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DETERMINANTS OF CAPITAL FLOWS: A CROSS-COUNTRY ANALYSIS

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Abstract

There are two basic approaches to identifying the determinants of capital flows, *viz*. the traditional and the portfolio (or modern) approach. Although most econometric models have by now forsaken the traditional capital flow equations in favour of modelling financial linkages *via* arbitrage type interest rate parity relations, the importance of fundamentals in explaining particular capital flow developments cannot be denied (International Monetary Fund, 1992). This paper identifies the determinants of capital flows using the conventional approach, and is based on a cross-sectional study of eight countries, *viz*. Australia, India, Indonesia, Argentina, Brazil, Chile, Colombia and Mexico. Non-linear Seemingly Unrelated Regression estimation has been used to allow for cross-country effects in the error structure.

Key Words: Capital Flows, Seemingly Unrelated Regressions (SUR) model

JEL Classifications: C3, F21

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I. Introduction

The importance of capital flows for an economy is well recognised and well documented (World Development Report, 1985; Report of the Research Department of the International Monetary Fund, 1991; Final Report of the Working Party on the Measurement of International Capital Flows, International Monetary Fund, 1992; World Bank, 1995). Capital flows are generally welcomed in most countries as they assist in the proper allocation of global resources and thereby increase the availability of capital and thus higher investment and growth. They are instrumental in the transfer of technology and management skills. Some of the other advantages of foreign investment are: risk sharing with the rest of the world, greater external market discipline on macroeconomic policy, broader access to export markets through foreign partners, training and broader exposure of national staff, greater liquidity to meet domestic financing needs, broadening and deepening of national capital markets, and improvement of financial sector skills (World Bank, 1995).

However, massive capital in-flows may also lead to excessive money supply changes and consequent pressures on prices and the exchange rate, and deterioration in the current account balance. There may be other associated dangers of foreign investment: currency appreciation, reduced scope for independent macroeconomic policy actions, greater exposure to external shocks, demands for protection in local markets, some loss of control of foreign-owned domestic industry, disruption of national capital markets, asset inflation, increased volatility in financial and exchange markets, high sterilization costs, *etc*. (World Bank, 1995).

The purpose of this study is to identify the determinants of capital flows, especially in the wake of economic liberalisation and deregulation. The period covered in the paper is 1970-1995. The rest of the paper is organised as follows. Section II contains a brief review of literature on the subject and also develops the theoretical framework. This framework draws inspiration mainly from the International Monetary Fund Report (1991) titled 'Determinants and Systemic Consequences of International Capital Flows' and also the Multi-country Model (MCM) developed at the Board of Governors of the US Federal Reserve System (1984). Section III details the sources of the data. Section IV touches upon the basic model used in the paper and the econometric analysis. The concluding section summarises the results of the study and their policy implications.

II. Literature Review and Theoretical Framework of the Model

A key concept in the classical economic theory is the long-run equilibrium based on a uniform rate of profit with associated prices of production. This equilibrium is the outcome of an adjustment process: differential profit rates induce capital mobility between markets, which continues until profit rates equalize (Smith, 1776). The study by Van Wegberg and Marc (1990) contributes to the debate by employing an evolutionary-type model with bounded rationally in decision-making, imperfect labor mobility, and structural changes in the economy. It finds that the latter two conditions impede a tendency for profit rates to equalize.

Atesoglu (1993) uses a Keynesian explanation of post-Second World War economic growth in Canada. In the Keynesian approach, increases in the labor force, capital stock, and technical change are considered to be mainly endogenous, adjusting passively to the changes in the economy that are brought about by changes in demand. The emphasis is on the role of demand, rather than on factors of production and technical change as in the neoclassical theory of growth. This is based on the Balance of Payment Constrained Growth Model developed by Thirlwall and Hussain (1982). They were able to delineate the sources of growth in real output into three key factors: exports, capital flows, and the effect of relative price changes. All of these factors affect the economy primarily from the demand side.

In a significant study, Bordo *et al*. (1988) examine various channels through which real and monetary disturbances are transmitted under fixed and floating exchange rates. The Monetarist approach has been put forth by Brunner (1989), after extensive research, and it establishes that: 1. The actions of the Federal Reserve Board dominate the movement of the monetary base over time; 2. The movements of the monetary base dominate the movements of the money supply over the business cycle; and 3. Corresponding movements closely follow the acceleration or decelerations in the money supply in economic activity.

Previous empirical studies of the effects of several economic variables on private direct investment in Argentina, Chile, Mexico and Venezuela indicated that the most significant variables in explaining investment behaviour were London Inter-Bank Offered Rate (LIBOR) and Gross Domestic Product (GDP) annual growth rates. Surprisingly, debt-equity-swaps (DES) were not significant in explaining capital flows to the region. The data suggest that domestic savings, rather than funds borrowed abroad, will be the major factor determining the pace of overall investment in the developing world in the years ahead. If developing countries cannot save enough to finance their capital needs, such demand will drain the private and public savings of OECD countries. The resulting global capital

shortage would raise real interest rates (Helmut, 1995/96). In Latin America, the changes brought about by the replacement of import substitution by free-market policies can be singled out as the most significant factor in attracting FDI to the region.

It is no coincidence that the sharp raise in FDI goes hand-in-hand with the speed-up of structural reforms in Mexico (1989) and in Argentina (1990-91). Sanchez (1996) opines that at least two of the so-called "structural reforms" have been key to this trend: Deregulation and Privatization. The positive expectations created by NAFTA stimulated large capital flows, especially in the form of portfolio investment, *i.e.*, the purchase of Mexican stocks and bonds. One of the most important aspects of the crisis has been the *de facto* monetary cooperation between the United States and Mexico.

Various empirical results indicate that macro-economic fundamentals are quite important in attracting foreign investment inflows, implying therefore that the macro-economic policies have to be appropriate and they have to provide incentives for attracting foreign investment. In the context of India, Gopinath (1997) identifies regime shifts (deregulation and liberalisation), and market size as the variables affecting capital flows. A study by UNCTAD (1993) finds that in the case of Africa, Japan and Latin America, the level of external debt, among other things, exerted a positive influence on FDI flows.

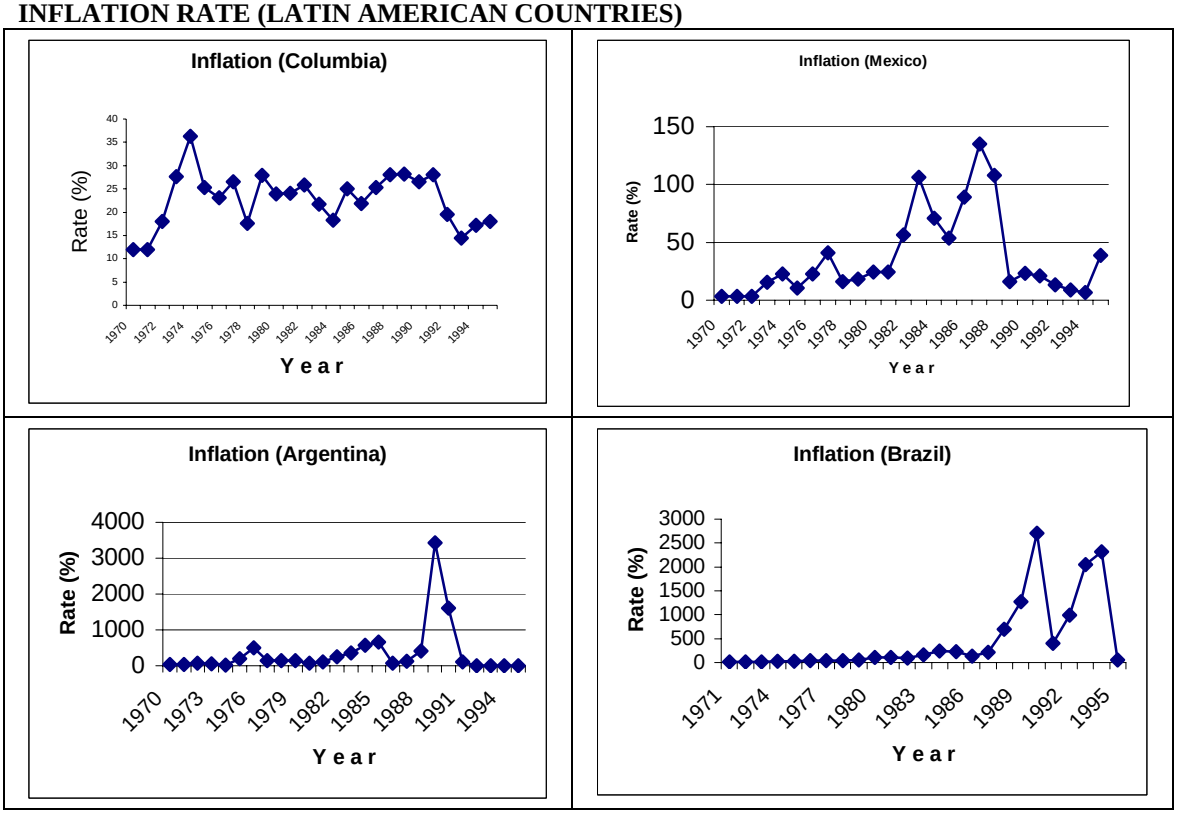
III. Data Description and Analysis

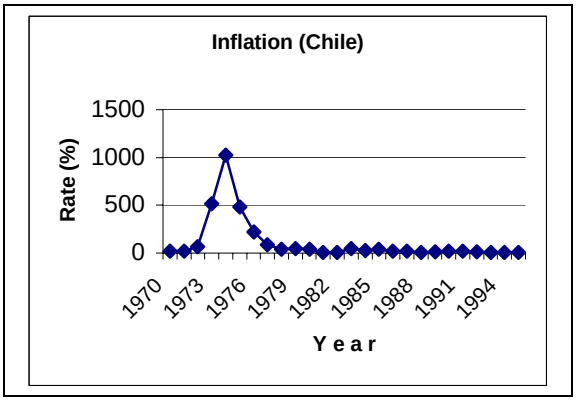
International capital flows are recorded in the nonreserve capital account of the balance of payments (BoP). This account includes all international transactions involving assets other than official reserves, such as transactions in money, stocks, government bonds, land, and factories. The International Monetary Fund (1992) defines capital flows as consisting of: (a) direct investment; (b) portfolio investment; (c) other long-term and short-term capital flows; and (d) reserves and liabilities constituting foreign authorities' reserves.

Our objective initially was to include approximately twenty countries whose economies are most affected by capital flows. However, this was not achieved, primarily due to data problems and also because of inconsistencies in BoP format *etc*. The countries finally included in our analysis are: Australia, India, Indonesia, Argentina, Brazil, Chile, Colombia and Mexico. The selection of countries is not purely arbitrary, but is based on important considerations. For example, Latin American countries are the burning example of group of countries most affected by capital flows and that is the reason for their inclusion.

The primary sources of data are International Financial Statistics (IFS) CD-ROM diskette obtained from the International Monetary Fund, World Development Indicators (World Bank), Asian Development Bank, Penn World Tables, World Debt Tables, Australian Bureau of Statistics (ABS). The data for India have been obtained from various publications of the Reserve Bank of India *viz. RBI Bulletin* (various issues), *Report on Currency and Finance* (various issues), *Annual Reports*, etc. Some on-line data made available over the internet by the Federal Reserve Board of Governors of USA and the Bank of England have also been used. The study covers the period 1970-1995 and is based on yearly observations**.** For some countries, data on Gross Fiscal Deficit was not available. Therefore, Budget Deficit was used as a proxy. Data on Sovereign Credit Rating (to capture the impact of government policies on capital flows) could not be obtained from *Standard and Poor's* due to time constraints. The SHAZAM (Version 8) econometrics package, in conjunction with Microsoft Excel, was extensively used for the analysis of the data.

INFLATION RATE (LATIN AMERICAN COUNTRIES)





IV. Econometric Analysis

Based on the theoretical framework developed in the previous section, our basic model is:

$$Capflows = \beta_0 + \beta_1 Lib + \beta_2 Inf + \beta_3 Exdt + \beta_4 GDP + \beta_5 Def + \beta_6 Fx + \beta_7 Opn + \varepsilon$$

Capflows : Capital Flows (US$)
Lib : London Inter-bank Offered Rate (%)
Inf : Rate of Inflation (%)
Exdt : Total External Debt (US$)
GDP : Market Size of the economy captured by Gross Domestic Product (US$)
Def : Gross Fiscal Deficit (In Local Currency)
Fx : Gross Foreign Exchange Reserves (US$)
Opn : Degree of openness of the economy = (Exports + Imports)/GDP at current market prices (US$)

(*i*) *Ordinary Least Squares* (*OLS*):

Ordinary Least Squares (OLS) regressions were initially fitted separately for each country *viz*. Australia, Indonesia, India, Argentina, Brazil, Chile, Colombia and Mexico. The OLS residuals were plotted against the estimated mean of the dependent variable, and also against time, to test for heteroscedasticity and autocorrelation. In almost all the countries, the residuals showed a distinctive pattern, indicating the presence of both heteroscedasticity and autocorrelation. We know that in such a situation the usual hypothesis tests are not reliable, raising the possibility of drawing misleading conclusions. The Durbin-Watson statistics also confirmed that the errors exhibit negative autocorrelation in the case of Chile, and positive autocorrelation for all of the other countries. Further, the data analysis also suggested the presence of non-linearities in the data. Therefore, the application of OLS may not be appropriate.

(*ii*) *Generalised Least Squares* (*GLS*):

Thus far we have considered equations for capital flows in respect of each country separately. Since these countries may have many things in commons, we can devise ways of pooling the sample information and possibly modelling them as a set of relations so that we can take account of this information explicitly (Griffiths *et al.*, 1993). Formulating the sampling model in this way permits us to specify a single linear statistical model with one coefficient vector and a single error covariance matrix. From an estimation viewpoint the error covariance matrix involves the variances of each of the equations and thus suggests that if these variances are not equal, GLS estimation may be appropriate. However, because of the block-diagonal nature of the covariance matrix, the GLS estimator for the pooled information is identical to applying OLS separately to each equation. Consequently, it yields the same results as estimating each of the equations individually by OLS.

(*iii*) *Seemingly Unrelated Regression* (*SUR*):

Following Zellner (1962), if the errors in our eight equations (*i.e.*, for our eight countries) contain correlated equation errors, we have what is termed a seemingly unrelated regressions (SUR) model. Separate OLS or GLS estimation of each of the relations ignores the possible relatedness of the equations errors. These estimators assume that the errors across our eight equations are uncorrelated, and thus the off-diagonal elements of the covariance matrix are zero. We now want to take account of the fact that the errors for these equations may be contemporaneously (in the same time period) correlated, and thus the off-diagonal elements may be non-zero. These off-diagonal elements represent the covariance between the errors from the different equations in the same time period.

So, a SUR model is based on the following assumptions: (1) all errors have a zero mean; (2) in a given equation the error variance is constant over time, but each equation can have a different variance; (3) the errors in different equations, but corresponding to the same time period, are correlated (contemporaneous correlation); (4) errors in different time periods, whether they are in the same equation or not, are uncorrelated (*i.e.*, autocorrelation does not exist).

When we estimated the full eight-equation SUR model, the error covariance matrix turned out to be singular. We intend to examine this issue further, and it would be interesting to determine if this result is a pointer to the fact that there may not be common factors affecting capital flows in all the eight countries as a group. This issue assumes significance in the light of our data analysis also which suggests that variables for countries like Australia, India and Indonesia, do not exhibit wide fluctuations. However, this is not true in respect of Latin American countries *viz.* Argentina, Brazil, Chile, Colombia, Mexico. Among Latin American countries also Colombia could be classified as a

case in sharp contrast to others; its variables exhibit moderate trend compared to other countries in this group. In the light of this observation, SUR models based on various combinations of different equations were considered. Only three such specifications were successful. The first such set of equations involved Australia, Indonesia and India. The second model included Australia, Indonesia, India and Colombia; and the third specification involved Argentina, Brazil and Chile. Whenever our model included Mexico, the error covariance matrix was always singular.

The SUR results are summarised in Table 2 for each the three specifications noted above. If contemporaneous correlation does not exist, the least squares estimator applied separately to each equation is fully efficient, and there is no need to employ the SUR estimator. The null hypothesis for the Likelihood Ratio (LR) test of a diagonal covariance matrix is that there is no contemporaneous covariance. For the model reported in Table 2.1, the LR test statistic of 13.892 is greater than the critical value of 7.81 at 5% level of significance. The null hypothesis of 'No Contemporaneous Covariance' is, therefore, rejected. For the specifications shown in Tables 2.2 and 2.3, the null hypothesis is again rejected. So, we are justified in applying SUR estimation to the set of equations because of contemporaneous correlation between the errors. However, still our results are not robust, for the following reasons. First, as the Durbin Watson statistics indicates our results still suffer from autocorrelation and SUR has failed to address this issue. Second, our data analysis at the outset indicated a possibly non-linear relationship, and SUR has not solved this problem. Third, although SUR has addressed the issue of contemporaneous correlation of errors, it has failed to resolve the issue of autocorrelation not only in each of the equations but also across equations and also not only at the same point of time but over a period of time.

In the light of these factors, it is not advisable to completely rely on the SUR results. Thus we explore the possibility of finding a better alternative framework.

(*iv*) *Non-linear Seemingly Unrelated Regression* (*SUR*):

Can Non-Linear SUR provide a solution to all our questions? The answer to this question is probably yes. Its usefulness can be gauged from the fact that it addresses the core issue of non-linear nature of relationship between dependent and independent variables. In doing so it may also alleviate the autocorrelation in each of the equations and also across the equations, if in fact this autocorrelation is really reflecting an inappropriate functional form.

We applied non-linear SUR for each of the three models above and the results are presented in Table 3. The results are fairly robust now as the diagnostic tests reveal that precision in estimation has improved, as is reflected in the smaller standard errors. The Durbin-Watson statistics have also improved. Autocorrelation has not been completed removed but the DW statistics have moved towards two in value, showing a reduction in autocorrelation. For some countries, there is virtually no autocorrelation - *e.g.*, Australia, India, Colombia, Brazil, and to some extent Chile.

Our results indicate that *Gross Foreign Exchange Reserves is statistically significant in all the countries*, except for Brazil at the 5% significance level, and except for Indonesia (where it is significant close to at 10% level of confidence). *Gross Domestic Product is statistically significant for Australia, Indonesia, India, Colombia and Chile*.

As the size of economy grows, it boosts investors' morale in the country's policies, thereby attracting capital inflows. The relationship is positive for most of countries, except for some countries in Latin America where it is negative. *The degree of openness of an economy seems to be irrelevant in attracting capital flows.* It is significant only in respect of Brazil and that too at the 10% significance level. Surprisingly, the rate of inflation is statistically insignificant in the equations for all of the countries. So, *capital flows remain unaffected regardless of the rate of inflation*. However, there is negative correlation between the inflation rate and capital flows. As the rate of inflation goes up, net capital inflows go down. On the other hand, *Gross Foreign Exchange Reserves are positively correlated with net capital flows*, except in the case of Indonesia. As the level of foreign exchange reserves go up it stimulates the economy, raising international confidence in the country's economy and thereby accelerating capital inflows. This result is consistent with the theoretical framework of the model.

Also, *Gross Domestic Product* is statistically significant for Australia, Indonesia, India, Colombia and Chile. It is, however, not significant for Argentina and Brazil. In most of the specifications, there is a positive correlation with the capital inflows meaning that as the size of the economy grows it boosts investors' confidence in countries' economic policies, resulting in increased inflows. *LIBOR* (*i.e.*, the London Inter-bank Offered Rate) seems to be of not much importance to any of the countries. *Gross Fiscal Deficit (GFD)* is significant only for Australia and Indonesia. It shows a positive and negative relationship with net capital inflows for Australia and Indonesia respectively. For Australia, as the level of the country's fiscal deficit goes up, it is matched by increased capital inflows meaning that the country is financing its deficit by different forms of investment from overseas - may be direct portfolio investment, foreign direct investment or other forms of capital inflows. Since Australia is a developed country, investors are not wary of making investment even when the level of fiscal deficit goes up.

This represents Australia's goodwill and reputation in the eyes of foreign investors. On the contrary, Indonesia is an example in other direction. As the level of its deficit goes up, investors' become too cautious to invest in the country resulting in deceleration in capital flows. *Total External Debts is statistically significant for India and Colombia.* It postulates negative correlation with capital flows. As the indebtedness to the outside world increases, it leads to slowdown in capital flows perhaps raising apprehensions in the minds of foreign investors with regard to country's ability to meet its debt obligations.

VI. Conclusions and Policy Implications

Previous studies have failed to find any stable empirical relationship between capital flows and their determinants. However, this study suggests that we may be able to establish stable empirical relationships between capital flows and their determinants, provided that the fundamentals of the economy are fairly stable. A very important and significant implication of the study is that government policies should be directed towards improving the fundamentals of the economy, such as Gross Foreign Exchange Reserves, Gross Domestic Product and Total External Debts, if the intention is to attract capital inflows. Some of the other empirical findings of the paper are, first, gross foreign exchange reserves are one of the important factors affecting capital flows in all of the countries considered, regardless of any region or group. Second, the level of gross domestic product is another factor influencing capital flows, although this seems to be more relevant for countries in the non-Latin American group. Growth in the size of an economy can lead to an increase in capital flows because of growing investors' confidence. Third, previous studies find *LIBOR* to be a significant factor for mobilising capital flows in Latin American countries but it turns out to be insignificant in our study.

The empirical findings in our study are more robust in comparison to previous studies since we apply non-linear SUR estimation to arrive at our conclusions. However, we intend to investigate further the causes for the singular covariance matrices in the SUR estimation.

Table 1 - Ordinary Least Squares (OLS)

	Australia	India	Indonesia	Colombia	Mexico	Argentina	Brazil	Chile
Constant	**-0.3743 (-3.109)***	0.1885 (0.8129)	-0.6002 (-0.6724)	-0.1127 (-0.1733)	-0.1272 (-0.7029)	-0.7009 (-0.4355)	0.8092 (0.9314)	-0.1069 (-0.3043)
Libor (lib)	-0.3031 (-1.273)	**0.1955 (2.555)***	0.2357 (0.5677)	0.1856 (0.9926	0.9554 (1.181)	0.3432 (0.1865)	0.4453 (1.522)	**0.5848 (5.368)***
Inflation (inf)	-0.2387 (-1.389)	**-0.9901 (-3.122)***	0.9492 (0.1246)	-0.1287 (-1.818)	-0.1443 (-1.899)	**-0.3015 (-2.682)***	-10484 (-0.8001)	-0.3539 (-2.448)

External Debt (Exdt)	-4197 (-1.554)	0.00456 (0.9340)	0.00241 (0.0082)	-0.5031 (-1.725)	0.0367 (0.2282	-0.01100 (-0.2238)	0.9260 (1.446)	-0.2569 (-2.093)
GDP	0.00062 (0.1033)	-0.00273 (-1.369)	0.2218 (0.7015)	0.00244 (2.212)	0.4936 (1.848)	0.02402 (0.1567)	-0.00070 (-1.470)	-0.2259 (-0.9120)
Deficit (Def)	**-0.0605 (4.068)***	547.72 (0.0935)	0.000795 (1.519)	-0.00117 (-0.8062)	-0.2011 (-0.5800)	20.663 (1.488)	2.1478 (0.9034)	0.0121 (1.293)
Forex (Fx)	**0.0900 (3.585)***	0.00432 (0.5972)	-0.6460 (-0.6049)	-0.2678 (-0.6937)	1.0690 (2.064)	**0.90227 (3.090)***	**0.0080 (4.762)***	0.8990 (2.392)
Openness (Opn)	**0.1329 (2.626)***	0.3299 (2.361)	-0.3981 (-0.2243)	-0.2647 (-1.345)	-0.2148 (-1.486)	0.2799 (0.6279)	-0.4790 (-1.379)	0.4926 (1.253)
R-Sq.	0.8945	0.7223	0.7264	0.6160	0.7242	0.8340	0.8604	0.8655
Adj.R-Sq.	0.8535	0.6143	0.6200	0.4667	0.6169	0.7694	0.8061	0.8132
Durbin-Watson	1.493	.2005	1.4934	1.3246	1.9929	1.7628	1.2550	2.2529

(Figures in parenthesis are t-ratios)
****Significant at 5% level of significance***

Table 2 - Seemingly Unrelated Regression (SUR)

	2.1 - SUR (Australia, India and Indonesia)			**2.2 - SUR (Australia, Indonesia, India and Colombia)**			
	Australia	India	Indonesia	Australia	Indonesia	India	Colombia
Constant	-0.2927 (-3.213)*	0.1424 (0.7850)	-0.9111 (-0.1206)	**-0.2939 (-3.507)***	-0.1219 (-0.1691)	0.1390 (0.7712)	-0.2321 (-0.5668)
Libor (Lib)	-0.1971 (-1.050)	**0.1788 (2.866)***	0.1801 (0.5034)	-0.2465 (-1.378)	0.2518 (0.7404)	**0.1760 (2.830)***	0.1159 (0.9289)
Inflation (Inf)	-0.1984 (-1.492)	**-0.9003 (-3.626)***	-0.1839 (-0.2890)	-0.2426 (-1.949)	-0.6381 (-0.1085)	**-0.9094 (-3.688)***	-0.6111 (-1.275)
External Debt (Exdt)	-2658.0 (-1.285)	0.00140 (0.3700)	0.1546 (0.5587)	-3154.4 (-1.611)	0.3076 (1.190)	0.0016 (0.4218)	-0.1724 (-0.9326)
GDP	0.00049 (0.1032)	-0.00219 (-1.408)	-0.01097 (-0.03738)	0.00373 (0.8668)	-0.1395 (-0.5055)	-0.00215 (-1.392)	0.0010 (1.446)
Deficit (Def)	**0.05420 (4.771)***	3499.0 (0.7646)	0.00060 (0.3884)	**0.05863 (5.598)***	0.000485 (0.3347)	2835.2 (0.6228)	**0.00023 (3.045)***
Forex (Fx)	**0.07942 (4.108)***	0.00412 (0.7238)	-0.02465 (-3002E-01)	**0.06114 (3.425)***	-0.1978 (-0.2571)	0.00492 (0.8674)	-0.0596 (-0.2514)
Openness (Opn)	**0.1034 (2.701)***	**0.3366 (3.069)***	-0.1636 (-0.1096)	**0.9350 (2.706)***	0.4990 (0.3540)	**0.3332 (3.049)***	-0.8192 (-0.6693)
R-Sq.	0.8909	0.7051	0.6913	0.8846	0.6755	0.7056	0.6202
Durbin-Watson	1.2969	1.9018	1.0589	1.0968	0.9240	1.9155	1.0993
Log of the Likelihood Function	-1633.69	-1633.69	-1633.69	-2202.65	-2202.65	-2202.65	-2202.65

(Figures in parenthesis are t-ratios)
****Significant at 5% level of significance***

2.3 - SUR (Argentina, Brazil and Chile)			
	Argentina	Brazil	Chile
Constant	-0.1158 (-1.209)	0.4459 (0.8235)	-0.199 (-0.8504)
Libor (Lib)	0.2650 (1.902)	0.3464 (1.874)	**0.4999 (5.964)***
Inflation (Inf)	**-0.2469 (-3.123)***	-9129.8 (-1.162)	-0.2209 (-2.156)
External Debt (Exdt)	-0.0213 (-0.6970)	0.000055 (0.1380)	**-0.2857 (-4.200)***
GDP	0.03923 (0.4244)	-0.00016 (-0.5653)	-0.1135 (-0.6899)
Deficit (Def)	**0.03732 (3.220)***	-0.00122 (-0.9752)	-0.0034 (-0.4867)
Forex (Fx)	**0.6813 (3.613)***	**0.7910 (6.944)***	**1.2093 (4.569)***
Openness (Opn)	**0.4038 (1.430)**	**-0.5129 (-2.394)**	**0.4520 (1.597)**
R-Sq.	0.8582	0.9024	0.8585
Durbin-Watson	1.8139	1.5268	2.2026
Log of the Likelihood	-1639.90	-1639.90	-1639.90

Function			

(Figures in parenthesis are t-ratios)
****Significant at 5% level of significance***

Table 3 - Non-Linear Seemingly Unrelated Regression (SUR)

	3.1 - Non-Linear SUR (Australia, India and Indonesia)			**3.2 - Non-Linear SUR (Australia, Indonesia, India and Colombia)**			
	Australia	India	Indonesia	Australia	Indonesia	India	Colombia
Constant	**50***	**50***	**50***	**50***	**50***	**50***	**50***
Libor (Lib)	1.002	**1.001**	1.000	1.001	1.0000	**0.9999**	1.0000
Inflation (Inf)	-1.0001	**-1.0003**	-1.000	-1.001	-0.9999	**-1.0002**	1.0000
External Debt (Exdt)	-1.1729	-0.00139 (-0.2553)	**0.50780 (3.4491)***	-0.8569	-0.1015 (-1.1479)	**-0.0084 (-2.3760)****	1.0000
GDP	**0.5535 (-2.3308)****	**0.00799 (2.9179)***	**0.06945 (0.4841)**	**0.00292 (3.6429)***	**0.2182 (3.6518)***	**0.00167 (1.5075)****	**-0.2926 (-1.4428)****
Deficit (Def)	**0.0487 (4.0419)***	-1.0484	**-0.0022 (-2.8812)***	**0.06525 (11.910)***	**-0.00313 (-6.2267)***	-0.9945	**-0.000013 (-1.7067)****
Forex (Fx)	**0.03343 (1.9805)****	**0.0363 (2.8975)***	-0.53506 (-1.2677)	**0.01950 (1.8980)****	-1.1631 (-4.5641)*	**0.0129 (1.9371)****	0.00005 (1.0442)
Openness (Opn)	**1.0001**	**1.0001**	0.9999	**1.0000**	1.0000	**1.0000**	**0.4398 (3.1648)***
R-Sq.	0.8447	0.4378	0.8048	0.8502	0.6864	0.5144	0.7100
Durbin-Watson	1.4351	2.1120	1.3115	1.6607	1.5367	1.9185	1.9810
Log of the Likelihood Function	-2089.0049	-2089.0049	-2089.0049	-2872.4898	-2872.4898	-2872.4898	-2872.4898

(Figures in parenthesis are t-ratios)
****Significant at 5% level of significance***
*****Significant at 10% level of significancee***

3.3 - Non-Linear SUR (Argentina, Brazil and Chile)			
	Argentina	Brazil	Chile
Constant	**50***	**50***	**50***
Libor (Lib)	1.0000	1.0009	**1.0000**
Inflation (Inf)	-1.0028	-1.2401	-1.0002
External Debt (Exdt)	0.00042 (0.01172)	-0.00024 (-0.3852)	-0.05394 (-0.2915)
GDP	-0.01387 (-1.0028)	0.4430 (1.5320)	**0.7842 (2.9919)***
Deficit (Def)	0.00697 (0.4297)	-0.00011 (-1.0615)	-0.0080 (-0.8389)
Forex (Fx)	**1.2335 (6.8381)***	0.000851 (0.5510)	**1.9746 (4.3421)***
Openness (Opn)	1.0000	-0.5129 (0.9995)	**0.9999**
R-Sq.	0.7795	0.9368	0.7501
Durbin-Watson	1.5334	1.5179	1.8338
Log of the Likelihood Function	-2088.414	-2088.414	-2088.414

(Figures in parenthesis are t-ratios)
****Significant at 5% level of significance***
*****Significant at 10% level of significance***

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