, Brazil, and Argentina.

The Null hypothesis proposes that there are no common trends among the four nations as stated above. Although the economies are distinct and essentially independent of each other, it is a definite possibility that each nation experience similar trends in similar variables. As an example, in the United States, gas prices in Ohio may rise. Similarly, gas prices in a totally independent economy, such as Florida may rise as well. It is this concept which is tested in this hypothesis. The Null hypothesis then, states that there are no common trends among the internal variables in the four separate nations.

First Alternate Hypothesis Three: There is a positive correlation between the internal factor trends in Colombia, Bolivia, Brazil, and Argentina.

The second alternate hypothesis proposes that the internal factors [capital inflows, unemployment, population, inflation, currency valuation, imports, external debt, economic growth, national output, exports, savings, investments, and per capita earning power as defined within this study] are unidirectional. The hypothesis proposes then, if there are common trends among the four nations' internal variables, they would all move in a similar direction. Thus, if capital inflows were rising in Bolivia, a positive correlation with another internal variable (either in Bolivia or in one of the other sample nations), would reveal a similar rise in the correlated variable as well.

Second Alternate Hypothesis Three: There is a direct relationship among the internal variables such that common directional [increase or decrease in values] trends are observed among the four countries.

The second alternate hypothesis proposes that the internal factors [capital inflows, unemployment, population, inflation, currency valuation, imports, external debt, economic growth, national output, exports, savings, investments, and per capita earning power as defined within this study] may not be unidirectional, but may be multi-directional instead. Thus, if unemployment is rising in Colombia, it may be observed rising in the remaining three nations as well. If the variable is

correlated with a falling variable (for example, inflation) in Colombia, similar trends should be observable in the other three nations as well.

Altimir (1996) believes that debt crisis is a result of a fragile infrastructure as evidenced by low economic growth, falling wages, rising unemployment, rising population, and lowered savings. Ffrench - Davies (1998) also concludes that capital inflows, currency overvaluations, lowered exports, decreased national output, and decreased investments lead to debt crisis. Similarly, De Vries (1995) explains debt crisis as a result of inflation and inflation controls placed upon individual nation's economies.

Finally, Ghosh and Tanski (1998) conclude that rising exports lead to better debt service. This is reinforced by Edwards (1997). Thus, imports are included in the internal factors as a contributing variable with an expected rise in imports resulting in greater debt and lowered debt service.

The above leads to Hypothesis Four which is proposed as follows:

Null Hypothesis Four: There is no statistically significant relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three.

The null hypothesis proposed is based on the literature and the results of the testing of hypothesis

three. The test results from hypothesis three should narrow the amount of internal variables from the initial thirteen variables to a more manageable number of variables based on common trends. It is predicted that those remaining variables with significant relationships with each other are those internal variables which are shared among the four nations within the study. The common variables proposed in the null hypothesis would show no significant relationship to debt levels when tested using a regression analysis.

First Alternate Hypothesis Four: There is a statistically significant relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three.

The first alternate hypothesis proposes using the internal variables, (at this point unknown), from test three to determine whether a statistically significant relationship exists between these variables and debt level as determined by regression analysis.

Second Alternate Hypothesis Four: There is a direct relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three, such that common internal variable trends in one country are reflected in the remaining three nations.

This last hypothesis proposes that a direct relationship exists between the level of debt and the internal variables (as determined by hypothesis three testing), whether significant or not. The purpose of this

hypothesis, although similar to the first alternate, is to determine those influential variables which may be included within a proposed model, should the regression analysis prove that none of the variables possess a predictive value in relation to the level of debt.

The four nations under study have different economies and there may exist similar circumstances among them, which would be reflected in common subject variable trends. However, since the current literature does not cover these four nations in particular, it is difficult to say which variables will show up as being predominant until testing. Thus, a Null Hypothesis is proposed, assuming no relationship among the variables. For instance, trended variables may be rising population and rising currency valuation. These two elements may show the same trends, but they cannot easily be translated into a coherent and practical economic and social policy as related elements.

Null Hypothesis Five: There is no relationship among the common variables which enable the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables.

The first alternate hypothesis assumes that a statistically significant correlation can be established between many of the variables. It further assumes that these relationships can be explained in terms of policy and policy making objectives.

First Alternate Hypothesis Five: There is a statistically significant relationship among the common variables which enable the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables.

The second alternate hypothesis assumes that similar trends can be established among some of the internal variables determined in hypothesis three testing, such that these observable trends allow the formation of policies in regard to the economies of the four nations under study.

Second Alternate Hypothesis Five: There is a direct relationship among the common variables, such that directional trends and percentage of impact enable the discovery of patterns or trends which may lead to the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables.

Hypothesis Six takes the same approach as Hypothesis Five. Using the Null Hypothesis to state that there is no significant impact of any one-subject variable on these four nations allows the testing to reveal which variables have had an impact on the formation of debt crisis [as defined] and whether the IMF actions [as measured by account changes as stated in Hypothesis Two] have significantly contributed to the level of debt among the four nations. Thus, Hypothesis Six is proposed as follows:

Null Hypothesis Six: As measured by percentage of impact on debt, IMF policies [external variables] did not significantly contribute to debt levels among the four economies to a greater or lesser degree than global variables, or common internal factors.

First Alternate Hypothesis Six: As measured by percentage of impact on debt, IMF policies [external variables] significantly contributed to debt levels among the four economies to a greater degree than global variables, or common internal factors.

Second Alternate Hypothesis Six: As measured by percentage of impact on debt, IMF policies [external variables] significantly contributed to debt levels among the four economies to a lesser degree than global variables, or common internal factors.

The testing of the six hypotheses will enable the researcher to determine what has contributed to the high level of debt as found in these four nations. Further, the main impetus of this study, whether the IMF policies, (such as the structural adjustment programs, establishment of Special Drawing Rights accounts, lending through the compensatory accounts or the capital formation policies), affected the level of debt within the four nations within this study. This determination will allow the formulation of a regional model for the four nations in the context of a model [global, external, and internal factors] similar to that offered and summarized by Ghosh and Tanski (1996).

Research Design

The six hypotheses will undergo testing in accordance with the statistical techniques as outlined below. The overall objective, again, of the testing is to develop an economic model based on the statistically significant relationships of the global, external, and internal variables for the four countries examined here. An analysis of these relationships hopefully will yield a model of the four nations that may shed some light on Latin America as a

whole.

This study will use primarily a between subjects approach, as the relationships involved will be examined over time and the proposed economic model will be used to determine the variation or changes between subjects at a single point in time (Cone & Foster, 1997). The single point in time comparison will be repeated for each year from 1975 through 1995, inclusive.

Further, the present study utilizes archival/ historical data with the addition of time constraints limiting that data to those values existing within the depicted period. The variables under analyses are individual aspects of the economic structures [global, external, or internal variables] of four Latin American Nations [Colombia, Bolivia, Brazil, and Argentina].

The four nations of Colombia, Bolivia, Brazil, and Argentina have been chosen as the focus of this study because of the completeness of the data for the period 1975-1995. Also, these four nations have experienced rapid economic growth as found in an initial examination of country statistical yearbooks. Finally, these four nations have been the most frequently represented in the current

literature.

The period 1975-1995 has also been chosen because of the completeness of data, the period's applicability to the debt crisis events, and the availability of the data as gathered from the IMF and the United Nations statistical yearbooks.

Finally, the global variable [interest rates], external variables [IMF structural adjustment, lending, and capital formation], and the internal variables [unemployment, population, inflation, currency valuation, imports, external debt, economic growth, national output, exports, savings, investments, and per capita earning] have been included in this study because of their repeated presence in the current literature, their availability, and the completeness of the data for the examination period.

This study is also exploratory in a sense, since best guesses have been made about the variables of interest and their relationships coming primarily from the literature review.

The recent study's design, and the corresponding analyses, are dependent on the continuous nature of the variables under discussion and the changes occurring in their respective values from year to year. These changes in the variables will then be subjected to testing to

determine if relationships exist between the variables within the same time periods, the significance of these relationships between the variables, and their impact [if any] on the economic structures examined.

Assumptions

Assumptions relevant to this study are that the data are complete and accurate as recorded on a yearly basis. The data, it should be remembered, as recorded are not always exact numbers, but only representative numbers; thus conclusions based on these numbers may not be exact. Further, the data are assumed to be homogenous [for each nation] and it is assumed, concerning the relationships, that the data are linear in their properties. These data are also historical in nature, and are by no means an expression of pure cause and effect relationships. These assumptions about the data may, of course, influence the results

Procedures

The data will be collected for the four nations under study for each year between 1975 and 1995, inclusive. The data sources will consist of the IMF Yearbook, which is published once a year and encompasses the financial and economic data from the previous twelve months [October

through September] for each country examined. The yearbooks are available to the general public, as copies, in the reference section of the University of South Florida at the Tampa, Florida campus. In addition, the yearbooks are summarized in five-year increments, which reproduce both IMF and country statistical information for the previous five years, as well as additional summary data. Specifically, [interest rates, structural adjustment account changes, capital formation account changes, lending account changes, and debt level changes] will be drawn from the yearly and [five-year] summary IMF yearbooks.

Also, data, (as found in the IMF statistical year books, the United Nations statistical yearbooks, and the individual national statistical yearbooks), will be collected from the individual country statistical yearbooks [capital inflows, unemployment, population, inflation, currency valuation, imports, economic growth, national output, exports, savings, investments, and per capita earning power] which are published each year. Table 9 summarizes the Hypotheses, the data sources, and the literature cites from which the hypotheses are drawn. Hypotheses one through three are dependent upon the collection of raw data [IMF Yearbooks and Country Specific Statistical Yearbooks], while the remaining hypotheses rely

upon the manipulation of the IMF yearbook and country specific yearbook data without the need for gathering further data (See Table 9).

All subject variables will be stated in $SDR (SDR dollars are simply SDR units translated into a dollar value. The dollar value can then be translated into currency using a standardized exchange rate); where such valuation does not exist in the data, a conversion using the exchange rate [for the time period being converted] provided in the IMF Yearbook Economic Tables will be utilized. The conversion values will be provided in the appendices for reference.

The data will be entered into an SPSS Data Matrix which consists of rows and columns. The columns will be representative of the variables of interest with an associated abbreviation. Each row will represent one year of the data as summarized within the IMF Yearbook Tables and the country Statistical Yearbook Tables. The top (horizontal) rows will represent the earliest years in the study beginning with the year 1975. Each subsequent horizontal row will represent the next year. The vertical columns will define the individual variable. Each value entered into the column will represent a variable's

Table 9

Stated Hypotheses, Associated Variables, Sources, and Cites

Hypothesis One: (no statistically significant relationship between rising levels of debt and rising interest rates)

Name	Source	Literature Cite
Interest Rates	IMF Yearbook	De Vries (1995)

Hypothesis Two: (no statistically significant relationship between increased debt level and structural adjustment, lending, and capital formation)

Name	Source	Literature Cite
structural ** adjustment,	IMF Yearbook	Martines and Fierro (1993)
capital** formation	IMF Yearbook	Hague (1992)
lending** policies	IMF Yearbook	De Vries (1995)

Hypothesis Three: There is no correlation between the internal factor trends in Colombia, Bolivia, Brazil, and Argentina.

Name	Source	Literature Cite
capital inflows.	Country Yearbook Data	Ffrench - Davies (1998)
unemployment	Country Yearbook Data	Altimir (1996)
population	Country Yearbook Data	Altimir (1996)
inflation	Country Yearbook Data	Ffrench - Davies (1998)
currency valuation	Country Yearbook Data	Ffrench - Davies (1998)
imports	Country Yearbook Data	Ghosh and Tanski (1994)
ext. debt	Country Yearbook Data	Ghosh and Tanski (1994)
economic growth	Country Yearbook Data	Altimir (1996)
ntl output	Country Yearbook Data	Ffrench - Davies (1998)
exports	Country Yearbook Data	Ffrench - Davies (1998)
savings	Country Yearbook Data	Altimir (1996)
investments	Country Yearbook Data	Ffrench - Davies (1998)
per capita earning	Country Yearbook Data	Altimir (1996)

Note: Variables selected for this tables have been derived from Table 7

specific value for a specific year within the period.

Where data are missing, an interpolation (estimate) will be made using the immediately preceding and the proceeding data. The interpolation will be effected using the following methodology. The higher value will be subtracted from the lower value. The resulting figure will be divided by two and added to the lower figure. This sum will then represent the missing data and bridge the gap between the preceding and proceeding values.

Where more than one period is missing, the interpolation will follow the above methodology beginning with the outer figures and working inward toward the middle period or periods until all gaps are filled. This methodology is a conservative approach to the problem of missing data. This methodology allows the use of the time period as a controlling agent rather than using a simple average as determined by the values on either side of the missing values.

Data Processing

The data will be processed with the use of the SPSS Graduate Package software, specifically version 8.0. The data entered into the SPSS data matrix will be the actual data. Missing values will be supplemented with values in accordance with the procedures outlined above.

Data Analysis

The level of debt (loan amounts outstanding per year per nation) will be used as a dependent variable as stated in hypothesis one, two, and four. Debt levels are expected to rise during the period 1975 through 1995. Simultaneously, the currency values are expected to fall. Debt crisis, (as an event), may be reflected in the existence of high levels of debt combined with actual currency collapse (Altimir, 1996) and (DeVries, 1995).

Hypothesis One [Second alternate]: A test of the rising levels of debt parallel rising levels of interest rates such that a direct relationship between the two can be observed) will be subjected to a "T - test" analysis. The "T - test" will be used to determine whether a significant relationship exists between rising interest rates as measured using year to year data ranging from 1975 - 1995, and the level of debt, as measured by year to year data within the same time range periods. The establishment of a significant relationship between interest rates and debt level ($p = <.05$) will determine final inclusion within the model.

Hypothesis Two [Second alternate]: Tests of a statistically significant relationship between increased debt level, increased structural adjustment, increased

lending, and decreased capital formation will be subjected to a regression analysis. This will be used to determine whether a significant relationship exists between the level of debt (as measured by loans outstanding for each individual nation as collected from the IMF yearbooks) among the four stated nations, and [$U.S.] amounts held in IMF accounts for structural adjustment programs, lending amounts for the four stated nations [as measured on a year to year basis], and the level of capital formation as determined by the levels of capital inflows into the four stated nations. The presence of a statistically significant relationship between IMF policies and the level of debt will help to confirm or refute the impact of IMF policies on the level of debt, thus the debt crisis itself.

Hypothesis Three [Second alternate]: (a significant correlation between the directional trends of internal factors in Colombia, Bolivia, Brazil, and Argentina) will be subjected to a Pearson Product Moment Correlation Analysis which will measure whether the internal factors (Table 9) exhibited among the four stated nations show any correlation between their year to year values. A positive correlation [of the internal variables] among the four nations will help to lend credence to the idea of common trends which will enable their inclusion within the

proposed economic model. The common trends examined will be levels of unemployment, savings, investments, inflation rates, population rates, currency valuation, imports, exports, economic growth, national output, and per capita earning.

Hypothesis Four [Second Alternate]: A test of the directional relationship between the between debt level and internal variable trends (as determined by Hypothesis Three) will be further tested utilizing a regression analysis to determine if a common significant relationship exists between the level of debt among the four stated nations and any common internal factors. A statistically significant relationship will allow inclusion of the common internal variables in the proposed regional economic model.

Hypothesis Five, [Second alternate]: Tests of a direct relationship among the common variable trends may enable the creation of comprehensive economic policies as elicited by a regional model. Since this hypothesis is dependent upon the outcome of Hypothesis Four, those results will be scrutinized to determine if sufficient trends exist between and among the variables in order to offer some economic policy possibilities which might help avoid future debt crises or trends toward such events.

Hypothesis Six [Second alternate]: (IMF policies, as

measured by percentage of impact on debt, contributed to debt levels among the four economies to a lesser degree than global variables, or common internal factors) will use a straightforward arithmetical approach to the raw data [for each variable] to determine year by year the percentage of total debt for each nation within this study. A determination of the level of impact each variable may have had in each of the years from 1975 - 1995, inclusive], will enable inclusion of those high percentage [greater than 60%]variables in the formation of an economic model of debt crisis. This model will then be used to determine which factors are thought to be contributing to debt over the period under study.

Summary

This section has proposed six hypotheses which provide a basis for testing. The results of these tests may lead to answers to the originally proposed research questions which have been the basis and focal point of this present study. The import substitution models (ISI), as pointed out by Ghosh and Tanski (1998), have been inadequate in their methodology to explain the Latin American propensity for incurring debt. The current literature, as well, is laced with text describing the IMF as being responsible for the current debt problem in Latin America.

This research has been designed to include all pertinent variables which may affect the level of debt, lead to currency devaluation, and the eventual collapse of the currency and perhaps the economy. The current literature was examined to determine which variables have been used in previous research, the relationships among these variables (in terms of movement or trend), and how their effects have been measured.

It is hoped that the first set of tests, (Hypothesis One), may reveal that global forces such as rising interest rates may have had a direct effect on the level of debt in Latin America. If the tests show that relationship, it may be said that debt level was influenced, to some extent, by at least one global variable [interest rates].

The second set of tests, (Hypothesis Two), may reveal that the level of debt was influenced by IMF policies. It is hoped that at least one of the [structural adjustment, level of lending, and capital formation] variables which have been categorized as external will show an influence on the level of debt among the four nations of Brazil, Bolivia, Colombia, and Argentina.

The third set of tests, (Hypothesis Three), it is hoped, will disclose that the four nations have common internal variables, which will enable further testing of

the trends for the four nations as a region. It is hoped that as many of the internal variables as possible will be shared among the four nations. The greater the number of specified internal variables which can be included in the fourth set of tests, it is felt, the greater the accuracy of the proposed model.

The criteria of inclusion will be the fourth set of tests, (Hypothesis Four). These will test those internal variables which are included as shared, (showing the same trends in all four nations; i.e., unemployment rising in Bolivia throughout the examination period will also be observed rising in Brazil, Colombia, and Argentina), to determine whether the internal variables have had a common influence on debt levels.

The fifth set of tests, (Hypothesis Five), are designed to obtain a result suggesting which of the influential variables had the most impact on the level of debt. From this result, a determination can be made as to which of the variables, (as a percentage of total), impacted the level of debt on a year by year basis. The increase or decrease of the percentage of impact, (of each variable), on the level of debt as currency values decrease will show which of the global, external, or internal

variables had the greatest impact on the level of debt, if any, and which of these variables tended to increase as currency value decreased, (to eventually collapse), and which values decreased to a point of immateriality.

The sixth and final test is designed to illuminate which variables are the most influential (as determined by percentages) on a year by year basis. It is hoped that the results of the test will show which variables become the most influential as debt level rises and currency valuation falls; that is, as debt crisis approaches and becomes an event.

Through these series of tests the level of debt remains the dependent variable. The tests used, in some cases, are simple ones and in some instances, as in test six, are purely mathematical. These tests, again, are attempting to measure which variables have influenced the level of debt. These tests are, as was mentioned, clearly segmented and historical, but their research value could be significant.

Finally, these tests, it is hoped, will point to some conclusions showing that some global, some external, and some internal variables have played influential roles in the Latin American economies, the rising level of debt in these countries, the eventual collapse of their currencies

and the eventual onset of their debt crises.

CHAPTER IV
FINDINGS

Introduction

The results of the statistical testing and data analysis are presented here. This section will begin with a restatement of the purpose of this study followed by an explanation regarding reliability and validity testing. From there a discussion regarding the hypothesis testing will ensue, followed by a summary section which will draw together, the testing of the various hypotheses.

Restatement of Purpose

The purpose of the study was to provide a comprehensive, research based study of the Latin American debt problem as it arose in the 1960s, grew in the 1970s, and culminated in the collapse of currencies across the Latin American region in the 1980s. Further, the study has proposed assessments of global, internal, and external forces within the specifics of four economies; Brazil, Argentina, Colombia, and Bolivia, to gain insights into the common factors that occurred and affected the economies.

Also, and more specifically, the study sought to determine whether the International Monetary Fund and its policies were chiefly responsible for the large level of

debt which now exists in the region. On the other hand, the present study also sought to determine whether internal factors, (unemployment, savings, investments, inflation rates, population rates, currency valuation, imports, exports, economic growth, national output, and per capita earning), in these four countries were related to the 1975 - 1995 levels of debt.

Finally, the present study sought to determine which internal factors existed as common elements among the four economies. It was hoped then, that these might suggest some policies to avoid a debt crisis in other regions in similar circumstances.

Validity Testing

The sources used for the collection of data were both the IMF yearbooks for the periods 1975 through 1995, and the United Nations Yearbooks for the same periods. The data used were fiscal (September) year-end figures classified as categories of revenue or expenditure. The figures used were for the four nations under study, Argentina, Brazil, Bolivia, and Colombia.

Although there are gaps in Latin American data in certain categories using only one data source, these gaps in information may be filled using multiple sources, as was done here. Thus, in depth research using multiple source

ensures the validity of the data to the fullest extent possible.

Regarding validity, the data gathered was summary data reported to the IMF, World Bank, and United Nations. Because the data is economic and based on actual transactions, there is a high degree of validity, in that the figures recorded within a specific category, for instance, interest rates, are an actual measurement of interest rates. Also, as these are actual figures and not a scale applied to figures, the data validity can be considered high.

The raw data used in this study were subjected to validity tests using cross-referenced material. For instance, if data for 1980 loan principles, based on IMF sources, were found to be $1,000,000.00 dollars, a cross-reference to another source, such as the United Nations, was used to verify the amount. Overall, the data was consistent and any differences between amounts were not material. The occurrence of these differences was limited to two occasions where the differences between IMF and UN data were material enough to warrant examination. Upon examination, however, it was found that the difference in numbers came from ending dates of the fiscal period. The

IMF ends its fiscal year in September, while the UN figures use a calendar year. It was in the years 1975 and 1979 that these two discrepancies occurred. The difference in fiscal year enabled the researcher to reconcile the two figures. IMF sources were used as the primary data collection source. Where data was missing the United Nations Statistical Yearbook was used.

Homogeneity Tests

In addition, the raw data were subjected to tests of homogeneity, as well as tests for kurtosis and skewness. Overall, the data was homogenous, after translation to US dollars from the currencies in which the data was originally stated. Rather than eliminate outliers from the data, the outliers were explained in the summary and accounted for in the overall analysis.

Reliability Testing

Regarding reliability, the data used was gathered from individual nations, which report their year-end data to such agencies as the IMF, the World Bank, and the United Nations. This data, in turn, is recorded in the IMF, World Bank, and United Nations statistical yearbooks. As the data is reported on a yearly basis, the methodology each nation employs to gather such data, is assumed to be repetitive.

This repetition, assuming consistency of the methodology with which they report the data, can only lead the researcher to conclude that the economic data as is reported, is reliable.

General Trends

The general trends revealed during the research is the IMF's tendencies to reclassify accounts every five years. This procedure made it difficult to locate certain accounts, such as Gross Domestic Imports, as an example. From the period 1975 through 1995, the classifications became more complicated, and more sub-classifications tended to be created and renamed. As was often the case, the accounts had simply been renamed and sub-classified under a more general heading. Overall though, the figures within the classifications and sub-classifications were verified with simpler United Nations data for the same periods.

Hypothesis Testing

The data was subjected to six tests. Each test, starting with Hypothesis One, represents an increasingly narrower scope of testing. Test one begins with an analysis of the impact global interest rates may have had on the level of external debt. Test two narrows the scope from global factors (interest rates) to external factors

(structural adjustment, external lending, capital formation). Test three narrows the scope of testing even further through testing of the internal factors, (unemployment, savings, investments, inflation rates, population rates, currency valuation, imports, exports, economic growth, national output, and per capita earning), and their impact on each nation's level of external debt.

Test four continues the examination of external debt as impacted by internal factors, however, in this testing, the variables are limited to specifically trended variables (population rates, consumer price indices as an indicator of inflation, portfolio investments, capital inflows, and gross domestic product). Test five uses the residual predictive variables from test four to determine a regional (aggregate data) impact of specific internal factors on external debt levels. Finally, test six uses all variables (used in tests one through five) to show the percentage of impact each variable has had (in each year), on the level of debt, as an aggregate for all four nations as a region.

Each test, except tests five and six, use a nation by nation approach. A final aggregate sum is used for tests five and six. As no direction was predicted, two tailed tests were used as the best measure of the data.

Significance was determined at the .05 level, and is the basis of acceptance or rejection of a hypothesis.

Test One

Null Hypothesis 1 states that there is no statistically significant relationship between rising levels of debt, (as a dependent variable) and rising interest rates (as an independent variable). Through testing, the Null Hypothesis was not rejected. A summary of results can be seen in Table ten.

In an environment where both interest rates and debt are fluctuating often, it is probable that debt and interest rates will be offset by a decrease in one over the other. A two - tailed, paired T-test is especially appropriate, since no particular direction was predicted (See Table 10).

Argentina

External debt as compared to interest rates (as converted to Special Drawing Rights dollar values) shows no two tailed significance for the variable labeled Argentina Interest Dollars and Argentina External Debt. The obtained "T" value was -.140, which was not significant (2.0860 is significant for a two tailed test with 20 degrees of freedom).

TABLE 10

TEST ONE TABLE OF RESULTS FROM PAIRED SAMPLE T TEST

Stated in Millions of Dollars US

DESCRIPTION	MEAN	T VALUE	DF	SIG. 2-TAILED
ARGENTINA EXTERNAL DEBT ARGENTINA INTEREST DOLLARS	-$12396.5	-.140	20	.890
BRAZIL EXTERNAL DEBT BRAZIL INTEREST DOLLARS	-$51997.5	-1.185	20	.250
COLOMBIA EXTERNAL DEBT COLOMBIA INTEREST DOLLARS	-$.7724	-.077	20	.940
BOLIVIA EXTERNAL DEBT BOLIVIA INTEREST DOLLARS	$82.2	3.932	20	.001
AGGREGATE DATA	-$23273.26	-.227	20	.823
SPLIT TEST CASES 1 - 11	$ 4731.10	.070	10	.945
SPLIT TEST CASES 12 - 21	-$54078.11	-.260	9	.801

Note: External Debt data drawn from IMF yearbook data and United Nations statistical yearbook data.

Interest dollars are calculated as the external debt for any given country in any given year multiplied by the prevailing interest rate in that nation, in that year to arrive at the dollar value of the interest rate.

Dollar values are taken to mean the US dollar value of the external debt, (or loan principle), multiplied by the (IMF set) exchange rate for SDR units.* This calculation converts dollar values into SDR dollar values. In this way variables are made consistent through the use of the SDR unit as the standard of measure.

* SDR units are units of measurement used by the IMF similar to the dollar and is used as a form of exchange that is not currency. However, the

Brazil

External debt as compared to interest rates (as converted to Special Drawing Rights dollar values) shows no two-tailed significance for the variable labeled Brazil Interest Dollars and Brazil External Debt. The obtained "T" value was -1.185, which was not significant (2.0860 is significant for a two tailed test with 20 degrees of freedom).

Colombia

External debt as compared to interest rates (as converted to Special Drawing Rights dollar values) shows no two-tailed significance for the variable labeled Colombia Interest Dollars and Colombian External Debt. The obtained "T" value was -.077, which was not significant (2.0860 is significant for a two tailed test with 20 degrees of freedom).

Bolivia

External debt as compared to interest rates (as converted to Special Drawing Rights dollar values) shows a two-tailed significance for the variable labeled Bolivia Interest Dollars and Bolivian External Debt. The obtained "T" value was 3.932, which was significant (2.0860 is significant for a two tailed test with 20 degrees of

freedom).

Aggregate Data (All Nations)

External debt as compared to interest rates (as converted to Special Drawing Rights dollar values) shows no two-tailed significance between the two means for Aggregate External Debt and Aggregate Interest Dollars. The obtained "T" value was -.227, which was not significant (2.0860 is significant for a two tailed test with 20 degrees of freedom).

Secondary testing

The data is homogenous, but does contain some outlying figures. Because of this, a retest of the Aggregate data using a split case methodology was used. The purpose of this is to identify if their are any effects from the outlying data by shrinking the test population. Thus, the first split contains cases 1 - 11 (1975 - 1985). This test obtained the "T" value of .070, which was not significant. A retest of the Aggregate data using cases 12 - 21 (1986 - 1995), obtained the "T" value was -.260 (2.0860 is significant for a two tailed test with 20 degrees of freedom. Based on the above then, H1, (There is no statistically significant relationship between rising levels of debt, and rising interest rates, (as paired

variables)), in the Null form, was not rejected.

Also, the first alternate hypothesis one, (there is a statistically significant relationship between rising levels of debt, (as a dependent variable) and rising interest rates (as independent variables)), was rejected. The second alternate hypothesis one, (There is a direct relationship between rising levels of debt and rising interest rates such that an increase in debt levels will be paralleled by rising interest rates.), was also rejected.

Thus, interest rates show no significant relationship with the level of debt, (either individually, by country, or as an aggregate). Acceptance of the Null hypothesis, does not preclude the inclusion of interest rates in the final model, of course. The determination for inclusion is dependent, to a large part, on the results of the last, (hypothesis 6), tests.

Test Two

The second set of tests used a 2 stage least squares regression analysis. The reason for using this type of test was to gain an insight into which independent variables were predictive regarding external debt. Hypothesis Two states that there is no statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital

formation (as independent variables) as measured by changes in these IMF accounts. The testing of hypothesis two, (There is no statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital formation (as independent variables) as measured by changes in these IMF accounts)), was not rejected.

The first alternate hypothesis two, (There is a statistically significant relationship between increased debt level (as a dependent variable), and structural adjustment, lending, and capital formation (as independent variables) as measured by changes in these IMF accounts)), and the second alternate hypothesis two, (There is a direct relationship between debt level and structural adjustment, lending, and capital formation such that as debt levels rise, capital formation decreases, structural adjustment funding rises, and lending is increased), were rejected.

A Two - tailed T-test is appropriate. This was done because it is probable that debt and interest rates will be offset by a decrease in one over the other in an environment where both interest rates and debt are fluctuating.

In each of the following tests, external debt was used as the dependent variable in a 2 stage - least squares

regression analysis. The independent variables were Net (IMF) draws, Compensatory (IMF) draws, Special Drawing Rights, and Capital Formation. Using F values to determine significance, the number of regressed variables represents the numerator, and the number of residuals represent the denominator. Table Eleven contains the testing summary.

Colombia

The results of the regression testing for Colombia, (See Table 12), revealed a ratio of 4/16 with regression 4 / residual 16 with a significant F value of 3.06 at the 5% level of significance. The test results show F = 23.82049. The initial conclusions, after an analysis of the correlation matrix shows a significant correlation among the regression variables, (independent variables were net draws, compensatory draws, special drawing rights, and capital formation; dependent variable was external debt).

Bolivia

The results of the regression testing for Bolivia, (See Table 13), revealed a ratio of 5/15 with regression 5 / residual 15 with a significant F value of 2.90 at the 5% level of significance. The test results show F = 2.53921. An initial analysis of the correlation matrix shows, no significant correlation among any of the regression

variables, (independent variables were net draws, compensatory draws, special drawing rights, and capital

TABLE 11

TEST TWO SUMMARY TABLE OF REGREESION ANALYSIS RESULTS BY NATION

NATION	Degrees of Freedom			
DESCRIPTION	REGRESSION	RESIDUAL	F VALUE	SIG. F
COLOMBIA	4	16	23.82049	.0000
BOLIVIA	5	15	2.53921	.0741
BRAZIL	4	16	1.27341	.3213
ARGENTINA	3	17	.21598	.8839
AGGREGATE DATA	5	15	.44747	.8086

Note: Dependent Variable was External Debt

Independent Variables for each nation (and aggregate) was

1] Net Draws (drawn from IMF yearbook data)

2] Compensatory Draws (drawn from IMF yearbook data)

3] Special Drawing Rights (drawn from IMF yearbook data)

4] Capital Formation (drawn from IMF, UN, and or specific nation statistical yearbook)

TABLE 12

COLOMBIA 2 STAGE LEAST SQUARES TEST TWO RESULTS

Multiple R	.92532
R Square	.85622
Adjusted R Square	.82028
Standard Error	28.38567

Analysis of Variance:

	DF	Sum of Squares	Mean Square
Regression	4	76773.112	19193.278
Residuals	16	12891.944	805.747

F = 23.82049 Signif F = .0000

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
COL_ND	.240196	.083397	.373995	2.880	.0109
COL_CD	-3.157891	1.103536	-.394724	-2.862	.0113
COL_SDR	.042432	.110333	.041951	.385	.7056
COL_CF	9.59114021E-06	1.2268E-06	.812838	7.818	.0000
(Constant)	-21.564314	14.527673		-1.484	.1571

Correlation Matrix of Parameter Estimates

	COL_ND	COL_CD	COL_SDR	COL_CF
COL_ND	1.0000000	-.6702741	-.1887654	.0617928
COL_CD	-.6702741	1.0000000	.3335739	.0642925
COL_SDR	-.1887654	.3335739	1.0000000	-.3299122
COL_CF	.0617928	.0642925	-.3299122	1.0000000

formation; dependent variable was external debt).

Brazil

The results of the regression testing for Brazil, (See Table 14), revealed a ratio of 4/16 with regression 4 / residual 16 with a significant F value of 3.06 at the 5% level of significance. The test results show F = 1.27341. The initial conclusions offered by an analysis of the correlation matrix shows no significant correlation among any of the regression variables (independent variables were net draws, compensatory draws, special drawing rights, and capital formation; dependent variable was external debt).

Argentina

The results of the regression testing for Argentina, (See Table 15), revealed a ratio of 3/17 with regression 3 / residual 17 with a significant F value of 3.20 for the 5% level of significance. The test results show F = .21598. The initial conclusions offered after an analysis of the correlation matrix shows, no significant correlation among any of the regression variables, (independent variables were net draws, compensatory draws, special drawing rights, and capital formation; dependent variable was external debt). The low R value (Table 15) indicates that the finding is a little suspect. Much of the variance is not explained.

TABLE 13

BOLIVIA 2 STAGE LEAST SQUARES TEST TWO RESULTS

Multiple R	.67706
R Square	.45841
Adjusted R Square	.27788
Standard Error	103.35337

Analysis of Variance:

	DF	Sum of Squares	Mean Square
Regression	5	135618.35	27123.670
Residuals	15	160228.80	10681.920

F = 2.53921 Signif F = .0741

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
BOL_STR	3.256208	4.812799	.242310	.677	.5090
BOL_ND	-1.555254	1.005303	-.360911	-1.547	.1427
BOL_CD	1.713692	1.750704	.375073	.979	.3432
BOL_SDR	4.506402	3.693260	.283962	1.220	.2412
BOL_CF	-3.69561867E-07	4.3618E-06	-.018862	-.085	.9336
(Constant)	75.176682	51.592706		1.457	.1657

Correlation Matrix of Parameter Estimates

	BOL_STR	BOL_ND	BOL_CD	BOL_SDR	BOL_CF
BOL_STR	1.0000000	.0421513	-.8289330	-.1587160	.2406370
BOL_ND	.0421513	1.0000000	-.0350246	.3306916	-.4355855
BOL_CD	-.8289330	-.0350246	1.0000000	.3694223	-.2023866
BOL_SDR	-.1587160	.3306916	.3694223	1.0000000	-.0918612
BOL_CF	.2406370	-.4355855	-.2023866	-.0918612	1.0000000

TABLE 14

BRAZIL 2 STAGE LEAST SQUARES TEST TWO RESULTS

Multiple R .49140
R Square .24148
Adjusted R Square .05185
Standard Error 1413.94730

Analysis of Variance:

	DF	Sum of Squares	Mean Square
Regression	4	10183469.6	2545867.4
Residuals	16	31987951.5	1999247.0

F = 1.27341 Signif F = .3213

---------- Variables in the Equation ----------

Variable	B	SE B	Beta	T	Sig T
BRA_ND	1.938139	1.921679	.230742	1.009	.3282
BRA_CD	.131247	.844013	.036759	.156	.8784
BRA_SDR	-4.744397	2.577745	-.419211	-1.841	.0843
BRA_CF	-.000170	.001887	-.019856	-.090	.9293
(Constant)	988.768142	493.404871		2.004	.0623

Correlation Matrix of Parameter Estimates

	BRA_ND	BRA_CD	BRA_SDR	BRA_CF
BRA_ND	1.0000000	-.2792716	-.0823136	-.1148594
BRA_CD	-.2792716	1.0000000	.2877399	-.0437049
BRA_SDR	-.0823136	.2877399	1.0000000	-.0697995
BRA_CF	-.1148594	-.0437049	-.0697995	1.0000000

Aggregate Data (All Nations)

Aggregate testing of all four nations, (See Table 16), shows a ratio of 5/15 with regression 5/residual 15 with a significant F value of 2.90 at the 5% level of significance. The test results show F = .44747. The initial conclusion with an analysis of the correlation matrix, shows, no significant correlation among any of the regression variables, (independent variables were net draws, compensatory draws, special drawing rights, and capital formation; dependent variable was external debt).

Again, the low R values for the aggregate test does not explain the variance. The results noted here are suspect.

Test Three

The Null Hypothesis three states that there is no relationship among the internal variables, (unemployment, savings, investments, inflation rates, population rates, currency valuation, imports, exports, economic growth, national output, and per capita earning). Through testing, the null hypothesis was rejected. Hypothesis three, (second alternate) states that there could be a direct relationship among the internal variables, such that common directional, [increase or decrease in values], trends may be observed among the four countries. Through testing, (See Table 17)

TABLE 15

ARGENTINA 2 STAGE LEAST SQUARES TEST TWO RESULTS

```
Multiple R            .19161
R Square              .03671**
Adjusted R Square    -.13328
Standard Error 482173.22522

            Analysis of Variance:

               DF    Sum of Squares      Mean Square

Regression      3    150637201860.7    50212400620.2
Residuals      17      3952347324955   232491019115.0

F =         .21598       Signif F =  .8839

------------------ Variables in the Equation ------------------

Variable              B        SE B       Beta          T  Sig T

AR_CD         106.640318  393.034091    .083919       .271  .7894
AR_SDR        923.316769 1262.470864    .216065       .731  .4745
ARG_CF          -.005202    .035049   -.039336      -.148  .8838
(Constant)-34557.285150 269206.4339                 -.128  .8994

Correlation Matrix of Parameter Estimates

               AR_CD       AR_SDR       ARG_CF

AR_CD      1.0000000     .5228436    -.3114845
AR_SDR      .5228436    1.0000000     .1015269
ARG_CF     -.3114845     .1015269    1.0000000
```

**Note: Low R value is noted in text. See page 113

TABLE 16

AGGREGATE (ALL NATIONS) 2 STAGE LEAST SQUARES TEST TWO RESULTS

Multiple R .36027
R Square .12980**
Adjusted R Square -.16027
Standard Error 487635.71508

Analysis of Variance:

	DF	Sum of Squares	Mean Square
Regression	5	532021996899.4	106404399379.9
Residuals	15	3566828859258	237788590617.2

F = .44747 Signif F = .8086

Variables in the Equation

Variable	B	SE B	Beta	T	Sig T
TTL_STR	-4379.074419	12963.50019	-.087548	-.338	.7402
TTL_ND	-100.133406	309.333318	-.116017	-.324	.7506
TTL_CD	202.494548	292.196922	.312749	.693	.4989
SDR	932.607667	722.343962	.416937	1.291	.2162
TTL_CF	-.007562	.014589	-.135440	-.518	.6118
(Constant)	-188918.40309	330085.9404		-.572	.5756

Correlation Matrix of Parameter Estimates

	TTL_STR	TTL_ND	TTL_CD	SDR	TTL_CF
TTL_STR	1.0000000	-.0336535	-.1438222	.0880946	.2212072
TTL_ND	-.0336535	1.0000000	-.7111452	-.3322645	.1643524
TTL_CD	-.1438222	-.7111452	1.0000000	.5976485	-.2745425
SDR	.0880946	-.3322645	.5976485	1.0000000	.0214736
TTL_CF	.2212072	.1643524	-.2745425	.0214736	1.0000000

**Note: Low R value is noted in text. See page 116

TABLE 17

TEST THREE TABLE OF CORRELATION RESULTS BY INDIVIDUAL NATIONS

DESCRIPTION: CORRELATION PAIRS	r VALUE
Bolivia:	
Unemployment and Exchange Rates	@ .480
Unemployment and GDP	@ .455
Unemployment and Savings	@ .445
Unemployment and Capital Inflows	@ .451
Unemployment and Economic Growth	@ .522
Per Capita and Economic Growth	@ .508
Argentina:	
Loan Principle and Exports	@ -.479
Loan Principle and Exchange Rates	@ -.440
Loan Principle and Economic Growth	@ .542
Loan Principle and Per Capita	@ -.488
Population and Exports	@ -.440
Population and Imports	@ .524
Population and Exchange Rates	@ .536
Brazil:	
Portfolio Investment and External Debt	@ -.518
Portfolio Investment and Population	@ .476
Portfolio Investment and CPI	@ .449
Portfolio Investment and Econ Growth	@ .528
Colombia:	
Savings and External Debt	@ .526
Portfolio Investment and External Debt	@ .481
Portfolio Investment and Population	@ .533
Portfolio Investment and Econ Growth	@ .460
Portfolio Investment and Per Capita	@ .437
Exchange Rates and Economic Growth	@ .443
Exchange Rates and Capital Inflows	@ .457
Exchange Rates and GDP	@ .473

Note: Internal Variables which were tested for correlation were

Exchange Rates	Consumer Price Index
Exports	Savings
Imports	Portfolio Investment
Population	Capital Inflows
Gross Domestic Product	Unemployment
Economic Growth	Per Capita Earnings

TABLE 18

RAW DATA MATRIX AS SET UP IN SPSS: BY COUNTRY

ARGENTINA

DESC	ARG_LP	ARG_EXCH	ARG_EXP	ARG_IMP	ARG_POP	ARG_GDP	ARG_CPI
1975	3801.00	60.90000	211140.00	.00	25.38	95898.00	79.50
1976	5145.00	274.50000	1248844.00	.00	25.72	421968.00	127.80
1977	6113.00	597.50000	4102076.00	.00	26.06	1007845.00	176.10
1978	8791.00	1003.50000	8366066.00	.00	26.39	1748775.00	175.50
1979	11272.00	.00016	16651487.00	.00	27.79	29849.00	159.50
1980	12992.00	.00020	13765383.00	.00	28.24	71918.00	100.80
1981	12303.00	.00072	2.50	4.19	28.69	.02	83.60
1982	17524.00	.00485	18.70	10.87	29.16	.13	164.80
1983	26634.00	.02326	190.80	100.46	29.63	.63	343.80
1984	26171.00	.17874	1420.00	735.96	30.10	7254.00	626.70
1985	41001.00	.80050	7382.60	3081.82	30.33	34813.00	672.10
1986	86796.00	1.25700	10538.68	6648.00	30.74	64309.00	131.30
1987	69828.00	3.75000	33836.00	28414.00	31.14	228057.00	343.00
1988	63983.00	13.37000	164353.00	87988.00	31.53	751795.00	3079.80
1989	68115.00	1.79500	22596.00	9115.00	31.93	94183.00	2314.00
1990	66730.00	5.58500	98153.75	29600.00	32.32	318578.00	1629.10
1991	68051.00	.99850	17107.65	10748.00	32.97	258372.00	.00
1992	65465.00	.99050	16663.33	18553.00	33.42	308952.00	.00
1993	71471.00	.99850	17991.06	20152.00	33.87	353257.00	.00
1994	81506.00	.99950	22848.79	28687.00	34.32	410953.00	.00
1995	83199.00	1.00000	31167.83	26700.00	34.77	415537.00	.00

DESC	ARG_SVG	ARG_PORT	ARG_CI	ARG_UNEM	ARG_GRTH	ARG_PERC	BOL
1975	748.00	-65.55	20449.00	97.00	1620.00	62028.00	815.00
1976	38331.00	-76.68	.00	98.20	4712.00	60562.00	89.00
1977	573817.00	.00	.00	99.30	5059.00	66449.00	1670.00
1978	2971754.00	132.00	.00	101.60	4994.00	68655.00	2148.00
1979	12565531.00	293.00	7036.00	69.50	8840.00	653.00	2408.00
1980	3049.00	196.00	16010.00	82.20	13444.00	1277.00	2709.00
1981	.00	1309.00	.01	174.80	10976.00	1091.00	3168.00
1982	.01	329.00	.13	183.60	5887.00	988.00	3129.00
1983	.30	679.00	2.97	159.40	4712.00	1998.00	3407.00
1984	7.90	364.00	142.00	152.10	4494.00	2864.00	3305.00
1985	142.70	-677.72	.00	231.60	4189.00	3134.00	3856.00
1986	.61	-662.96	15006266.00	177.80	5778.00	4175.00	4978.00
1987	5.32	-811.47	130000.00	230.50	8253.00	5371.00	6556.00
1988	102.00	-966.21	1835184.00	251.20	7161.00	5171.00	5570.00
1989	124.00	-1442.94	5656882.00	322.60	5523.00	5712.00	4501.00
1990	3373.00	-2296.17	.00	509.30	5798.00	6209.00	5245.00
1991	172.00	.00	37818.00	696.00	11836.00	8295.00	5048.00
1992	370.00	367.00	51555.00	827.00	20449.00	9504.00	5045.00
1993	565.00	2208.68	633448.00	1062.00	23053.00	10473.00	5075.00
1994	731.00	398.53	82084.00	1400.00	31426.00	12172.00	6009.00
1995	422.00	.00	74962.00	1959.00	29911.00	12300.00	6616.00

TABLE 18 (CONT)

BOLIVIA

DESC	BOL_EXCH	BOL_EXP	BOL_IMP	BOL_POP	BOL_GDP	BOL_CPI
1975	20.00	245227.00	310034.00	4.89	1158194.00	5.10
1976	20.00	295202.00	327827.00	5.02	1342796.00	6.60
1977	20.00	352554.00	398810.00	5.15	1621454.00	8.10
1978	20.00	372705.00	527477.00	5.29	2099957.00	10.40
1979	25.00	569600.00	742400.00	5.43	3272928.00	19.70
1980	25.00	818400.00	802900.00	5.60	4634686.00	47.20
1981	25.00	748200.00	974400.00	5.76	3729400.00	39.00
1982	196.00	26848800.00	22442400.00	5.92	35164800.00	133.00
1983	500.00	175518800.00	138908800.00	6.08	20344700.00	269.00
1984	9000.00	710.00	481.00	6.25	11754432800.00	1281.00
1985	.00	684.00	606.00	6.43	35.00	11748.00
1986	.00	780.00	824.00	6.61	9686.00	20072.00
1987	.00	807.00	1101.00	6.80	9868.00	10504.00
1988	.00	807.00	794.00	6.99	6725.00	16.00
1989	.00	1079.00	814.00	7.19	7020.00	15.00
1990	.00	1317.00	1018.00	6.96	7247.00	17.00
1991	3.75	1213.00	1386.00	6.73	102490.00	18.00
1992	4.09	976.00	1499.00	6.90	123952.00	17.00
1993	4.47	999.00	1656.00	7.07	150342.00	.00
1994	4.69	1507.00	1764.00	7.24	189417.00	.00
1995	4.93	1636.00	2116.00	7.41	236469.00	.00

DESC	BOL_SVNG	BOL_PORT	BOL_CI	BOL_UNEM	BOL_GRTH	BOL_PERC	BRA_LP
1975	4378.00	.00	206737.00	76.60	673.00	117.00	12797.00
1976	5042.00	.00	246242.00	81.20	677.00	102.00	20498.00
1977	655.00	.00	300614.00	85.70	717.00	95.00	26862.00
1978	8598.00	.00	429742.00	94.80	1001.00	84.00	39495.00
1979	7552.00	1.84	703265.00	99.50	1177.00	71.00	46925.00
1980	11656.00	-4.46	814323.00	105.90	848.00	58.00	49937.00
1981	29.00	-1.05	539.00	180.50	1067.00	41.00	53275.00
1982	432.00	-16.55	15358.00	200.70	611.00	14.00	57031.00
1983	3138.00	-1.88	118564.00	277.60	606.00	4.00	62563.00
1984	89844.00	-.88	28573252.00	303.20	479.00	1174.00	69240.00
1985	.00	-.99	.00	370.90	761.00	1123.00	81894.00
1986	.00	.00	.00	46.20	824.00	874.00	103632.00
1987	.00	.00	.00	78.00	1086.00	1054.00	124892.00
1988	.00	.00	.00	86.65	795.00	985.00	123865.00
1989	.00	.00	.00	95.30	802.00	964.00	115761.00
1990	.00	10.39	.00	71.80	977.00	1054.00	124726.00
1991	10.71	.00	14844.00	62.10	1387.00	1135.00	122353.00
1992	5.63	.00	20225.00	59.30	1498.00	1126.00	124674.00
1993	6.14	.00	25054.00	69.60	1656.00	1135.00	126350.00
1994	6.85	.00	28129.00	38.80	1764.00	1204.00	138567.00
1995	.00	.00	36730.00	47.50	2116.00	1315.00	144461.00

TABLE 18 (CONT)

BRAZIL

DESC	BRA_EXCH	BRA_EXP	BRA_IMP	BRA_POP	BRA_GDP	BRA_CPI	BRA_SVNG
1975	9.07	794.00	1221.00	106.23	10717.00	25.80	998.00
1976	12.35	1643.00	2203.00	109.18	22379.00	34.80	2317.00
1977	16.05	3511.00	3844.00	112.24	45258.00	43.70	5193.00
1978	20.92	6598.00	7737.00	115.40	92936.00	38.70	11473.00
1979	42.53	24203.00	31150.00	115.74	353636.00	52.70	41851.00
1980	65.50	93603.00	116900.00	121.29	1099194.00	82.80	114478.00
1981	127.80	343876.00	357715.00	124.02	3814041.00	99.30	496843.00
1982	252.70	1071880.00	1165523.00	126.81	14162140.00	97.80	2150449.00
1983	984.00	13804.00	10920.00	129.22	122490.00	142.10	24029415.00
1984	3184.00	51.00	29.00	132.69	1228425.00	197.00	250042036.00
1985	.01	185.00	107.00	135.56	16.00	226.90	.00
1986	.02	394.00	284.00	138.49	66.00	152.50	.00
1987	.07	1548.00	1013.00	141.45	1213.00	229.70	58.55
1988	.77	4611.00	2411.00	144.43	94711.00	682.30	1182.44
1989	11.36	49.00	30.00	147.40	5970.00	1287.00	172977.00
1990	68.99	1213.00	938.00	150.37	1026954.00	2937.80	13378.00
1991	.39	7305.00	5643.00	153.32	31747.00	388.40	433.00
1992	4.51	88825.00	58987.00	156.28	3841518.00	810.10	55944.00
1993	.12	1892.00	1461.00	159.22	2288.00	1231.70	42.00
1994	.85	44411.00	38283.00	153.73	439125.00	2075.90	2022.00
1995	.97	74201.00	91142.00	155.82	934393.00	66.00	1184.00

DESC	BRA_PORT	BRA_CI	BRA_UNEM	BRA_GRTH	BRA_PERC	COL_LP	COL_EX
1975	.00	.00	250.80	15911.00	10671.00	2450.00	32.96
1976	.00	.00	501.50	96.00	.00	2845.00	36.32
1977	.00	.00	752.30	16103.00	.00	3228.00	37.96
1978	.00	.00	1003.00	19612.00	98686.00	3614.00	41.00
1979	869.00	.00	1210.00	26088.00	338453.00	4403.00	44.00
1980	451.00	.00	1616.50	31835.00	1055356.00	5162.00	50.92
1981	-2.32	.00	2023.00	28026.00	3680865.00	5908.00	59.07
1982	-1.10	.00	2533.00	23241.00	13418847.00	6608.00	70.29
1983	-299.42	.02	2383.70	17589.00	121764489.00	7197.00	88.77
1984	-266.61	.19	2234.30	14908.00	1542.00	7580.00	113.89
1985	-260.32	.00	1875.30	15742.00	1806.00	10515.00	172.20
1986	-550.43	13.00	1380.20	19064.00	2370.00	14899.00	2199.00
1987	-607.18	268.00	2133.00	23522.00	2959.00	19616.00	263.70
1988	-670.15	20637.00	2319.40	21605.00	3093.00	18632.00	335.86
1989	-39.42	35792.00	1891.00	26118.00	4031.00	18383.00	433.92
1990	-95.31	.00	2367.00	32043.00	4212.00	20871.00	568.73
1991	.00	6060.00	3470.00	32828.00	3673.00	20696.00	706.86
1992	.00	-731511.00	4573.30	31718.00	3405.00	18529.00	811.77
1993	-832.00	443.00	4395.60	38377.00	3895.00	18189.00	917.33
1994	-4455.00	89479.00	4452.70	52550.00	5252.00	20959.00	831.27
1995	-1391.35	191961.00	4509.80	79947.00	6704.00	20735.00	987.65

TABLE 18 (CONT)

COLOMBIA

DESC	COL_CI	COL_UNEM	COL_GRTH	COL_PERC
1975	2993.00	76.60	1750.00	22.38
1976	4097.00	.00	2046.00	34.60
1977	6215.00	.00	2463.00	53.02
1978	9668.00	94.80	3694.00	85.79
1979	10625.00	99.50	4258.00	128.09
1980	17204.00	105.90	5947.00	201.97
1981	24073.00	180.50	6051.00	310.79
1982	33815.00	200.70	6042.00	525.72
1983	48784.00	277.60	5201.00	973.08
1984	7618.00	303.20	4403.00	1297.79
1985	.00	370.90	4537.00	1300.52
1986	322554.00	46.20	4237.00	1422.56
1987	575066.00	78.00	6131.00	1685.36
1988	995057.00	86.65	6731.00	1686.16
1989	1650046.00	95.30	6576.00	1626.93
1990	2973075.00	41.80	7952.00	1758.40
1991	3852531.00	62.10	7017.00	1775.16
1992	5816972.00	59.30	8959.00	1771.00
1993	10396342.00	69.60	13504.00	1999.00
1994	14407878.00	38.80	17347.00	2816.00
1995	21264982.00	47.50	20592.00	3300.00

DESC	COL_EXP	COL_IMP	COL_POP	COL_GDP	COL_CFI	COL_SVNG	COL_PORT
1975	2401.00	2317.00	23.64	15929.00	30.40	.00	-1.17
1976	3715.00	3281.00	24.33	22534.00	.00	.00	-1.16
1977	5751.00	4541.00	25.05	33128.00	33.10	.00	-2.43
1978	8505.00	7758.00	25.64	47846.00	17.80	.00	-3.91
1979	10485.00	9262.00	25.38	68906.00	24.60	5081.00	-14.49
1980	16632.00	15995.00	25.89	102553.00	26.50	8913.00	-3.82
1981	16158.00	21019.00	26.43	136337.00	28.80	13625.00	-2.32
1982	21129.00	29418.00	26.97	193640.00	24.50	20702.00	-7.72
1983	29694.00	37584.00	27.50	283848.00	19.80	33456.00	-2.09
1984	447.00	467.00	28.06	427424.00	16.10	49736.00	-2.94
1985	753.00	683.00	28.62	939299.00	24.00	.00	-1.09
1986	1564.00	995.00	29.19	1818369.00	16.20	.00	36.69
1987	2121.00	1616.00	29.73	3301208.00	23.30	.00	68.09
1988	2522.00	2189.00	30.24	5257269.00	28.10	.00	152.73
1989	3563.00	2711.00	32.35	8661717.00	25.80	.00	235.23
1990	5876.00	4012.00	32.99	16711600.00	29.10	.00	188.50
1991	7970.00	5193.00	32.84	26396745.00	31.20	3303195.00	123.01
1992	8161.00	7262.00	33.39	37408772.00	29.35	4866991.00	173.25
1993	9906.00	11310.00	33.95	55312170.00	27.50	7641456.00	684.03
1994	13043.00	16589.00	34.52	70363260.00	23.80	11529748.00	885.55
1995	17204.00	21599.00	35.10	106268827.00	21.00	18605273.00	-234.86

TABLE 19

TEST THREE TABLE OF CONSOLIDATED CORRELATION RESULTS: EXTERNAL LOAN PRINCIPLE BY COUNTRY AND INTERNAL VARIABLES

DESCRIPTION: CORRELATION PAIRS	r VALUE
Argentina Loan Principle and	
Argentina Exchange Rate	@ -.440
Argentina exports	@ -.479
Argentina Economic Growth	@ .542
Argentina Per Capita Earning	@ -.488
Brazilian Consumer Price Index	@ .541
Brazilian Portfolio Investment	@ -.536
Colombian Savings	@ .541
Colombian Portfolio Investment	@ .460
Bolivian External Debt and	
Argentina Exchange Rate	@ -.462
Brazilian CPI	@ .476
Brazilian Portfolio Investment	@ -.511
Colombian Savings	@ .533
Brazilian External Debt and	
Argentina Exchange rate	@ -.462
Brazilian Portfolio Investment	@ -.518
Colombian Portfolio Investment	@ .471
Colombian External Debt and	
Argentina Exchange rate	@ -.446
Argentina Exports	@ -.475
Argentina Per Capita Earnings	@ -.494
Brazilian Portfolio Investment	@ -.497
Colombian Savings	@ .526
Colombian Portfolio Investment	@ .481

Note: Internal Variables which were tested for correlation were

Exchange Rates	Consumer Price Index
Exports	Savings
Imports	Portfolio Investment
Population	Capital Inflows
Gross Domestic Product	Unemployment
Economic Growth	Per Capita Earnings

These variables were compared to external debt using Pearson Correlation

the second alternate hypothesis was not rejected.

Testing of the variables as found in the data matrix, (see Table 18), revealed that several variables show up across the data with certain similarities among the four sampled nations. The tests revealed both positive and negative correlation among the variables. Positive correlation signifies similar directional movement. Negative correlation signifies opposing movement, (See Table Seventeen).

For example, the Argentina Loan Principle and the Argentina Exchange rate show a negative correlation, ($r = -.440$), which means that as the Loan principle increased or decreased in dollar value, the exchange rate value moved in a direction opposite to this, and decreased, or increased in value, respectively.

The data analysis for H3;Alt.2, showed that there is a direct relationship between debt level and structural adjustment, lending, and capital formation such that as debt levels rise, capital formation decreases, structural adjustment funding rises, and lending is increased).

Thus, Hypothesis three, alternate two is supported. There are directional trends among the four nations' internal variables such that similar directional movements occur among the variables. There are direct relationships among the internal variables which support both increases

and decreases in one internal variable in one nation which were significantly, (r= >.95) matched by related or unrelated variables in Argentina, Brazil, Bolivia, and /or Colombia. These variables were compared to external debt using Pearson Correlation.

Thus, acceptance of the second alternate form of hypothesis three leads to the inclusion of internal variables, (exchange rates, exports, imports, economic growth, per capita earning, capital inflows, consumer price index, portfolio investment, unemployment and savings), as tested independently among each of the four nations, (Argentina, Brazil, Bolivia, and Colombia), for testing under hypothesis four.

Test Four

Test three illustrated that the four nations under study, (Bolivia, Argentina, Brazil, and Colombia), contained internal variables (exchange rates, exports, imports, economic growth, per capita earning, capital inflows, consumer price index, portfolio investment, unemployment and savings), which were sufficiently correlated to external debt among all four nations.

However, test three revealed only relationships among variables to each other and to external debt, and did not

indicate which variables had predictive value in terms of external debt for all nations. Table 19 illustrated that the exchange rates and the portfolio investments showed up across all four nations with the most frequency. These two variables then, portfolio investments, and exchange rates, are common variables that cut across individual national economic borders.

Some of the variables, such as Brazilian Consumer Price Index show up in comparison to Argentina loan p principle and Bolivian External Debt, but they do not show up in the other nations in comparison to their external debt. As the purpose of test three is to examine whether any of the internal variables show up among the four nations (when tested individually), but not to ascertain predictive value, it was necessary to conduct another test using a different statistical technique.

To obtain a more accurate picture of the trends among these four nations (Bolivia, Argentina, Brazil, and Colombia), as well as determine which, of the internal variables influenced external debt, test four was employed using aggregate figures to obtain a regional model of the relationship between external debt and the internal variables population, consumer price index, portfolio investments, capital inflows, and gross domestic product.

Null Hypothesis 4, (There is no statistically significant relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three), is not accepted. Hypothesis 4;alternate 2, (There is a direct relationship between debt level (as a dependent variable), and specifically trended internal factors (as independent variables) as determined by Hypothesis Three, such that common internal variable trends in one country are reflected among the four nations, was not accepted.

Hypothesis four, alternate one, states that there is a statistically significant relationship between debt level (as a dependent variable), and the specifically trended internal factors of population, consumer price index, portfolio investment, capital inflows, and gross domestic product, (as independent variables) as determined by Hypothesis three.

Hypothesis three determined that population, consumer price index, portfolio investment, capital inflows, were considered specifically trended internal factors. The selection of these variables as representative of the region was based on the common distribution of the internal variables among the four nations when tested both

individually and aggregately. Through linear regression testing, Hypothesis four, alternate one, is accepted.

The testing of hypothesis four consisted of several tests on a periodic basis. For instance, the first test was a linear regression analysis covering all of the independent variables, mentioned above, throughout the 1975 through 1995 period.

Population, Consumer Price Index, Portfolio Investment, Capital Inflows, and Gross Domestic Product were entered as predictive variables. Using a Stepwise criteria, a probability of F less then or equal to .050 was employed to determine entry of a variable into the analysis. A probability of F greater than or equal to .100 was employed to determine removal of a variable from the analysis. The remaining variables, Exports, Imports, Savings, Economic Growth, and Per Capita Earnings, were removed from the analysis during running of the linear regression test. Table 20 illustrates those variables, which were included in the test four regression analyses, and were supported by the results of test three. Hypothesis Four; alternate one was accepted. The tests, (see Table 21), revealed that the relationship between External Debt, as a dependent variable, Population, Consumer Price Index, Portfolio

TABLE 20

TEST FOUR RESULTS SHOWING TEST THREE AND TEST FOUR R VALUES AMONG INTERNAL VARIABLES

TEST FOUR VARIABLES: TEST 4	R VALUE	TEST THREE VARIABLES: TEST 3	R VALUE
Population	.963	Imports	.524
		Portfolio Investment	.520
Consumer Price Index	.979	Exchange Rates	.548
		Loan Principle	.541
		Portfolio Investment	.503
		Per Capita Earnings	.517
Portfolio Investment	.986	Imports	.482
		Exports	.470
		Loan Principle	.460
		Population	.497
		Economic Growth	.516
		Unemployment	.505
		Per Capita Earnings	.437
Capital Inflows	.992	Unemployment	.445
		Exchange Rates	.457
Gross Domestic Product	.994	Unemployment	.444
		Imports	.486
		Exchange Rates	.548
		Loan Principle	.541
		Portfolio Investment	.503
		Per Capita Earnings	.517

Investments, Capital Inflows, and Gross Domestic Product,

as independent variables, were statistically significant ones across the four nations and through the 1975 - 1995 period. Table 21 depicts the overall outcome of the fourth test. The test involved both a forward (1975 - 1995) testing of two-year cumulative increments, (See Table 22 notes), as well as a reverse (1995 - 1975) testing of two-year cumulative increments. The technique allowed the researcher to gain an overall view of when the predictor variables (Population, Consumer Price Index, Portfolio Investments, Capital Inflows, and Gross Domestic Products) came into play during the overall, study period. All of these variables are independent variables measured against the dependent variable, external debt.

During the period 1975 through 1983, Population, Savings, Unemployment, Consumer Price Index, Portfolio Investments, and Capital Inflows were present during rising debt levels . From 1984 through 1990, Population, Consumer Price Index, Capital Inflows, Unemployment, and Economic Growth impacted the external debt levels the most. Limiting the variables to those with the most significance, Population and Capital Inflows impacted external debt during the 1984, 1985 period.

TABLE 21

TEST FOUR REGRESSION TESTING RESULTS AND YEARLY ANALYSIS

DESCRIPTION	YEAR	SIGNIFICANT VARIABLES VIA PRIORITY				
1	2	3 ↓	4	5	6	7
	1995					
	1994					
	1993					
Population	1992	Per Capita Earnings				
Population	1991	Per Capita Earnings				
Population	1990	Economic Growth				
Unemployment		Economic Growth	Portfolio Investments			
CPI		Economic Growth	Portfolio Investments	Imports		
Population	1989	Economic Growth	Economic Growth			
Unemployment		Economic Growth	Gross Domestic Product			
Population	1988	Economic Growth				
Unemployment		Economic Growth	Portfolio Investments			
Population	1987	Economic Growth				
Unemployment		Economic Growth	Population			
Population	1986	Economic Growth				
Unemployment		Economic Growth	Population			
Capital Inflows		Economic Growth	Population	Savings		
Population	1985	Capital Inflows				
Population	1984	Capital Inflows				
Population	1983	Population				
Savings		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
Imports		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
↑		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
	1982	Population				
		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Portfolio Investments		
Population	1981	Population				
Savings		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Portfolio Investments		
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	Gross
Domestic Product						
Population	1980	Population				
Savings		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Portfolio Investments		
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	Gross
Domestic Product						

TABLE 21 (Continued)

TEST FOUR REGRESSION TESTING RESULTS AND YEARLY ANALYSIS

DESCRIPTION	YEAR	SIGNIFICANT VARIABLES VIA PRIORITY				
1	2	3 ↓	4	5	6	7
Unemployment	1979	Population				
Savings		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Capital Inflows		
		Population	Consumer Price Indx	Capital Inflows	Portfolio Investments	
Unemployment	1978	Population				
		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Capital Inflows		
		Population	Consumer Price Indx	Capital Inflows	Portfolio Investments	
Unemployment	1977	Population				
		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Capital Inflows		
		Population	Consumer Price Indx	Capital Inflows	Portfolio Investments	
Unemployment	1976	Population				
		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Portfolio Investments		
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	Gross
Domestic Product						
Unemployment	1975	Population				
		Population	Consumer Price Indx			
		Population	Consumer Price Indx	Portfolio Investments		
		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	
↑		Population	Consumer Price Indx	Portfolio Investments	Capital Inflows	Gross
Domestic Product						

Note: The above table depicts the relationship between the variables as determined by the regression analysis used in Test Four.

Column One represents the Predictor variables in two year tests of the variables. For instance, the first test was 1975 through 1977, the second test used the same variables, but added two years to the test period. The second test then was from 1975 through 1979. These tests went through the entire study period until the entire period had been covered. The variables appearing in the later years were assigned the ending year.
The small upward arrow indicates the direction of testing; (from earlier year to later year) in Column One.

Column Two represents the study period, reversing from latest to earliest period.

Column Three through Seven represents those variables which appeared in a two year retest starting with 1995 and working backward to 1975. For instance, the first test is from 1995 to 1993, the second test is from 1995 through 1992, the third test is from 1995 through 1991, and so on, until the entire period under study (1975 – 1995) is covered. The small downward arrow indicates the direction of testing (from later to earlier year) in Columns Three through Seven.

The order of appearance of the variables is listed by significance. For instance, in 1983, Population in Column 3, as the top entry, is the most significant of the predictor variables in 1983, for the 1995 backward to 1975 tests. Population in Column 1, as the top entry, is the most significant of the predictor variables, in 1983, for the 1975 forward to 1995 tests.

TABLE 22

TEST FOUR REGRESSION TABLES ON A TEST BY TEST BASIS SHOWING INCLUSION OF PREDICTOR VARIABLES AS DETERMINED BY TIME PERIOD.

Regression: 1975 through 1977: TEST A

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.998[a]	.996	.992	$784.34	3.000

a. Predictors: (Constant), Population

b. Dependent Variable: External Debt

Regression: 1975 through 1979: TEST B

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.997[a]	.993	.991	$1,739.58	2.360

a. Predictors: (Constant), Unemployment

b. Dependent Variable: External Debt

Regression: 1975 through 1981: TEST C

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.972[a]	.945	.934	$5,514.99	
2	.996[b]	.992	.987	$2,404.54	2.866

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Savings

c. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1975 through 1983: TEST D

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.984[a]	.968	.963	$5,071.84	
2	.992[b]	.984	.979	$3,869.43	
3	.998[c]	.996	.993	$2,154.63	3.093

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Savings

c. Predictors: (Constant), Population, Savings, Imports

d. Dependent Variable: External Debt

Regression: 1975 through 1985: TEST E

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.980[a]	.961	.956	$7,346.14	
2	.992[b]	.985	.981	$4,857.15	1.636

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Dependent Variable: External Debt

Regression: 1975 through 1987: TEST F

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.928[a]	.862	.850	$24,504.86	
2	.990[b]	.979	.975	$9,995.64	
3	.997[c]	.994	.992	$5,505.02	2.242

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Unemployment

c. Predictors: (Constant), Population, Unemployment, Capital Inflows

d. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1975 through 1989: TEST G

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.950[a]	.903	.895	$23,118.68	
2	.981[b]	.962	.956	$15,049.70	1.348

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Unemployment

c. Dependent Variable: External Debt

Regression: 1975 through 1991: TEST H

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.958[a]	.917	.912	$22,523.95	
2	.983[b]	.966	.961	$14,952.40	
3	.988[c]	.976	.970	$13,152.15	
4	.993[d]	.986	.982	$10,209.93	
5	.996[e]	.992	.989	$7,962.26	1.988

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Unemployment

c. Predictors: (Constant), Population, Unemployment, Consumer Price Index

d. Predictors: (Constant), Population, Unemployment, Consumer Price Index, Capital Inflows

e. Predictors: (Constant), Population, Unemployment, Consumer Price Index, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1975 through 1993: TEST I

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.955[a]	.911	.906	$23,828.49	
2	.985[b]	.970	.966	$14,220.28	
3	.989[c]	.978	.974	$12,496.85	
4	.994[d]	.988	.985	$9,532.72	
5	.997[e]	.993	.991	$7,376.68	2.061

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Unemployment

c. Predictors: (Constant), Population, Unemployment, Consumer Price Index

d. Predictors: (Constant), Population, Unemployment, Consumer Price Index, Capital Inflows

e. Predictors: (Constant), Population, Unemployment, Consumer Price Index, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

Regression: 1975 through 1995: TEST J

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.963[a]	.927	.923	$22,717.34	
2	.979[b]	.959	.955	$17,416.32	
3	.986[c]	.973	.968	$14,664.85	
4	.992[d]	.984	.980	$11,592.15	
5	.994[e]	.988	.984	$10,286.20	1.839

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows

e. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

TABLE 22 (CONT)

Model		Beta In	t	Sig.	Partial Correlation
1	Exports	-.061[a]	-.968	.346	-.222
	Imports	-.060[a]	-.961	.349	-.221
	Gross Domestic Product	-.074[a]	-1.206	.244	-.273
	Savings	-.080[a]	-1.319	.204	-.297
	Portfolio Investments	-.186[a]	-3.513	.002	-.638
	Capital Inflows	-.002[a]	-.029	.977	-.007
	Economic Growth	-.036[a]	-.430	.673	-.101
	Per Capita Earnings	-.058[a]	-.926	.367	-.213
	Consumer Price Index	.183[a]	3.785	.001	.666
	Unemployment	-.314[a]	-3.068	.007	-.586
2	Exports	-.038[b]	-.770	.452	-.184
	Imports	-.041[b]	-.838	.414	-.199
	Gross Domestic Product	-.066[b]	-1.430	.171	-.328
	Savings	-.066[b]	-1.415	.175	-.325
	Portfolio Investments	-.134[b]	-2.896	.010	-.575
	Capital Inflows	-.134[b]	-2.824	.012	-.565
	Economic Growth	.101[b]	1.437	.169	.329
	Per Capita Earnings	-.039[b]	-.809	.430	-.192
	Unemployment	-.156[b]	-1.350	.195	-.311
3	Exports	-.025[c]	-.605	.554	-.150
	Imports	-.030[c]	-.736	.473	-.181
	Gross Domestic Product	-.060[c]	-1.547	.141	-.361
	Savings	-.059[c]	-1.520	.148	-.355
	Capital Inflows	-.125[c]	-3.348	.004	-.642
	Economic Growth	.062[c]	.994	.335	.241
	Per Capita Earnings	-.028[c]	-.691	.499	-.170
	Unemployment	-.118[c]	-1.196	.249	-.286
4	Exports	-.036[d]	-1.125	.278	-.279
	Imports	-.040[d]	-1.254	.229	-.308
	Gross Domestic Product	.130[d]	2.307	.036	.512
	Savings	.127[d]	2.280	.038	.507
	Economic Growth	.024[d]	.462	.651	.119
	Per Capita Earnings	-.038[d]	-1.182	.256	-.292
	Unemployment	-.091[d]	-1.156	.266	-.286
5	Exports	-.036[e]	-1.260	.228	-.319
	Imports	-.040[e]	-1.439	.172	-.359
	Savings	.041[e]	.157	.878	.042
	Economic Growth	.035[e]	.746	.468	.196

TABLE 22 (CONT)
Regression: 1995 through 1993

Variables Entered/Removed[a]

a. Dependent Variable: External Debt

Regression: 1995 through 1992

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.995[a]	.990	.985	$2,400.91	3.275

a. Predictors: (Constant), Per Capita Earnings

b. Dependent Variable: External Debt

Regression: 1995 through 1991

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.984[a]	.968	.957	$3,963.59	2.097

a. Predictors: (Constant), Per Capita Earnings

b. Dependent Variable: External Debt

Regression: 1995 through 1990

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.952[a]	.906	.882	$6,131.24	
2	.994[b]	.987	.979	$2,611.47	
3	.999[c]	.999	.997	$906.38	2.097

a. Predictors: (Constant), Economic Growth

b. Predictors: (Constant), Economic Growth, Portfolio Investments

c. Predictors: (Constant), Economic Growth, Portfolio Investments, Imports

d. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1995 through 1989

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.961[a]	.924	.909	$5,496.72	
2	.992[b]	.983	.975	$2,896.89	3.080

a. Predictors: (Constant), Economic Growth

b. Predictors: (Constant), Economic Growth, Gross Domestic Product

c. Dependent Variable: External Debt

Regression: 1995 through 1988

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.958[a]	.917	.903	$5,446.18	
2	.990[b]	.981	.973	$2,865.10	2.942

a. Predictors: (Constant), Economic Growth

b. Predictors: (Constant), Economic Growth, Portfolio Investments

c. Dependent Variable: External Debt

Regression: 1995 through 1987

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.929[a]	.864	.844	$6,481.12	
2	.978[b]	.956	.942	$3,959.42	2.429

a. Predictors: (Constant), Economic Growth

b. Predictors: (Constant), Economic Growth, Population

c. Dependent Variable: External Debt

TABLE 22 (CONT)
Regression: 1995 through 1986

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.932[a]	.869	.853	$6,150.63	
2	.973[b]	.947	.932	$4,165.64	
3	.991[c]	.982	.973	$2,630.87	2.403

a. Predictors: (Constant), Economic Growth

b. Predictors: (Constant), Economic Growth, Population

c. Predictors: (Constant), Economic Growth, Population, Savings

d. Dependent Variable: External Debt

Regression: 1995 through 1985

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.796[a]	.634	.593	$18,974.17	1.580

a. Predictors: (Constant), Capital Inflows

b. Dependent Variable: External Debt

Regression: 1995 through 1984

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.902[a]	.813	.794	$19,119.07	1.536

a. Predictors: (Constant), Capital Inflows

b. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1995 through 1983

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.845[a]	.715	.689	$27,807.55	
2	.925[b]	.856	.828	$20,694.73	
3	.954[c]	.911	.881	$17,207.30	
4	.973[d]	.947	.920	$14,079.00	2.320

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows

e. Dependent Variable: External Debt

Regression: 1995 through 1982

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.882[a]	.778	.759	$27,775.98	
2	.947[b]	.897	.879	$19,733.51	
3	.967[c]	.936	.917	$16,341.26	1.491

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Dependent Variable: External Debt

TABLE 22 (CONT)
Regression: 1995 through 1981

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.907[a]	.823	.809	$27,124.35	
2	.959[b]	.920	.907	$18,943.77	
3	.974[c]	.948	.934	$16,001.43	
4	.984[d]	.968	.955	$13,095.21	
5	.990[e]	.981	.970	$10,778.78	2.200

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows

e. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

Regression: 1995 through 1980

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.924[a]	.853	.843	$26,175.05	
2	.965[b]	.932	.922	$18,487.03	
3	.977[c]	.955	.944	$15,652.21	
4	.987[d]	.973	.964	$12,582.48	
5	.991[e]	.983	.975	$10,527.78	2.090

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows

e. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1995 through 1979

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.935[a]	.874	.865	$25,434.35	
2	.967[b]	.935	.926	$18,863.35	
3	.977[c]	.954	.944	$16,441.51	
4	.986[d]	.972	.963	$13,311.99	1.934

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Capital Inflows

d. Predictors: (Constant), Population, Consumer Price Index, Capital Inflows, Portfolio Investments

e. Dependent Variable: External Debt

Regression: 1995 through 1978

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.944[a]	.891	.884	$24,639.46	
2	.971[b]	.942	.935	$18,509.16	
3	.980[c]	.960	.951	$15,978.44	
4	.988[d]	.976	.969	$12,796.99	2.044

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Capital Inflows

d. Predictors: (Constant), Population, Consumer Price Index, Capital Inflows, Portfolio Investments

e. Dependent Variable: External Debt

TABLE 22 (CONT)
Regression: 1995 through 1977

Model Summary[e]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.952[a]	.906	.901	$23,904.06	
2	.975[b]	.950	.944	$18,020.08	
3	.983[c]	.965	.958	$15,459.61	
4	.990[d]	.979	.973	$12,361.30	2.026

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Capital Inflows

d. Predictors: (Constant), Population, Consumer Price Index, Capital Inflows, Portfolio Investments

e. Dependent Variable: External Debt

Regression: 1995 through 1976

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.958[a]	.918	.913	$23,267.67	
2	.977[b]	.955	.950	$17,687.79	
3	.985[c]	.969	.964	$15,049.47	
4	.991[d]	.982	.977	$11,945.51	
5	.993[e]	.987	.982	$10,611.74	1.826

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows

e. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

TABLE 22 (CONT)

Regression: 1995 through 1975

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.963[a]	.927	.923	$22,717.34	
2	.979[b]	.959	.955	$17,416.32	
3	.986[c]	.973	.968	$14,664.85	
4	.992[d]	.984	.980	$11,592.15	
5	.994[e]	.988	.984	$10,286.20	1.839

a. Predictors: (Constant), Population

b. Predictors: (Constant), Population, Consumer Price Index

c. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments

d. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows

e. Predictors: (Constant), Population, Consumer Price Index, Portfolio Investments, Capital Inflows, Gross Domestic Product

f. Dependent Variable: External Debt

As a point of interest, and as it relates to Latin

American Debt, the 1979 period in Argentina exhibited an exchange rate collapse. Another collapse occurred in Argentina in 1991, as well. The 1985 period of Capital Inflows also corresponds with exchange rate collapses in Bolivia and Brazil, and later (1987) in Colombia. Brazil also experienced another exchange rate collapse in 1991.

As the fourth test used aggregate numbers, it is difficult to isolate precisely which variables are responsible for the exchange rate collapses in these nations. It is safe to say though, that the presence of Capital Inflows can be noted in each of the years, (1979, 1984, 1985, 1991), when exchange rate collapses took place. Also, population increase were also present in these same years, as well as increases in Consumer Price Indices.

Test Five

The testing of hypothesis 5 involved the testing of aggregate data for the four nations (See Table 23). The testing consisted of Pearson and partial correlation testing using the variables labeled Gross Domestic Product, Portfolio Investments, Capital Inflows, Population, and Consumer Price Index. Two tailed tests only, were considered.

Tests of the Null Hypothesis, (There is no relationship among the common variables which enables the

creation or consideration of cohesive, consistent, or comprehensive policies based on the variables labeled Gross Domestic Product, Capital Inflows, Portfolio Investment, Consumer Price Index, and Population) is not accepted.

The testing of Hypothesis 5, alternate one, states that there is a statistically significant relationship among the common variables (Gross Domestic Product, Capital Inflows, Portfolio Investments, Consumer Price Index, Population, Exports, Imports, Savings, Economic Growth, Per Capita Earnings, and Unemployment)), which enable the creation or consideration of either cohesive, consistent, or comprehensive policy making based on these variables is accepted, (See Table 23).

In the two tailed tests for specific variables as drawn from test four, (Gross Domestic Product, Portfolio Investments, Capital Inflows, Population, and Consumer Price Index), a .05, significant, two tailed correlation exists between the Consumer Price Indices, and Capital Inflows, r = .523.

Test Six

A matrix was created to organize the specific data on a year by year basis to test hypothesis six. The matrix

TABLE 23

TABLE OF TEST FIVE CORRELATIONS AND PARTIAL CORRELATIONS WITH "r" VALUES AND PROBABILITY VALUES CONTROLLING FOR EXTERNAL DEBT.

	Gross Domestic Product	Capital Inflows	Portfolio Investments	Consumer Price Index	Population
Gross Domestic Product	1.000	.712	.073	.047	.024
Capital Inflows	.712	1.000	-.133	.523*	.031
Portfolio Investments	.073	-.133	1.000	-.397	-.383
Consumer Price Index	-.047	.523*	-.397	1.000	.087
Population	-.024	.031	-.383	.196	1.000

* = Significant Two Tailed correlation at .05 level

- - - P A R T I A L C O R R E L A T I O N C O E F F I C I E N T S - - -

Controlling for.. EXT_DEBT

	GDP	PORT_INV	CAP_INFL	POPUL	CPI
GDP	1.0000	.0260	.7180	.2579	-.0131
	(0)	(18)	(18)	(18)	(18)
	P= .	P= .913	P= .000	P= .272	P= .956
PORT_INV	.0260	1.0000	-.1389	.5461	-.2589
	(18)	(0)	(18)	(18)	(18)
	P= .913	P= .	P= .559	P= .013	P= .270
CAP_INFL	.7180	-.1389	1.0000	.0149	.5514
	(18)	(18)	(0)	(18)	(18)
	P= .000	P= .559	P= .	P= .950	P= .012
POPUL	.2579	.5461	.0149	1.0000	-.6182
	(18)	(18)	(18)	(0)	(18)
	P= .272	P= .013	P= .950	P= .	P= .004
CPI	-.0131	-.2589	.5514	-.6182	1.0000
	(18)	(18)	(18)	(18)	(0)
	P= .956	P= .270	P= .012	P= .004	P= .

(Coefficient / (D.F.) / 2-tailed Significance)

" . " is printed if a coefficient cannot be computed

consisted of the variables, (Interest Dollars, Structural

Adjustment, Net Draws, Compensatory Draws, Special Drawing Rights, Capital Formation, Per Capita Earnings, Capital Inflows, Portfolio Investments, Gross Domestic Product, and External Debt), covered throughout this study. The matrix is organized using yearly aggregate amounts in accordance with the previous outline of the study, by global, external, and internal variables, (see Table 24).

Global variables contain only interest dollars arrived at by taking the regional (four nation aggregate sum) totals and dividing by four to arrive at a regional, yearly average interest rate as an aggregate for the four nations. In order to provide a similar comparison between variables, interest rate percentages were converted to Special Drawing Rights Dollar Units. The interest rate was multiplied by the debt figure as measured by SDR units. This was accomplished on a year to year basis. Interest Rate Dollars for any given year were then divided by External Debt Dollars for the same year to arrive at a percentage of debt (See Table 25). for instance, in 1995, aggregate Interest Rate Dollars were $127,799.62. When divided by the 1995 External Debt figure of $255,013.00, the resulting percentage equaled 50.11%.

Table 24

Table of Matrix Variables

Global Variables

Interest dollars / external debt = percentage of debt

External Variables

Structural adjustment / external debt = percentage of debt
Net draws / external debt = percentage of debt
Compensatory draws / external debt = percentage of debt
SDR / external debt = percentage of debt
External debt / Capital formation = debt as a percentage of CF

Internal Variables

External debt / Per Capita Earning = debt as a percentage of PCE
External debt / Capital Inflows = debt as a percentage of CI
Portfolio Investments / external debt = percentage of debt
External debt / gross domestic product = debt as a percentage of GDP

TABLE 25

TABLE OF TEST SIX PERCENTAGES OF EXTERNAL DEBT AS MEASURED BY YEAR AND CATEGORY

	GLOBAL	EXTERNAL				INTERNAL				
YEAR	INTEREST $ %	STRUCTURAL ADJUSTMENT %	NET DRAW %	COMP DRAW %	SDR %	CAPITAL FORMATION %	PER CAPITA EARNING %	CAPITAL INFLOWS %	PORTFOLIO INVESTMENT %	GDP %
1975	16.25	0.00	1.00	.32	1.33	8.63	27.27	8.74	-.34	1.55
1976	17.25	0.00	1.59	.90	1.10	11.86	48.90	12.05	-.26	1.64
1977	23.25	0.00	1.50	.96	.89	12.34	56.87	12.60	-.01	1.40
1978	25.25	0.00	1.07	.71	.86	81.30	32.27	12.58	.24	1.35
1979	29.50	0.00	.89	.55	.89	9.02	19.16	9.15	1.77	1.75
1980	31.84	0.00	1.44	.51	.86	8.35	6.70	8.53	.90	1.20
1981	38.50	0.00	1.49	.48	1.10	32.97	2.03	13850.83	1.75	.97
1982	40.50	0.00	1.75	.45	.21	58.34	.63	548.85	.36	.17
1983	120.50	0.00	0.00	.02	.20	59.64	.08	84.17	.38	.48
1984	177.50	0.00	1.64	2.00	0.00	.37	1545.25	.37	.09	.00090
1985	199.25	0.00	0.69	1.48	0.00	0.00	1863.54	0.00	-.68	14.09
1986	44.50	0.00	0.42	.85	.07	1.37	2378.22	1.40	-.56	11.11
1987	208.00	0.01	0.41	.68	.07	31.32	1995.61	169.00	-.61	6.24
1988	1148.00	0.01	0.55	.52	.07	7.44	1939.02	11.30	-.70	3.47
1989	19177.60	0.01	0.46	.43	.07	2.82	1676.09	3.61	-.60	2.36
1990	541.50	0.01	0.36	.38	.15	7.32	1643.93	0.00	-1.01	1.20
1991	1269.07	0.00	0.00	.02	.12	5.53	1452.71	333.66	.06	.81
1992	765.20	0.00	0.00	.00	.12	4.14	1352.03	-15.36	.25	.51
1993	2900.92	0.00	0.00	.00	.18	2.00	1262.99	33.53	.93	.40
1994	52.02	0.00	0.00	.00	.18	1.69	1151.99	85.43	-1.30	.35
1995	50.11	0.00	0.00	.00	.18	1.18	1079.65	51.45	-0.64	.24

The 50.11% figure can be interpreted to mean that the Interest Rate Dollars were 50.11% of the External Debt Dollars. This methodology was continued for the remaining variables as identified above.

The external variables consisted of the previously attributed IMF variables of structural adjustment, net draws, net compensatory draws, SDR accounts, and capital formation. Internal variables consisted of those previously identified internal variables common among the four nations during the 1975 through 1995-study period. These variables were per capita earning, capital inflows, portfolio investments, and gross domestic product.

It was necessary to establish a level of significance to be used as a basis for inclusion or elimination within the percentage matrix. Any variable in the 1975 - 1995 period which was 100% of the value of the external debt is excluded from this discussion. The parameter point to be used was set at the 60% mark. The 60% mark is simply a point over the 50% mark. Using this parameter point, any variable value whose percentage value was between 51% and 100% of the external debt would be considered as influencing the level of debt. Any variable value greater than the external debt value is already at 100% and will be

eliminated from consideration at this point. Using this rationale, Capital Formation, and Gross Domestic Product, and Capital Inflows are excluded from thus discussion.

Thus, the only variables entertained in the following discussion will be the following:

1] Interest Rates
2] structural adjustments
3] net draws
4] compensatory draws
5] SDR
6] portfolio investments

Results

Interest (SDR) dollars rise steadily from 1975 through 1980 and achieve 31.48% of debt by 1980. From 1983 through 1985 interest rates exceed the set mark of 60% and can be said to impact debt level. Again, from 1987 through 1993 interest rates climb in excess of the 60% mark. Thus, interest rates impact external debt in the years 1983, 1984, 1985, 1987, 1988, 1989, 1990, 1991, 1992, and 1993. The years 1975 through 1982, 1986, and the period 1994 through 1995 were those years in which Interest Rate Dollars did not impact the level of debt.

None of the external variables (Structural Adjustment, Net Draws, Compensatory Draws, and Special Drawing Rights), previously attributed to the IMF accounts exceed 2% over the study period. These variables, as well, will not be

considered further.

Only the portfolio investment variable, (Internal Variable), remains to be considered. However, the variable values never exceed 2% of the external debt throughout the study period and will not be considered further.

Finally, only interest rates, capital formation, per capita earnings, capital inflows, and gross domestic product have a definite impact on the level of debt as determined by the 60% parameter. The IMF variables such as structural adjustment, net draws, compensatory draws, and SDR accounts, (as previously attributed to the IMF), do not have an impact on the level of debt. Thus, the null form of hypothesis six, (As measured by percentage of impact on debt, IMF policies [external variables] did not significantly contribute to debt levels among the four economies to a greater or lesser degree than global variables, or common internal factors), is accepted, as no significant impact seems to exist on the level of debt, whether to a greater or lesser degree.

Summary

An overall view of the debt situation regarding debt levels in Argentina, Colombia, Bolivia, and Brazil between 1975 and 1995 would indicate a continued rise in debt levels from 1975 through 1995. Simultaneously, interest

rates rose as well. Interest rates and external debt rose for individual nations as well as regionally, (in this study, regionally is explained as an aggregate of the four nations under study). However, debt and interest rate levels do not seem to be statistically linked significantly.

Six hypotheses were tested using common statistical techniques. Hypotheses 1 and 2 were tested using two-tailed T- tests. Hypotheses 3 and 5 were tested using Pearson correlation. Hypothesis 4 was tested using linear regression techniques. Hypothesis 5 used correlation analysis, while Hypothesis 6 used a percentage of total technique. Refer to Table 26 for a summarization of the results.

The six tests conducted in this study were an attempt to isolate specific economic variables from the plethora of global, nation external, and nation internal variables which were noted during the literature review and related to the process. Those variables were eliminated which seemed to be extraneous, through the literature review, to this research. The remaining variables have undergone tests designed to support or refute global, external, or internal relationships among each other and in regards to external debt.

TABLE 26

SUMMARIZATION OF HYPOTHESIS TESTING

H_{1}: Supported Significant at p<.05.
Null hypothesis accepted.
No two tailed significance was supported by the data tests. The conclusion is that the external debt and interest rates are not sufficiently linked to suggest a statistically significant relationship.

H_{2}: Supported Significant at p<.05.
Null hypothesis accepted.
No statistically significant relationship exists between the level of debt and the level of lending by the IMF as found in the structural adjustment accounts, net draw, compensatory draw, and Special Drawing Rights (SDR) accounts.

H_{3}: Supported Significant at p<.05.
Second Alternate hypothesis accepted.
There is a direct relationship among the internal variables which illustrate that both increases and decreases in one internal variable in one nation were significantly matched or opposed by unrelated variables in another nation.

H_{4}: Supported Significant at p<.05
First Alternate hypothesis accepted.
There is a statistically significant relationship at the .05 levels between external debt as a dependent variable and population, consumer price index, portfolio investments, capital inflows, and gross domestic product as independent variables.

H_{5}: Supported Significant at p<.05
First Alternate hypothesis accepted.
Two tailed tests show a significant .05 correlation between consumer price indices and capital inflows.

H_{6}: Supported Significant at p<.05
Null hypothesis accepted.
Interest rates, capital formation, per capita earnings, capital inflows, and gross domestic product have a definite impact on the level of debt as determined by the 60% parameter. The IMF variables such as structural adjustment, net draws, compensatory draws, and SDR accounts, (as previously attributed to the IMF), do not have an impact on the level of debt.

A second set of tests for Hypothesis two was proposed regarding the impact of IMF lending and it's Latin American policies. It was shown that the International Monetary Fund lending policies as defined by changes in the structural adjustment, net draw, compensatory draw, and special drawing rights accounts had no significant negative impact on the level of debt among the four nations individually or as an aggregate, or region.

For the purposes of clarity and simplicity, it was desirable within this study to treat the four nations as an entirety. The regional approach, using an aggregate amount seemed appropriate if certain conditions were met; the four nations exhibited common internal trends among themselves. The tests of Hypothesis two showed that there were sufficiently common trends among the internal, (Gross Domestic Product, Capital Inflows, Portfolio Investments, Consumer Price Index, Population, Exports, Imports, Savings, Economic Growth, Per Capita Earnings, and Unemployment), variables among the four nations to treat these individual nations as a region.

Having set up the data as an aggregate and treating the four nations as a region, further testing of the effect of these internal variables, (Gross Domestic Product,

Capital Inflows, Portfolio Investments, Consumer Price Index, Population, Exports, Imports, Savings, Economic Growth, Per Capita Earnings, and Unemployment), on external debt, (as determined by test three), was conducted. This additional testing limited the internal variables to per capita earnings, capital inflows, portfolio investments, and gross domestic product as being an accurate reflection of those variables common to the four nations when treated as a region. As an aggregate then, these internal variables seemed to mutually influence external debt levels regionally.

Further testing of these same internal variables showed support for the first alternate hypothesis five. The Pearson correlation two tailed tests revealed that capital inflows and consumer price indices were significantly related to the level of debt at the .05 level.

The last test examined the percentage of impact on debt, on a year to year basis, that Global variables (interest rate dollars), External variables (Structural Adjustment, Net Draws, Compensatory Draws, Special Drawing Rights, and Capital Formation), and Internal variables (Per Capita Earnings, Capital Inflows, Portfolio Investments, and Gross Domestic Product), had on external debt. The aggregate totals of the 21 year period were listed for each

of the ten variables. The Null hypothesis was not rejected as the IMF variables, (Structural Adjustment, Net Draws, Compensatory Draws, Special Drawing Rights, and Capital Formation), did not seem to significantly contribute to the level of debt in the four nation, (Brazil, Argentina, Bolivia, and Colombia), Latin American region.

The present study sought to determine whether the International Monetary Fund and its policies were chiefly responsible for the large level of debt in the defined Latin American region.

The data tests suggested that the IMF policies were not responsible for the level of debt in the Latin American region as defined by this study.

The present study has also sought to determine whether internal factors in the four countries were related to the current levels of debt. The data tests suggest that the internal variables, (Per Capita Earnings, Capital Inflows, Portfolio Investments, and Gross Domestic Product), were responsible in part for the levels of debt, in that their predictive value, when measured through linear regression, accounted for periodic (annual and bi-annual), impacts on the level of debt.

This study also sought to determine which internal Factors, (Population, Consumer Price Index, Portfolio Investments, Capital Inflows, and Gross Domestic Product), existed as common factors as relates to external debt among the four economies. The data testing suggested that the internal factors common among the four nations were per capita earning, capital inflows, portfolio investments, and gross domestic product.

Finally, the present study sought to determine whether these factors, once identified, can shape future policy through an examination of past events, in order to avoid a debt crisis in other regions of the world in similar circumstances.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Debt Crisis Defined

The reader will remember that debt crisis within this paper has been defined (P.65), as consisting of an event which is the result of a combination of global, external, and internal forces. Debt crises become apparent as historically continuous and measurable trends. These trends occur either singly or in combination, are of such impact and substance as to render a national government and its populace incapable of maintaining an expected standard of

living. Debt crisis [here] implies the government's inability to support its currency either through monetary and fiscal programs, or through adequate international reserves. Debt crises also imply that the government is unable to meet or reduce current external debt contract expectations.

Further, a debt crisis within this paper consists of global shocks, such as a rise in oil prices, and/or a rise in international interest rates. It also involves external events such as the application of IMF structural adjustments, capital formation, lending policies, and capital inflows. Finally, the reader is reminded that it involves internal variables such as rising unemployment, a rising population, rising inflation, rising currency valuation, rising imports, rising external debt, falling economic growth, falling national output, falling exports, falling savings and investments, and falling per capita earning power.

A final consideration involves the nature of a debt crisis itself. Although the above definitions suffice for descriptions of a debt crisis, they are not measurements of a debt crisis itself. A continuous variable such as level of debt or some indication of the value of a currency must

be selected as an instrument to determine when a debt crisis is at hand. Currency valuation and level of debt as variables measuring debt crisis can be both continuous and measurable as indicators of a debt crisis. High levels of debt, as indicated by Martinez and Fierro (1993), and the rising overvaluation of currency as illustrated by (Ffrench-Davies, 1998) were used in this study as the main indicators of debt crises.

Summary

This study was driven by six research questions, which were posed about the debt crisis in Latin America. These questions had been posited in response to the current literature; acting as a focus to the problem of debt in Latin America. One of the main assumptions made in this study and resting behind the research questions, is that the Latin American debt problem did not arise as an isolated event.

Contributory factors leading to the debt crisis, were assumed to exist. Many of the literature sources, in fact, alluded to the IMF lending policies as being partly responsible for the level of debt in Latin America. Many others alluded to external and internal variables which contributed to the level of debt. The present study attempted to comprehensively examine all known variables,

as found in the current literature, eliminate extraneous variables, and focus on the remaining variables which were assumed to impact debt.

Another assumption made was that the variables, which were related to debt, in terms of value and movement, contributed to the level of debt. For instance, if the level of debt was rising throughout the 21-year study period and the interest rates were rising as well, it would be safe to assume that one was influencing the other. In this sense, if interest rates rose in line with the rising level of debt, it could be said that the rising level of interest influenced the level of debt by raising the amount of interest dollars due for payment. The payment of this rising interest would make it increasingly difficult to pay back the standing principal.

Based on these assumptions, the following research questions were posited:

Research question one: Did Interest Rates rise from the period 1975 - 1995, and if so were the changes in interest rates [as a global variable] significant enough to impact the four [Colombia, Bolivia, Brazil, Argentina] economies and contribute to the debt crisis as defined?

Research question two: Were the IMF policies of structural adjustment, lending, and capital formation present in the four [Colombia, Bolivia, Brazil, Argentina] economies, and if so did

these programs foster lowered social standards, increased debt, and the eventual collapse of their respective currencies?

Research question three: Did the internal factors [capital inflows, unemployment, population, inflation, imports, economic growth, national output, exports, savings, investments, per capita earning power] present in the four [Colombia, Bolivia, Brazil, Argentina] economies show common trends?

Research question four: If any trends in the internal [see Table 8] variables in the four [Colombia, Bolivia, Brazil, Argentina] economies existed, were they significant enough to contribute to the debt crisis as defined?

Research question five: Do the statistically significant internal [shared] factors among the four (Colombia, Bolivia, Brazil, Argentina] economies, which contributed to the debt crisis in the region, indicate policy making objectives which could alleviate future crises in the region?

Research question six: If the IMF policies were responsible in part or in whole for the debt crisis in the four [Colombia, Bolivia, Brazil, Argentina] economies, were there feasible alternatives to the policies initiated?

Conclusions

In regard to the first research question concerning interest rates and their significance on the level of debt. Altimir (1996) points out that debt crisis may be the end result of external forces upon internal structures. One of these external events was the oil shock of the 1970s, (De Vries, 1995). De Vries goes further in saying that debt

crises can be the result of rising interest rates, (1995). As interest rates determine the level of debt indirectly, Martinez and Fierro (1993) concluded that debt crisis is the result of rising interest (See Table 27).

The hypothesis proposed around all of this discussion is based on measurable data. Interest rates were the most consistent data found. Translated to interest dollars, the interest rates could be measured in terms comparable to other variables. Both debt and interest rates showed a continual increase from 1975 - 1995, with occasional decreases in either debt level, interest rates, or both.

Direct testing, (Hypothesis 1), of the data for the period 1975 - 1995 revealed that no statistically significant relationship existed between interest rate levels and debt levels either in individual nations as sampled, or at an aggregate (regional) level. However, further comparison, (Hypothesis 6), of interest rates and level of debt showed a significant impact of interest rates, (as translated to interest dollars), on the level debt when interest rate dollars are measured as a percentage of debt dollars. This way of examining the data acts as a cross-reference to the statistical testing regarding interest rates and level of debt. This cross-

TABLE 27

AGGREGATE LOAN INTEREST RATES RESTATED AS INTEREST DOLLARS

Year	Loan Principle	Average Aggregate Interest Rates	Average Interest Dollars
1975	$ 19,864.23	16%	$ 3,227.94
1976	$ 29,679.30	17%	$ 5,119.68
1977	$ 37,874.66	23%	$ 8,805.86
1978	$ 54,049.50	25%	$ 13,647.50
1979	$ 65,010.24	30%	$ 19,178.02
1980	$ 70,801.45	31%	$ 22,284.76
1981	$ 74,655.81	39%	$ 28,742.49
1982	$ 84,293.38	41%	$ 34,138.82
1983	$ 99,802.08	121%	$ 120,261.51
1984	$106,298.29	178%	$ 188,679.46
1985	$137,268.01	199%	$ 273,506.51
1986	$210,306.60	45%	$ 93,586.44
1987	$220,893.73	208%	$ 459,458.96
1988	$212,051.50	1148%	$ 2,434,351.26
1989	$206,763.50	19178%	$39,652,172.64
1990	$217,574.22	542%	$ 1,178,164.42
1991	$216,149.56	1269%	$ 2,743,073.00
1992	$213,714.74	765%	$ 1,635,350.51
1993	$221,086.98	2901%	$ 6,413,556.46
1994	$247,044.28	52%	$ 128,506.26
1995	$255,012.71	50%	$ 127,799.62

Loan Principle Source: United Nations Yearbooks 1975 - 1995
Interest Rate Source: IMF Yearbooks 1975 - 1995

Note: Interest dollars are in millions of SDR dollars

referencing allows this researcher an insight into the actual relationship between the level of debt dollars and the level of interest rate dollars.

Thus, interest rate dollars have impacted the level of debt in the four Latin American countries when measured as a region. Except for Bolivia, which showed a significant relationship between interest rate dollars and debt level, the remaining countries of Argentina, Brazil, and Colombia exhibited no such significance between interest rate dollars and the level of debt when these countries were tested individually. The assumption for the regional approach is that the internal economic factors show sufficient commonality as to allow a regional approach to the problem. An explanation for this may be that the levels of debt, when the four nations are treated as an aggregate, rise at the same pace as interest rate dollars, as an aggregate. Individual economic differences may be the deciding factor in whether debt rises as fast as interest rate dollars, and so determine whether the relationship between the two is significant or not.

Research Question two concerns IMF policies of structural adjustment, lending, and capital formation. The question poses the problem of whether the four sample economies experienced lowered social standards, increased

debt, and the eventual collapse of their respective currencies due to IMF lending policies. Several studies regarding the IMF policies and its effects have been conducted in Latin America. Johnson and Salop(1985) focused on IMF stabilization programs. Borpujari (1986) focused on financial constraints and internal distribution. The IMF itself conducted a study (1985) which focused on its adjustment programs, finding that their programs were no more detrimental to a nation's economy than any other alternatives. Hague (1992) indicated in his studies that IMF programs could be detrimental to capital formation if fully implemented. Further, Martinez and Fierro (1993), take the position that the IMF structural adjustment programs aggravated failing internal structures.

These studies led to Hypothesis 2, which sought to measure changes in specific IMF accounts, thereby determining whether a significant relationship between debt level and the IMF lending and structural adjustment accounts existed throughout the 1975 - 1995 period. Other lending accounts, such as the Net Drawing, Special Drawing Rights, and Compensatory Drawing were also examined. These variables showed consistent data throughout the examination period. See Table 28.

TABLE 28

AGGREGATE IMF ACCOUNT BALANCES BY YEAR AND ACCOUNT: STATED IN SDR MILLIONS.

Year	Structural Adjustment Sum	Net Draw Sum	Compensatory Draw Sum	Special Drawing Rights Sum	Capital Formation Sum
1975	$ 0.00	$ 199.60	$ 64.00	$264.20	$ 230,179.00
1976	$ 0.00	$ 470.50	$ 268.00	$326.00	$ 250,339.00
1977	$ 0.00	$ 567.10	$ 364.80	$337.90	$ 306,829.00
1978	$ 0.00	$ 580.00	$ 384.30	$462.40	$ 439,410.00
1979	$ 0.00	$ 580.00	$ 359.00	$577.90	$ 720,926.00
1980	$ 0.00	$1,021.90	$ 359.00	$607.20	$ 847,537.00
1981	$ 0.00	$1,113.90	$ 359.00	$821.50	$ 24,612.01
1982	$ 0.00	$1,472.80	$ 379.80	$179.00	$ 49,173.13
1983	$ 0.00	$ 0.00	17.90	$198.40	$ 167,350.99
1984	$ 0.00	$1,740.40	$2,130.60	$ 1.60	$28,581,012.19
1985	$ 0.00	$ 940.40	$2,025.80	$ 1.00	$ 0.00
1986	$ 0.00	$ 876.10	$1,782.70	$143.00	$15,328,833.00
1987	$18.10	$ 914.20	$1,509.00	$162.00	$ 705,334.00
1988	$18.10	$1,165.20	$1,092.10	$154.20	$ 2,850,878.00
1989	$18.00	$ 941.10	$ 896.30	$150.10	$ 7,342,720.00
1990	$31.80	$ 782.50	$ 816.00	$316.50	$ 2,973,075.00
1991	$ 0.00	$ 0.00	$ 50.10	$258.90	$ 3,911,253.00
1992	$ 0.00	$ 0.00	$ 0.00	$262.50	$ 5,157,241.00
1993	$ 0.00	$ 0.00	$ 0.00	$399.30	$11,055,287.00
1994	$ 0.00	$ 0.00	$ 0.00	$443.30	$14,607,570.00
1995	$ 0.00	$ 0.00	$ 0.00	$453.70	$21,568,635.00

Source: IMF Yearbook 1975 - 1995

The results of direct testing, (Hypothesis 2) of the data revealed no statistically significant relationships between the level of debt and the IMF accounts as measured throughout the 1975 - 1995 period, in the aggregate. However, when tested individually, Colombia exhibited a significant F value (23.82049), regarding External Debt and the influence of independent variables (Net Draws, Compensatory Draws, Special Drawing Rights, and Capital Formation) on the level of external debt. Argentina, Bolivia, and Brazil did not exhibit such significance. An analysis of the "T" values resulting from the individual tests revealed that Net Draws, (Colombia, Bolivia, and Brazil) Compensatory Draws, (Colombia), Special Drawing Rights, (Bolivia and Brazil), and Capital Formation (Colombia) were the only IMF accounts which showed high, (although not significant) "T" values in relation to external debt. Also, other comparisons, (Hypothesis 6), showed no significant contribution of the IMF accounts when compared to the level of debt as a percentage of that debt.

Debt crisis should not be taken to mean a single event, but a series of events, which lead to the collapse of currencies, (as reflected in a sudden revaluation of currency) as a signal measure of the event. Also,

simultaneous high levels of debt (as reflected in the raw data as Loan Principle) can be considered a secondary measure of the debt crisis event. As shown by the raw data debt crisis within Argentina, Bolivia, and Brazil occurred at least once in each nation during the twenty year (1975 - 1995) period under study. Argentina shows currency valuation adjustments in 1979 and 1991. Bolivia shows similar currency valuation adjustments in 1985. Brazil shows currency valuation adjustments in 1985 and 1991, and again in 1993. Finally, Colombia, although currency valuation steadily rose from 1975 through 1995, no valuation adjustments were made. This suggests that debt crisis had not occurred in Colombia, but given the rising level of debt, any sudden valuation in currency could result in the onset of debt crisis.

The level of debt however is not the debt crisis. The results of the tests in this study do not refute the findings of the previously cited research. Concluding then, the IMF lending accounts of structural adjustment, net draws, compensatory draws, special drawing rights did not have a statistically significant impact on the level of debt among the four sample nations when tested as an aggregate. A reference to the results of Hypothesis six

testing shows that the level of IMF lending among the four nations was not material enough to contribute to the level of debt. Even if the lending had been greater [in amount] among the four nations, it is still improbable that such IMF lending would significantly have affected the economies of Argentina, Bolivia, Brazil, and Colombia enough to foster further debt levels. Also, the level of capital formation determined in part by IMF lending did not have a statistically significant impact on debt level for two reasons. First, the capital formation amounts [aggregate] exceeded the level of debt. Secondly, capital formation, by its very nature, forms capital and does not deplete it. It is the steady depletion of capital which exacerbates already high and rising debt levels.

Regarding research question three, the internal factors [capital inflows, unemployment, population, inflation, imports, economic growth, national output, exports, savings, investments, per capita earning power] present in the four [Colombia, Bolivia, Brazil, Argentina] economies were examined to identify common internal variable trends among the four nations. All of the internal variables [capital inflows, unemployment, population, inflation, imports, economic growth, national output, exports, savings, investments, per capita earning power],

included in the Hypothesis Three testing were literature supported. The consolidated results of Hypothesis Three testing eliminated many of the internal variables for inclusion in the proposed Debt Crises Model. The purpose for test three was to find those literature supported, internal variables that possessed common trends (as determined by correlation) in relation to external debt.

The results of Hypothesis Three testing revealed that there was a direct relationship between specific internal variables and external debt. The results of Hypothesis Three testing reduced the internal variable population from eleven internal variables to five variables. Once those variables with common relationships to external debt had been established, the research could move forward to the testing of Hypothesis Four.

Direct testing of the variables in Hypothesis three showed that several internal variables exist among the four nations with common trends. These specific variables were isolated in the Hypothesis Three tests. The isolated variables were Population, Consumer Price Index, Portfolio Investments, Capital Inflows, and Gross Domestic Product. Inclusion of these variables in the testing of Hypothesis Three is literature supported. Among other variables,

Altimir (1996) cites rising population as evidence of a fragile infrastructure and contributory to debt crisis. Ffrench - Davies (1998), among other variables, cites capital inflows, decreased national output [GDP], and decreased investments [Portfolio Investments] as leading to debt crisis. De Vries (1995) also cites inflation [Consumer Price Index] as explanatory variables contributing to debt crisis. Thus, the variables selected for the Hypothesis Four tests were supported by the current literature.

Regarding Hypothesis Four, conclusions are that the specifically trended internal variables (Population, Consumer Price Index, Portfolio Investments, Capital Inflows, and Gross Domestic Product) have a statistically significant relationship with the level of debt. The internal variables have predictive qualities in terms of the level of debt. These results tend to be in agreement with the current literature. The internal variables, whether evident of a fragile infrastructure or not, are influential on the level of debt among the four nations as shown here and in previous literature. Hypothesis Four, alternate one, was accepted based on the above tests.

The use of linear regression analysis on a periodic basis with a "stepwise" methodology allowed a "stacking" of

the independent variables. For example, the regression analysis for the period 1975 through 1981 revealed two predictor variables (Test C, P.131). Population and Savings were both extracted from the variables and lifted into models one and two, respectively.

Population, in model one, has an adjusted R Square value of .934, while model two use population and savings with a higher adjusted R Square value of .987. The tests were run in two year cumulative intervals (test A is from 1975 to 1977, while test B adds two years to the previous ending figure, or 1977, and so on, until reaching 1995) from 1975 through 1995. The models are "snapshots" of the variables in play (in relation to external debt) in the four countries during the 1975 -1995 period. A second set of tests was run using the same two-year methodology, measuring from 1995 back to 1975.

Hypothesis four, alternate one tests revealed that the five internal variables of Population, Consumer Price Index, Portfolio Investments, Capital Inflows, and Gross Domestic Product were all present during the 1975 to 1995 research period. As the test period expanded (adding two years to each test), more variables were allowed into the model. Whether working forward from 1975 to 1995, or the

reverse, these five internal variables are present during the 1975 - 1995 period.

Confirmation testing of the Hypothesis Five (alternate one) variables, (Population, Consumer Price Index, Portfolio Investments, Capital Inflows, and Gross Domestic), showed that a significant correlation exists between Capital Inflows and Consumer Price Index. This suggests that price setting is related to the level of in-flowing capital. The surplus of capital tends to devalue the currency, thus inflating the price of goods bought (imported) and (sold).

Partial correlations, controlling for external debt, led back to Consumer Price Indices and Gross Domestic Product. Again the relationship between the price of goods, (as set by the consumer price index) and national output, (other nations willingness to purchase goods at a particular price level), is emphasized again. Capital inflows and population also showed a relationship when controlling for external debt. The relationship here is uncertain. Referring to Appendix One, capital inflows, as an aggregate, show a steady rise from 1975 to 1980. 1981 shows a sudden decline, then a rebound to higher levels between 1982 and 1984. From 1984 through 1995, a fluctuating decline in capital inflows occurs. Population,

on the other hand, shows a steady rise from 1975 through 1995.

It may be that the rise in population indirectly affects unemployment levels (Dore-Cabral, et.al, 1993). Rising unemployment would necessarily affect national output as measured by Gross Domestic Product. Lower national output may result in loss of investor confidence and the beginning of capital flight (Nazmi, 1998). Lowered expectations about Latin American may slow the arrival of capital inflow. However, although studies independently allude to this, there is no current research to confirm this.

The last test on Hypothesis Six was to set up data in a matrix form, separating the variables between global (interest rates), external (IMF structural adjustment, Net Draws, Compensatory Draws, SDR, and Capital Formation), and internal (Per Capita Earning, Capital Inflows, Portfolio Investments, and GDP) categories. A table of percentages for each variable for each year was constructed to verify arithmetically, which variables influenced the level of external debt. Measurement of the variable's value as a percentage of the value of the external debt for the same year showed which variables contained the largest

percentages of debt and so the greatest influence on the level of debt. The tests revealed those interest rates, capital formation, per capita earnings, capital inflows, and gross domestic product have all had a definite impact on the level of debt among the four nations (as an aggregate) in Latin America.

To briefly summarize, Altimir (1996) has pointed out that debt crisis may be the end result of external forces upon internal structures. Hypothesis One testing results support this conclusion, showing those interest rates influence debt level. The results also support DeVries' (1995), and Martinez and Fierro's (1993) positions, respectively, that debt crisis can be the result of rising interest rates.

The Johnson and Salop (1985) study on IMF stabilization programs concluded that stabilization programs could affect distribution within an economy in a positive and negative way, depending upon the scope of the economy. The Hypothesis Two test results neither supported nor refuted these conclusions. Borpujari's (1986) focus on financial constraints and internal distribution concluded that macroeconomic financial programming being appropriate only for those economies sufficiently developed to meet their own production and consumption needs. The Hypothesis

Two test results neither supported nor refuted these conclusions. The IMF's own 1985 study found that its programs were no more detrimental to a nation's economy than any other program alternatives. The Hypothesis Two test results showing no significant influence on the level of debt somewhat bolster this position, but does not necessarily support or refute the IMF's 1985 study. Hague's 1992 study concluded that IMF programs could be detrimental to capital formation if fully implemented. Hypothesis Two test results did not support these conclusions. Although some lag in capital formation has been observed, there are no data to support Hague's 1992 conclusions when applied to the 1975 - 1995 period. Finally, Hypothesis Two test results did not support the Martinez and Fierro (1993) position that the IMF structural adjustment programs aggravated failing internal structures.

Hypothesis Three test results narrowed the internal variables (capital inflows, unemployment, population, imports, inflation, economic growth, national output, exports, savings, investments, and per capita earning power) influential to debt level, as related by the literature (DeVries [1998], Altimir [1996], and Ffrench - Davies [1998]), from eleven variables to five variables (as

applied in the aggregate). When the four nations were tested as an aggregate, some of the variables cited by Altimir (1996), such as low economic growth, falling wages, rising unemployment, and lowered savings were not included in the final correlations. However, rising population was included in the final correlations.

Hypothesis Three testing results supported the French - Davies (1998) position that capital inflows, decreased national output (GDP), and decreased investments (Portfolio Investments) as influencing debt crises. Hypothesis Three test results also supported De Vries (1995) explanation that inflation, (Consumer Price Index), influences debt crises.

Hypothesis Four testing results concluded that the five internal variables of Population, Capital Inflows, GDP, Portfolio Investments, and Consumer Price Indices had predictive qualities regarding External Debt as a dependent variable.

Hypothesis Three test results supports the related literature (DeVries [1998], Altimir [1996], and Ffrench - Davies [1998]), regarding the influence of internal variables on external debt crises.

Hypothesis Five test results on Population, Capital Inflows, GDP, Portfolio Investments, and Consumer Price Indices showed sufficient correlations among these variables. When applied to the four nations of Argentina, Bolivia, Brazil, and Colombia, as an aggregate, a regional explanation for debt crises were formed.

Hypothesis Six test results were based on a matrix form, separating the variables between global (interest rates), external (IMF structural adjustment, Net Draws, Compensatory Draws, SDR, and Capital Formation), and internal (Per Capita Earning, Capital Inflows, Portfolio Investments, and GDP) categories. The results supported the related literature, (DeVries [1998], Altimir [1996], and Ffrench - Davies [1998]), regarding the influence of internal variables on external debt crises. The Hypothesis test results confirmed that interest rates, capital formation, per capita earnings, capital inflows, and gross domestic product have all had a definite impact on the level of debt among the four nations (as an aggregate) in Latin America.

Implications

The present results have many implications for Latin America. One of these is an economic model. The resultant economic model contains the following variables based on a

grouping priority:

Global Variables		
Level of External Debt	influenced by	Interest Rates

Internal Variables		
Level of External Debt	influenced by	Per Capita Earnings Capital Inflows Capital Formation Gross Domestic Product Portfolio Investments

External Variables		
Level of External Debt	influenced by	Structural Adjustment Compensatory Draws Net Draws Special Drawing Rights

The above variables revealed specific trends, which helped define a model of debt crisis. The trends observed among the variables are limited to the 1975 through 1995 period. As external debt increases; interest rates rise as well. The combination of interest rates and debt level adds to the amount of debt to be repaid. As the level of debt rises, portfolio investments decline or remain minimal. Structural adjustments, compensatory draws, net draws, and special drawing rights remain minimal throughout the period, as well.

Capital inflows and capital formation occur simultaneously from 1975 through 1980. From 1981 through 1984, capital inflows lag behind capital formation. A brief

period, from 1985 through 1986, occurs where capital inflows and capital formation occur simultaneously. However, from 1987 through 1995, capital inflows lag behind capital formation again.

Gross Domestic Product rises steadily in these countries from 1975 through 1984. An initial drop in GDP occurs in 1985, and then begins a continued rise from 1986 through 1995. Table 29 illustrates the continuous rise in the exchange rates until the collapse of the currency, the initiation of a new currency, and the rise in the exchange rate again. Collapse of the exchange rates occurred in 1981 in Argentina, 1985 in Brazil and Bolivia, and again in 1991 in Argentina.

The Debt Crisis model to be considered reflects some of the parameters found in the Neo - Liberal model. The Debt Crisis model is supported by two trends. The rising exports between 1975 - 1995 are evidence of a liberalization of trade. Rising imports are further evidence of this. Rising capital inflows also illustrate a liberalization of finances as well. The presence of macroeconomic policies and fiscal policy reform, as evidenced by IMF lending further supports the Thorp, et.al, (1996) description of the Neo - Liberal economic model.

TABLE 29

IMPLICIT OR EFFECTIVE EXCHANGE RATES

Year	Colombia Peso /$US	Brazil Cruz/$US *Reais/1000$US	Argentina Peso/$US *Aust/$US **Aus/1000$US ***Pesos/$US	Bolivia Boliv/$US
1975	30.92	8.1	36.6	20.
1976	34.69	10.6	140.0	20.
1977	36.77	14.1	407.6	20.
1978	39.09	18.0	795.8	20.
1979	42.55	26.9	1317.0	20.393
1980	47.28	52.7	1837.2	25.
1981	54.49	93.1	**.00044***	25.
1982	64.08	179.5	.00259*	64.
1983	78.85	577.0	.01053*	230.
1984	100.82	1848.0	**68.****	3135.9
1985	142.31	.006	602.**	**.44**
1986	194.26	.014	943.**	1.922
1987	242.61	.039	2144.**	2.054
1988	299.17	.262	8753.**	2.350
1989	382.57	2.834	423.**	2.691
1990	502.26	66.517	4876.**	3.172
1991	633.05	**.148***	**.95355*****	3.580
1992	759.28	1.641*	.99064***	3.900
1993	863.06	.032*	.99895***	4.265
1994	844.84	.639*	.99901***	4.620
1995	912.83	.918*	.99975***	4.800

Source: IMF Yearbook 1975 - 1995

The Neo-Liberal Model was based on the 1990 'Washington consensus' (Thorp, et. al., 1996), which stressed the liberalization of trade and finances, the adoption of a macro - economic perspective toward development, reducing the role of the state, and reforming fiscal policies. Thus, this research's model must necessarily fall within similar parameters.

As stated by Thorp, et.al, (1996), Brazil and Argentina have adopted this model. Colombia has adopted the Neo - Liberal model to a lesser extent, as has Bolivia. The summary data is aggregate. The following comments are directed to a regional consideration of the 1975 - 1995 events which lead to the debt crisis in Latin America.

As 1975 approached, the data shows those large levels of external debt already existed within the four-nation region. Exports were already in place and slowly rising. Imports existed, but were minimal or falling. Capital inflows and capital formation were matched, suggesting that in-flowing capital was used for capital formation.

During 1980 - 1985, debt levels continued to rise. Exports also rose as attempts were made to externally resolve the rising levels of debt. Unfortunately, rising interest rates offset some of these repayment attempts, resulting in still greater debt levels.

1981 brought about a currency collapse in Argentina, which further exacerbated the debt problem. Reserves were drawn to retain the exchange rate. However, the large amounts of capital inflows flooded the region with excess monies causing inflationary pressures. High interest rates, rising inflation, and collapsing currencies then exerted upward pressure on debt levels.

After 1981, and through 1984, capital inflows fell, but capital formation efforts increased. This suggests attempts at controlling the economy. Although economic controls were put in place, debt levels and interest rates continued to rise. However, portfolio investments continued to fall as the debt level rose.

The years 1984 and 1985 brought two more exchange rate collapses to the region. This exerted upward pressures on debt, helped raise interest rates and further reduced capital inflows. Rising exchange rates from 1975 - 1985 further contributed to debt levels and the region's inability to repay that debt.

From 1986 through 1990, debt levels, interest rates, and exchange rate valuation continued to rise. Exports continued to rise, (as GDP), while capital inflows remained less than capital formation. Economic controls from the previous economic collapse; although in place, were

outpaced by rising GDP and rising external debt levels. Some of theses events, for instance in Argentina, culminated in a 1991 collapse of currency (debt crisis). This is the quintessential definition of debt crisis and the events leading up to it. The periods after 1991 and early 1992 reflect some recovery. However, from 1992 through 1995, capital inflows remain less than capital formation.

Interest rates continued to rise, as did debt levels. Also, exchange rates continued to rise. Thus, 1992 through 1995, a period in which economic recovery could have occurred, failed to because of existent pressures from rising interest rates, large levels of debt, and capital flight from the region (as reflected in the lagging capital inflows). During the 1975 - 1995 period, IMF lending was minimal. Although GDP and Per Capita Earnings were rising, falling capital formation, and falling portfolio investments suggest consumption rather than savings. This researcher suggests that ready, expendable capital was funneled into retail consumption. This increased consumption promoted imports, the purchase of which provided additional capital to fuel further export manufacturing.

This import to export to debt channeling of monies allow for less internal use of monetary gains. This single dimension economy, necessarily fragile in nature, crumpled under any undue external pressures. The promotion of IMF policies regarding structural adjustment, did not seem to take place in this region, if IMF lending is taken as evidence of IMF policy. What little lending the IMF made on this region seemed insufficient to affect the economy as relates to increasing debt, collapsing currencies, or otherwise significantly affecting the level of external debt in this region.

Thus, a model of debt crisis in Latin America, from the analyses here, would appear as a sequence of events, as follows:

1] Increased exports generate additional capital

2] Additional capital is only minimally invested and used for import consumption.

3] Large capital inflows from exports use expendable monies to repay debt.

4] Debt and interest levels outpace expendable capital.

5] Internal savings and reserves are not built up due to frequent currency collapses.

6] Expendable reserves or savings are used to bolster failing infrastructure.

7] Rescue of the failing infrastructure allows insufficient resources to adequately adjust the economic structure.

8] Lack of sufficient internal economic structured decreases expansion abilities.

9] Decreased expansion potential allows debt to outpace economic ability to repay debt under the existing structure.

The reader will remember that the present study sought to determine which internal factors might suggest some policies to avoid a debt crisis in other regions in similar circumstances. The above nine points offer a firm basis for forming "debt control" policies. Capital controls placed upon circulating currency, such as loan caps, the implementation of monetary sterilization policies, and the limitation of over-investing in stock portfolios are three of the most significant impacts on capital inflow.

Among the aforementioned policies, those which encourage the development of infrastructures such as road and highway networks, communication networks, water and sewer delivery could be further constraints placed upon excess currency flow. Additionally, this can be achieved through the placement of monetary constraints upon in-flowing capital through policy, the diversion of in-coming capital through taxation, or the apportionment of in-coming funds through legislation.

Finally, the development and preservation of human

capital through job training, education, and an overall policy of skill development are essential to any nation's ability to respond to debt crises when they occur. The development of the nation's populace with respect to job skills, the adaptation of new manufacturing techniques with equivalent training, are all excellent ways in which to develop the nation from the inside out.

Limitations

The initial limitations of the study are determined by the completeness and accuracy of the data reported by the IMF and tabulated in their monthly and annual reports. As stated by Gavin and Perotti (1997): "The standard data source is the International Monetary Fund's Government Finance Statistics, whose coverage of Latin America is, however, largely limited to central governments, and even there has important gaps" (P.51).

Further, the study was limited in its scope to four countries in Latin America; Brazil, Argentina, Bolivia, and Colombia. Further constraints were placed upon the results by limiting the time of study to encompass the years 1975 through 1995. Finally, this study is not an experimental study, but "after the fact" research, which limits the cause and effect assumptions noted within this study.

Other limitations arose during the course of testing the data and exercising the methodology. Many of these limitations stem from the data itself. Many categories or classifications were eliminated from the data tables halfway through the examination period. Although the data were often traceable to another classification or category, the sense of continuity was lost. This rendered some of the data questionable, though usable.

Also, the configuration of categories or classifications seemed to shift every five years along with the values expressed. For instance, structural adjustments would be listed in terms of millions of dollars for the period 1975 - 1980, while being listed in terms of millions of pesos from 1981 - 1985. The category would then be labeled internal structural account under international regulatory agencies for 1986 - 1995. Thus, the researcher feels that although the data is consistent in its presence from year to year, it also loses some of its clarity in the way it is presented.

Recommendations for Future Research

The limitations cited within this study are excellent places to start with future research. The creation or assembly of a comprehensive data set regarding Latin America from a source independent of any participatory

agencies, such as the IMF, World Bank, or United Nations would be helpful to future research.

The extension of the present study from the short twenty year period to a lengthier forty-year period would certainly be fruitful. Such a study may shed more light on some of the variables that may have affected the level of debt before debt level became a problem. Also, this study's research could be extended to include other nations within the Latin American continent.

Other areas for future research may include in depth economic studies of those individual nations, which deal with the IMF and the World Bank. Such studies would provide insight into whether the debt crisis events shown in this research occurred in other nations outside Latin America as well.

In addition, future areas of recommended research could focus on the application of the Debt Crises Model, as formulated in this research, on other nations, to confirm the applicability of this model to debt crisis. Such research would verify this research's efforts to formulate a comprehensive model of debt crises.

Other research could be further exploration into the individual economies of Argentina, Bolivia, Brazil, and

Colombia to gain insight into the inter-relationship between the four nations. For instance, the extent of trading between the four nations, whether the similarities between their economies exist at a microeconomic or macroeconomic level, whether trade agreements existed among these four nations which fostered international trade. Further research could also confirm whether there truly is a regional relationship among these four nations.

Other research could also explore the problems encountered by nations in both Latin America and other parts of the world regarding debt crises. For instance, devastating natural disasters (hurricanes, earthquakes) often affect an economy's ability to repay debt. Such events often incur more debt in the process of rebuilding. Other areas of concern would be the problems encountered in the areas of employment. Although touched on lightly in this research, the problem of educating and training the general populace to handle such duties as complex multi-tasking machining or manufacturing processes, reading blueprints and processing instructions, handling simple cash transactions, are all very real concerns to industry when deciding to invest time, money, and manpower into a region.

These concerns can readily affect capital inflow,

employment levels, national output, national and individual savings, and the general standard of living. should a company decide not to invest due to a general lack of technical skill and ability in a region, the nation's ability to expand its economy may be severely curtailed.

Finally, one of the most fruitful areas of further research could be in an analysis of the economic variables cited within this study, either all or in part, to determine if some of the impact noted here, occurred in other areas of the globe and which of the variables were the most and least influential. In addition, further research in this area may reveal that there may exist other global, external, and internal variables not noted in this study.

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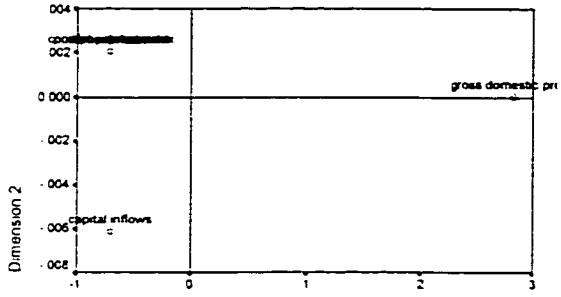
APPENDIX I

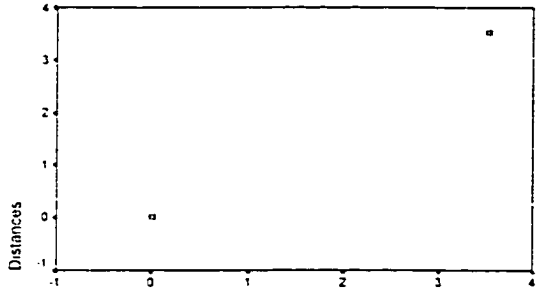
Derived Stimulus Configuration

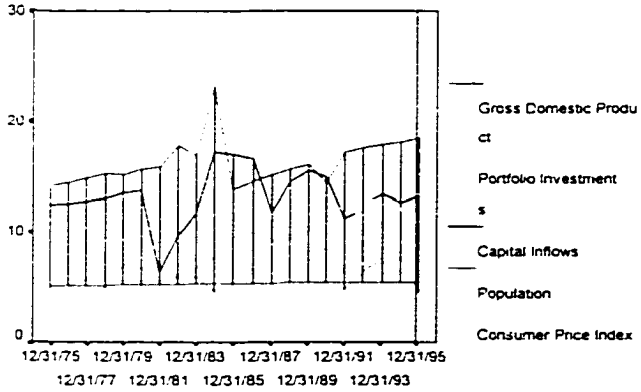
Individual differences (weighted) Euclidean d

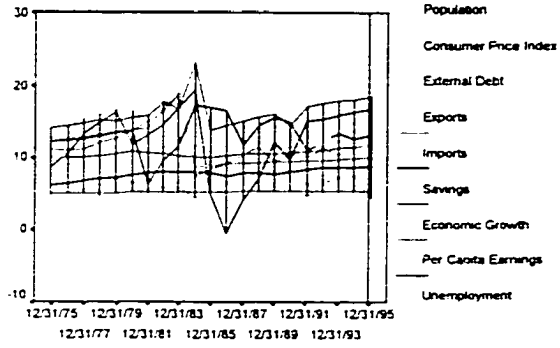


Scatterplot of Linear Fit

Individual differences (weighted) Euclidean dis







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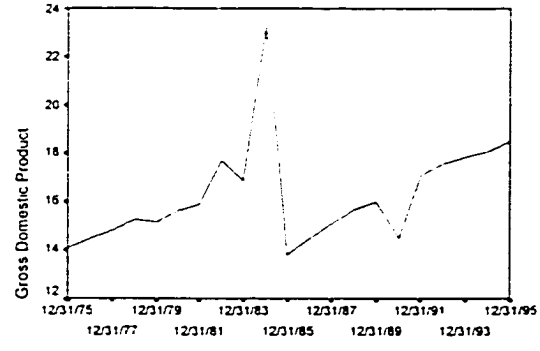

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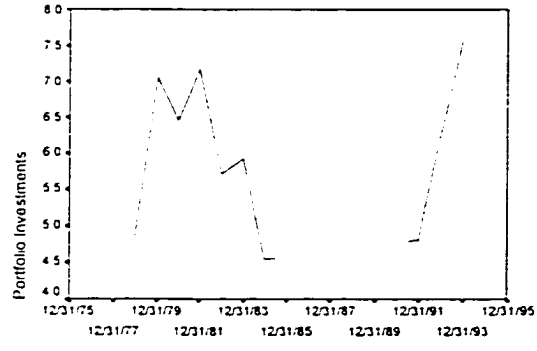

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