Equity Market vs. Capital Account Liberalization: A Comparison of Growth Effects of Liberalizations Policies in Developing Countries.

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Equity Market vs. Capital Account Liberalization: A Comparison of Growth Effects of Liberalizations Policies in Developing Countries.

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Abstract

In this paper I consider the relative merits of alternate liberalization strategies that developing countries can adopt to improve their economic performance. I start first by testing the impact of different categories of capital flows on output growth to see if equity flows are better for a country than debt flows. I then take the argument further by comparing the growth effects of equity market liberalization with capital account liberalization, as a result of the type of inflows that are permitted. I use a dataset that consists of 58 developing countries covering the period 1975-2000 for my investigation. I find that equity flows, which include FDI and portfolio equity flows, do indeed have positive effects on output growth compared to debt flows which are not only more volatile but also have no effect in improving a country's economic performance. These results are further strengthened by the growth effects of the two types of liberalizations. Liberalizing their equity markets should be a priority for developing countries.

JEL Classification: F4, O4, C2.
Keywords: Equity market liberalization, Capital account liberalization, Growth.

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1. Introduction

The topic of international capital flows has attracted a lot of attention in recent years. The occurrence of financial crises in emerging countries during the 1990s has sustained this interest in the discussion of these financial flows. There have been a number of studies that aim at identifying the cause of these crises. These studies usually suggest that the financial structure of developing countries is vulnerable to large international capital flows. Strengthening the international financial architecture is one solution to try to reduce financial crises that arise due to sudden reversals in capital flows. Apart from the weakness of the financial system, the volatile nature of capital flows may have a role to play in precipitating these financial crises.[1] Capital flows have been classified as unstable hot money flows and the more stable cold money flows. Hot money usually exhibits low persistence and high volatility.[2] The study of the role of these different capital flows is interesting not only from the point of view of their ability to trigger crises, but also from the perspective of their individual impacts on economic growth.

Most developing countries have liberalized foreign capital flows only in the last two decades and these flows have picked up momentum in the 1990s. Over this period there has been a surge in the amount of capital flowing from developed to developing countries (see Figure 1). Net private capital flows to emerging countries increased from US$40 billion in 1990 to US$298 billion in 1997, following the Asian crises of the late 1990s there was a decline, but they have rebounded to about US$200 billion in 2003. Most of the flows in the 1980s took the form of bond finance, but since the mid 1990s equity flows have increased substantially.

While the beneficial effect of trade in goods and services on a country's economic performance, has been well documented and established in the academic literature, there is no such agreement

[1] E.g. Rodrik and Velasco (1999) suggest that excessive short-term debt lead to recent emerging market crises.
[2] The degree of persistence and level of volatility are related issues. Time series that exhibit low persistence are ones with high volatility.

regarding the free flow of capital. The empirical evidence on the effect of capital mobility on growth is less conclusive. Theoretically capital mobility can be beneficial, because it frees countries from their savings investment constraints by allowing them to borrow foreign savings to finance higher demands for productive investment in human and physical capital. It allows consumption smoothing as a result of risk sharing, which protects agents against bad states of nature and dampens the effects of business cycles, leads to better allocation of resources, along with opportunities for portfolio diversification.

Although the debate over whether emerging countries should liberalize their capital account continues fervently, there is need for a clear definition of the term capital account liberalization (CAL) that should be used in making these arguments.[3] Terms such as financial liberalization, capital account liberalization and equity market liberalization (EML) need clarification. The importance of correctly defining these terms lies in the different types of capital flows associated with a particular liberalization, the characteristics of those flows and their effects on the real economy. For example, equity market liberalization is a type of capital market liberalization, which allows foreigners to purchase shares in the domestic equity market. Thus while liberalizing some capital flows, it doesn't permit all types of capital to enter the country as would a capital account liberalization.

The distinction between equity market liberalization and capital account liberalization lies in the different type of capital that is allowed to enter the country under the particular liberalization. While equity flows will flow in when the equity market is liberalized, capital account liberalization will allow all types of capital, both equity and debt, to flow in.

The four categories of capital flows – foreign direct investment (FDI), portfolio equity investment, portfolio bond investment and bank lending – can be grouped under the two broad categories of equity and debt. Equity flows include, FDI and equity portfolio flows, whereas debt flows usually include bond finance, commercial bank lending and official lending by governments or other

[3] See Henry (2003) for a discussion of this issue.

official agencies such as the World Bank and IMF. With this type of finance the debtor must repay the face value of the loan, plus the interest regardless of its own economic situation. Thus a liberalized stock market encourages FDI and equity portfolio.

Debt and equity flows have very different characteristics and may affect the economy in different ways. The questions of interest include: Which capital flows are considered "hot" money and which are "cold" money? Which types of capital flows have a greater impact on economic growth? What is the evidence on the growth effects of capital account liberalization compared to equity market liberalization across countries? Because they permit different varieties of capital to flow in, do different types of liberalization have different growth effects?

A number of studies have looked at the impact of open capital markets on growth. The results go both ways with a number of studies showing no effect of capital mobility on growth, while others showing some positive effect on growth.[4] There are however only a handful of studies that have looked at the growth impact of individual capital flows.[5] These studies show that there is strong evidence that FDI has a positive impact on growth, but they also find that portfolio equity investment also has a degree of positive influence on growth. These conclusions suggest that there may be differences in the growth rates of per capita GDP of countries that follow equity market liberalization compared to those liberalizing their entire capital account. Using country specific evidence on the type of liberalization and the liberalization dates (Appendix C) along with data on individual capital flow series, I have tried to study whether indeed some forms of capital inflows are better for developing countries than others in explaining future output growth.

I use a sample of 58 developing countries for the period 1975-2000, and employing a dynamic panel estimation technique, I study the impact on output growth, of various capital flows as well as the

[4] A brief review of these studies is provided in the related work section.
[5] Borensztein, De Gregorgio and Lee (1998), Gruben and McLeod (1998), Soto (2000), Reisen and Soto (2000), Reisen and Soto (2001).

liberalization regime in place to see if there is any strength in the argument that some capital flows are more stable than others (viz. FDI and Portfolio equity flows) and are likely to have positive effects on growth (see Figure 2).

I find that countries can achieve higher rates of growth by opening their stock markets to foreign investors before opening their entire capital accounts. Equity such as FDI or portfolio equity flows have a strong positive and significant effect on output growth. Equity flows on average lead to a 1.4 % increase in output growth. Debt flows on the other hand, portfolio bond flows and bank loans, have negative or no significant effect on output growth. On average debt flows reduced growth by about 0.6%.

The rest of the paper is organized as follows: section 2 discusses the existing literature on the growth effects of capital account and equity market liberalization as well as the studies that look at effects of individual categories of capital flows. Section 3 briefly describes the theoretical background, section 4 explains the empirical growth model that is estimated, the estimation procedure and the data. Section 5 provides the results, section reports impulse response functions and finally section 7 concludes.

2. Related Research

There is an abundant amount of existing research in the area of international finance and its impact on the economy. There are four strands of the literature that I combine to explain my thesis. I consider the underlying characteristics of the various types of capital flow to determine whether they can be classified as Hot or Cold flows. The next step would be to look at the impact of these flows on economic growth and finally a look at how different liberalizations affect growth. A brief overview of the literature on each of these strands is needed to relate my paper to existing work.

The first area of related work looks at the times series properties of different capital flows. An often-cited paper in this area is one by Claessens, Dooley and Warner (1995). Studies prior to theirs concluded that short-term flows were the most volatile and long-term flows were least volatile. They focus on this conventional reasoning that one can draw reliable inferences about persistence of capital flows based on the data categories given in the official balance of payments statistics i.e. that one can infer persistence from labels. They instead test if one can infer labels from persistence i.e. if presented only with time-series statistics on persistence, whether one can identify the label of the flow. Using time-series analysis of balance of payments data for ten industrial and developing countries they show that often the labels do not provide information about the time-series properties of the flow, particularly, long-term flows are often as volatile as short-term flows.

A closely related study by Chuhan, Presez-Quiros and Popper (1996), however finds empirical support for conventional wisdom that short-term capital investment is hot money and direct investment is not. They examine the behavior of four major components of international capital flows in 15 developing countries. They find that short-term flows are more sensitive than direct investment.

Another study that finds some support for the conventional ideas is Sarno and Taylor (1999). The look at the relative importance of permanent and temporary components of capital flows to Latin American and Asian developing countries. They find low permanent components in equity, bond and official flows, while commercial bank credit contains quite large permanent components, foreign direct investment is almost entirely permanent.

How these different type of capital flows affect growth comprises a separate area of the literature. Borensztein, Gregorio and Lee (1998) test the effect of foreign direct investment (FDI) on economic growth in a cross-country regression framework, utilizing data on FDI flows from industrial countries to 69 developing countries over the last two decades. Their results suggest that FDI is important for the transfer of technology, contributing relatively more to growth than domestic

investment. However, the higher productivity of FDI holds only when the host country has a minimum threshold stock of human capital.

Gruben and Mcleod (1998), for a group of 18 developing countries find that increases in the share of FDI to GDP are positively and significantly related to changes in GDP. They find similar results for the share of portfolio equity capital flows to GDP. They find little evidence that capital flows offset savings, but rather that FDI and portfolio equity flows have positive and significant effects on savings, while other types of flows have mixed and insignificant effects.

Reisen and Soto (2001) explore the benefits of private capital flows and the independent growth impact of various broad categories of flows in recipient emerging markets. Using panel data analysis for 44 countries over the periods 1986-97 they measure the independent growth effect of foreign direct investment, portfolio investment, portfolio bond investment, as well as short-term and long-term lending. Their findings suggest that developing countries should not solely rely on national savings, but rather should encourage foreign direct investment and portfolio equity inflows so as to stimulate long-term growth prospects.

Given the implications of the different type of capital flows, the next step would be to consider the evidence from the studies on the growth effects of liberalizations. This literature can be classified into two distinct approaches: effects of capital account liberalization and equity market liberalizations.

The literature on capital account liberalization provides some mixed results on the effects of liberalization. One of the earliest studies in this area by Alesina, Grilli and Milesi-Ferretti (1994), finds no significant effect of openness on growth. Their results are based on a study of 20 industrial countries from 1950s to 1990s. They find that the effect on growth was small. Their study was followed by a study by Grilli and Milesi-Ferretti (1995), who used a larger sample of 61 countries but also found the same negative effect of openness on growth. This study was extended by Rodrik (1998) to a larger sample of countries, but again with the same results of no effect.

There are similarly a number of studies that show that there is a positive effect of liberalization. Quinn's (1997) study showed positive results. However Quinn developed a more complex measure of capital account liberalization. His scale ranged from zero to eight. He considered the impact of both capital account openness and a change in openness and found a positive association to growth. His study thus suggests that the evidence of negative or no effect may have been a result of the measure of openness used. The study does not address the issue of endogeneity, i.e. that policies may be affected by the level of economic growth of the country. Edwards (2001) dealt with this issue, where he used lagged values of capital account openness, along with other variables as instruments, to overcome the problem of endogeneity. He still found positive results for the effect of capital account openness on growth but this is limited to high-income countries. Edison, Klein, Ricci and Slok (2002) find that this relation is stronger in emerging markets, especially Asia.

The other strand of this literature is related to looking at the effects of equity market liberalization, which is a type of capital account liberalization. Bekaert and Harvey (2000) find that liberalizing emerging equity markets leads to a decrease in the cost of capital. Bekaert, Harvey and Lundblad (2001) try to drive out the liberalization effect by using a number of other variables that could explain growth but are unable to and find that equity market liberalization leads to a 1% increase in real per capita GDP growth over a five-year period. Henry (2000a, 2000b) finds that equity market liberalization leads to not only an increase in equity prices but also to investment booms, which could have positive effects on growth.

I tie these different strands of literature together to try and understand if capital flows differ in their growth effects and if so, does that provide an insight into a particular type of liberalization countries should favor. As the brief review of the literature above shows, there has been no comparison of the effects of equity market liberalization with those of capital account liberalization. The contribution of this paper is in comparing the output effects of different liberalization decisions.

3. Liberalization, Capital Flows and Growth

Theory suggests that foreign capital flows can have beneficial effects on the economy. A lack of domestic savings can restrict the amount of domestic investment a country can undertake. The use of foreign savings relaxes constraints many developing countries face in terms of their ability to finance the higher domestic demand for productive investment in physical capital. It allows consumption smoothing as a result of risk sharing, which protects agents against bad states of nature and dampens the effects of business cycles. It leads to better allocation of resources, and provides opportunities for portfolio diversification.

Improved risk sharing reduces the cost of capital to firms, which allows them to undertake additional investment. If an emerging country's stock market is segmented from the rest of the world then equity market liberalization should make a country's equity market more integrated with world markets. This should result in a fall in the equity premium, thereby reducing the cost of capital. Along with improved risk sharing, stock market liberalization can lead to more liquid markets. Increased liquidity also reduces the equity premium, which decrease the cost of capital and raises firm value.[6]

We can enumerate the benefits and risks of various types of capital flows. Benefits of capital flows include their ability to add to domestic savings and increase capital accumulation, increased efficiency either through better resource allocation, deeper financial markets or reducing the cost of capital, and finally lowering consumption risk that arise due to the uncertain states of nature, through portfolio diversification.

The risks related to capital flows arises from: increased welfare losses due to distortions in consumption and production patterns; and the bankruptcies that arise as a result of sudden reversals of capital flow.

[6] For a complete theoretical explanation see Henry (2000b).

Can the benefit and risk characteristics of the different types of capital flows provide an insight into their individual growth effects? It is argued in studies like Claessens et al (1995) that data on these flows as labeled in the balance of payments accounts do not provide much information for policy purposes. Chuhan et al (1996) and Sarno and Taylor (1999) on the other hand, do find that different flows do exhibit varying degrees of permanent components. Flows with large temporary components are usually less persistent and may exhibit a high degree of reversibility. These reversible flows, especially short-term foreign debt flows as a ratio to foreign exchange reserves have been identified as a predictor of financial crises (Rodrik and Velasco 1999).

Another question related to the nature of capital flows is whether they aid in capital accumulation and thereby enhance productive capacity or if the flows are used for consumption and are less likely to have an impact on the productivity of the economy. While FDI is found to stimulate domestic investment rather than crowding it out through increased competition, debt flows are used more for consumption purposes.

Given these differences in capital flows a look at their benefits and risks can provide policy prescriptions regarding what flows should be encouraged, since destabilizing flows may impede rather than improve output growth.

3.1. Characteristics of Different Capital Flows

The properties of different flows are enumerated below. I list the pros and cons of equity flows and debt flows. These help develop some priors that the literature provides.

3.1.1 Equity Flows

We can distinguish between FDI and portfolio equity flows on the basis of the difference in the share of ownership in an enterprise. Equity holdings in excess of 10% are considered to be direct investment.

Foreign Direct Investment

FDI can be defined as "a firm largely owned by residents in a developed country that acquires or expands a factory or subsidiary firm located in a developing country," (Sarno and Taylor 1999). Some of the important features of FDI include: the accompanying knowledge and technology spillovers introduced in the host country improved technology that may otherwise have been hard to come by; the irreversible nature of FDI during periods of financial distress, may help smooth consumption patterns; it acts as a source of foreign savings to developing countries during crises; and improves efficiency in the economy. Another advantage of FDI is that it is not plagued by information asymmetries between lender and borrower like other flows such as equity and bond flows.

Sarno and Taylor (1999) note that the literature on sunk cost of physical investment points out that although the physical investment maybe irreversible, it does not imply that the flow of funds for such investments are also irreversible. However it is also likely that once a firm has made an investment in a country it would have done so after extensive research into the country's fundamentals and will not be affected by herd behavior like other flows, making FDI more permanent. Also direct investment by one firm may act as a signal to other firms that the country has sound fundamentals and is safe to invest in.

Portfolio Equity Flows

Equity flows are an important means of finance for firms in developing countries. Equity flows are believed to reduce the cost of capital, which allows firms to undertake projects that were previously high in cost, thereby increasing investment. As countries liberalize their equity markets, inflows of portfolio funds should stimulate economic growth. However with much uncertainty surrounding emerging countries, in their financial and political environments, emerging market equities are under represented in investor's portfolios and may be affected by cyclical conditions in developed countries

and herd behavior during crisis. Equity markets are also highly liquid and have low transactions cost which along with herd behavior makes these flows very volatile.

3.1.2 Debt Flows

Debt flow include portfolio bond flows, bank loans from developed to developing countries, trade credit etc. The previous era of international financial under the gold standard from 1870 to 1914, was one of sovereign debt flows. Flows from the leading European centers such as London, Amsterdam, Paris etc, were sent to less developed countries, mostly colonies or dominions like Canada, Australia and newly independent countries like the U.S. Higher returns on investment in these countries attracted investors in Europe. These funds that foreign governments borrowed played an important role in development in building railways, roads, bridges and other infrastructure.

In the second era of international finance that began after the end of the Bretton Woods, debt flows played an important role. Throughout the 1970's and 1980's international capital flows were mostly in the form of debt flows. During the 1980s, Latin American countries experienced a severe debt crisis and as result capital flows ceased for a few years. However the 1990s have been predominantly an era of equity finance.

There is not much literature on the benefits of debt flows. Policy recommendations usually emphasize encouraging equity flows and avoiding debt flows. Debt flows were considered for their consumption smoothing benefits to protect against adverse states of nature. Debt flows as a rule must be serviced first before equity flows, irrespective of the financial condition of the borrower. Stockholders on the other hand may only share in the earning of the firm and are not entitled to anything in the years the firm makes no profits.

Short-term debt and portfolio bond flows are easily affected by small disturbances in the economy, making them very volatile and easily reversible.

4. Model, Estimation and Data

4.1. Model and Estimation

I use an empirical growth model to estimate the effects of the different types of capital flows as well as two types of liberalizations policies on growth. As a standard practice in the growth literature, researchers use either country cross-section data with a vector of contemporaneous independent variables to explain the determinants of growth, or panel techniques in which they use five-year average observations to capture the long run dimension of growth. These are estimated using either OLS or instrumental variables using past levels of the variables as instruments. Since a number of emerging countries only recently liberalized their markets and portfolio equity inflows have picked up momentum only in the 1990s, there is not sufficient data on capital flows to use five-year averages. I therefore use annual observations to estimate my model.

Casselli, Esquivel and Lefort (1996) criticize the endogeneity problem inherent in many of these regressions which are estimated using fixed or random effects. Following their approach, I use a Generalized Method of Moments (GMM) instrumental panel estimator, proposed by Arellano and Bond, on differenced data to capture the cross-country evidence as well as the temporal aspects of changing patterns in international capital inflows, while keeping in mind the need for consistent estimators.

The model can be represented by the following equation, which shows that the path of output growth is described by:

$$y_{it} = \alpha y_{it-1} + x'_{it-1}\beta + \gamma D_{it} + u_{it} \qquad (1)$$

where y_{it} is the growth rate of per capita gdp, which depends on its own lag and x_{it} the vector of explanatory variables. β is the vector of parameters, D_t is the liberalization dummy, γ is the coefficient on the dummy and u_{it} is the error term. We can decompose u_{it} as follows:

$$u_{it} = \mu_i + v_{it} \quad (2)$$

where $\mu_i \sim$ IID $(0, \sigma_\mu^2)$ is the country specific effect which does not vary over time for each country and $v_{it} \sim$ IID $(0, \sigma_v^2)$ independent of each other and among themselves.

In equation (1) since y_{it} is a function of μ_i, y_{it-1} is also a function of μ_i. Therefore y_{it-1} a right hand side regressor in equation (1) is correlated with the error term. Thus estimating equation (1) using standard techniques like OLS renders the estimator biased and inconsistent.

Therefore Arellano and Bond suggest a two-step GMM estimator that gives consistent estimates provided there is no second order serial correlation among the errors. To obtain consistent estimates of α and β, we can take a first difference of equation (1) to eliminate the individual country specific effect μ_i, which gives the following equation:

$$y_{it} - y_{it-1} = \alpha(y_{it-1} - y_{it-2}) + (x'_{it-1} - x'_{it-2})\beta + (v_{it} - v_{it-1}) \quad (3)$$

For equation (3), a valid instrument to use is y_{it-2}, since it is highly correlated with $(y_{it-1} - y_{it-2})$ but not with $(v_{it} - v_{it-1})$. Apart from a lagged dependent variable that is correlated with the error term, the growth equation usually includes some or all X's that may be correlated with the disturbance term again resulting in inconsistent estimates. To correct for this, the set of instruments includes not only lagged values of the dependent variable but also lagged values of the regressors. Arellano and Bond suggest using levels of past values of the regressors as instruments.

Arellano and Bond (1991) propose a test for the null hypothesis of no second order serial correlation between the errors of the first differenced equation (3). The importance of this test arise because the consistency of the GMM estimator relies on the condition that $E[\Delta v_{it} \Delta v_{it-2}] = 0$. The Sargan test is a test for over identifying restrictions. A detailed description of the Arellano Bond estimator and test and the Sargan test are given in appendix A.

The problem of endogeneity relates also to the decision to liberalize. Is liberalization an exogenous political decision or do better future growth prospects compel countries to liberalize? Bekaert, Harvey and Lundblad (2001) and Sachs and Warner (1995a) believe that this decision is more driven by future growth prospects when a country joins a club like the EU where membership require simultaneously relaxing capital controls and better growth conditions. Since there are no such countries in my sample I consider it safe to assume that the decision to liberalize is an exogenous political one.

In equation (1) above, we are interested in capturing the effect of D_{it} which is the 'event' or 'treatment' and γ is the parameter that gives the effect of the treatment on the outcome variable $y_{it.}$ A problem with this approach is that the treatment variable, liberalization is not a random outcome. As a result we will encounter a sample selection bias. If not corrected, this will lead to specification error due to omitted variables. The effect of the treatment will be a biased estimator of the true effect on y_{it}.

To correct for this it is important to estimate a treatment effects model. This involves a two-step procedure. To do this we need:

$$D_{it} = \begin{cases} 1, & if \quad D_{it}^{*} \geq 0 \\ 0, & otherwise \end{cases} \qquad (4)$$

$$D_{it}^{*} = w_{it}\delta + \varepsilon_{it} \qquad (5)$$

D_{it} in equation (4) is the liberalization treatment dummy and is assumed to be dependent on a unobserved latent variable D_{it}^{*}, which is given in equation (5) and assumed to be linearly dependent on

a vector of variables w_{it}. Some of the variables in w_{it} may be the same as those in x_{it} but they should not be identical.

The two-step procedure involves first estimating the treatment equation (5) using a probit regression. The conditional probabilities from this probit regression are then used as instruments in the outcome equation (1) to estimate the effect of liberalization on the variable of interest.

4.2. Data

The sample extends from 1975-2000 and consists of 58 developing countries, which are listed in Table 1. The countries are grouped according to the kind of liberalization they have undertaken. The data are annual and are constructed primarily from the World Bank's World Development Indicators (WDI) and Global Development Finance (GDF). Data for the various capital flows are measured as a ratio to GDP. FDI, portfolio equity flows, portfolio debt flows are net flows i.e. they are the sum of capital and reinvested earning.

The relation is estimated controlling for other variables which include, gross domestic savings, government consumption to account for the size of the government sector, trade openness is accounted for by including a measure of total trade which is the sum of exports and imports as a ratio to GDP and finally a terms of trade variable.

I also use data on private credit to the domestic economy, stock market capitalization, total value of traded stock, and private and public bond market capitalization, as various measure of financial and stock market development. All these variables come from the World Bank's Financial Structure and Economic Development Database. Country income level classification data is also used which comes from the Global Development Network Growth Database also by the World Bank.

Liberalization dummies are used for equity market, capital account and trade liberalization. These dummies are measured as a 0–1 indicators, where a value of 1 indicates liberalization in that

year and 0 implies no liberalization. These dummies have been constructed from a number of different sources, using the dates of liberalization that are provided.

Equity market liberalization dates come from Bekaert and Harvey (2000). They choose to use 'official liberalization' dates. According to their definition, the official equity market liberalization date is the date when foreign investor had the opportunity to officially invest in domestic securities and when domestic investors could invest in foreign security markets. Using annual data keeps the errors of timing these liberalization dates small.[7]

Capital account liberalization dates come from Wyplosz (2001). Trade liberalization dates are from Wacziarg and Welch (2003), they extend the Sachs and Warner (1995) methodology to cover the 1990s. They construct this dummy using five individual dummies for specific trade related policies as do Sachs and Warner.[8]

[7] See BHL (2001) p.10.

[8] These five dummies include: average tariff rates of 40% or more, nontariff barriers covering 40% or more of trade, a black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s, a state monopoly on major exports and a socialist economic system. A detailed description can be found in their paper.

5. Results

This section reports the results. I start with a summary of the data, followed by correlations between certain key variables. Using the autocorrelation functions I study the persistence of different flows, followed by the results of the dynamic panel estimation technique where the dependent variable list includes output growth, investment and consumption, first for different capital flows and then for different types of liberalizations.

5.1. Preliminary Results

5.1.1 Summary Statistics

The data is summarized in Table 2. Panel A of Table 2 provides summary statistics for the full sample of various macro variables that have been used in the estimation. Panel B contains statistics on various capital flows. Panels C and D present the statistics separately for liberalized and non-liberalized equity markets, capital account and trade. In panel C the various dependent variables, GDP growth, and the components of GDP viz. investment and consumption are summarized. The mean GDP growth and Investment are higher and growth is less variable under liberalized regimes than under non-liberalized, whether it is equity market, capital account or trade liberalization. While GDP growth is in the neighborhood of 2.5% under the various liberalizations, it is only 1.39% for the full sample and often lower for the non liberalized periods. The same is true for investment; the liberalized periods show higher investment rates than the non-liberalized period and even the full sample. In contrast consumption is uniformly lower during all forms of liberalization.

Capital flows are shown in panel D. Apart from long-term debt flows all types of capital flows are higher under liberalization.

5.1.2 Correlations

Contemporaneous pairwise correlations are shown in Table 3. Panel A presents correlations between equity market, capital account liberalization and the various dependent variables. Both types of liberalizations are positively correlated with GDP growth and Investment but negatively correlated to consumption. Significant correlations are represented with asterisks. Panel B shows the correlation of different capital flows with the two liberalizations. Apart from long-term debt, all other capital flows have positive, significant correlations with liberalization. Without accounting for other factors it is hard to base conclusions on these correlations and therefore liberalization effects are explored in detail below using panel estimation technique.

Panel C and D present correlations between capital flows and the various dependent variables and correlation between the various liberalization EML, CAL and TRADE respectively. Bank loans and long-term debt are negatively correlated with growth, though the correlation with long-term debt is not significant. Consumption is negatively correlated to all capital flows.

5.1.3 Volatility of Capital Flows

Volatility of aggregate capital flows can be captured either by the coefficient of variation (CV) shown in Table 4 or the autocorrelation functions shown in Figure 3.[9] Long-term debt has the lowest CV, followed by bank loans and FDI, with short-term debt having the highest CV. Highly volatile flows are low in persistence. A good measure of persistence is provided by the autocorrelation functions. Persistent flows will be positively autocorrelated, whereas more volatile flows will have low or negative autocorrelation. Figure 3 shows that FDI and portfolio equity flows to be very persistence

[9] There are a number of measures of volatility, such as, the standard deviation of the different type of capital flows, coefficient of variation (CV), which is the ratio of the mean to standard deviation of a time series. A higher coefficient of variation implies a higher volatility. Another measure of volatility is the autocorrelation function which measure persistence of a series.

with strong positive autocorrelation, followed by portfolio bond flows. Short-term and long-term debt both show very low persistence, while bank loans appear to be somewhere in the middle.

The CV and autocorrelations both give opposing conclusions about the volatility of capital flows. Other than short-term debt, which appears to be the most volatile according to both measures, it is not possible to rank the remaining flows in order of volatility.

5.2. Growth Regressions

5.2.1 Growth Effects of Capital Flows

To study the effects of liberalization on growth, it is necessary to look at the growth effects of the underlying capital flows that will flow into a country once the markets have been liberalized. The type of flows countries should encourage depend on how conducive to growth each type of flow is. Policy usually encourages emerging countries to attract equity rather than debt inflows. Countries with strong banking and financial sectors could benefit from both types of flows. However developing countries usually do not possess the needed financial architecture to benefit from all types of flows.

The regressions in Table 5 include some of the variables used in empirical growth regression along with the various capital inflows to capture their effects on the growth rate of output, as well as on investment and consumption both measured as ratios to GDP. Significant coefficients are represented by asterisk, with two asterisk denoting significant at 1% level and one asterisk at 5%.

A surprising result from these regressions is the negative but significant coefficient on savings. Some authors make the argument that this result may be due to adjustment costs or fragile financial systems which may be a source of decreasing returns to savings.[10] Correcting for this problem involves specifying a non-linear relationship between the savings rate and growth. This is done because the non-

[10] See Soto (2000). According to him "wastefulness could grow with deficiencies in the financial system and increases in funds transferred from savers."

linearity indicates that above a certain threshold, an increase in the savings rate will not add to the growth of output. Including a squared savings term in my regressions didn't correct the negative sign on the savings rate.

The remaining variables conform to theory and other empirical studies. Lagged GDP has a coefficient of 0.17. Government consumption has a negative and significant coefficient, which is consistent with other empirical findings that government intervention creates distortions in the economy.

The coefficient on trade, which is the sum of export and imports as a ratio to GDP, is 0.186 and is significant. This result is also in agreement with the conclusions from the literature on growth and trade, where trade has a positive effect on growth. Finally the coefficient on change in the log term of trade is also positive and significant.

The variables on capital inflows include FDI, portfolio equity flows (PEF), portfolio bond flows (PBF), commercial bank loans, short-term debt and long-term debt. The first two regressions show the effect of various capital flows on growth. Regression 1 includes FDI, PEF, PBF and Bank loans. The first regression shows strong evidence of the different response of growth to equity flows as compared to debt flows. FDI and PEF flows have positive and significant effects on growth. A one percent increase in the FDI to GDP ratio leads to a 0.727 percent increase in GDP growth. Similarly a one percent increase in PEF is accompanied by a 2.069 percent increase in growth.

On the other hand bond flows and bank loans either have no significant effect on growth or have a negative effect. The coefficient values are -0.0823 for bond flows which is not significant and -0.5160 on bank loans which is significant at less than 1 percent level. The second regression includes apart from the capital flow variables from regression 1, short-term and long-term debt. The coefficients on most of the variable do not change much, short-term debt appears to have a negative effect on growth with a significant coefficient of -0.159 which is in line with the debt flow results from

regression 1, since short term flows tend to be more volatile and may trigger financial crises which many studies have found negatively affect growth. Long-term debt on the other hand has a positive impact on growth.

The remaining columns show the same regression for investment and consumption both measured as ratios to GDP. In columns 3 and 4, debt flows either have no significant effect or negative effects on investment. Portfolio equity flows on the other hand have a large positive effect on investment. A reason for this may be that larger equity flows to a country, reduce the cost of capital, as a result of which previously costly projects are now undertaken which increase investment in the economy.

FDI however has a negative impact on investment with a coefficient about -0.187. Thus it appears that FDI crowds out domestic investment perhaps because large foreign firms may be able to reduce production cost forcing smaller domestic firms out of business due to increased competition.

Debt flows it is thought are used more for consumption purposes rather than productive investment. The results described above are in line with this conjecture. Columns 5 and 6 show the effects on consumption. In column 5 apart from FDI all other capital inflows increase consumption. The result is not surprising for debt flows though it may be a little surprising for equity flows. When short and long term debt are added in regression 6, the result on bank loans changes.

The estimates are useful only as along as they are consistent. For this purpose the Sargan test statistic and the Arellano Bond test statistic are reported at the bottom of Table 5. Both test statistics reject any correlation between instruments and residuals as well as second order correlation in the residual and thus we have consistent estimates.

5.2.2. Growth Effects of Liberalization

The next natural step would be to see if there are differences in the growth effects of different forms of liberalization. Table 6 reports these results, which are organized just as the results in Table 5. The first two regressions pertain to growth, and the remaining to investment and consumption. Column 1, shows the effect of equity market liberalization (EML) on growth. There is a positive and very significant effect of EML on growth. Equity market liberalization increase annual growth by 3.8 %.

The second column reports the effect of capital account liberalization on growth. This effect is not significant, even thought the coefficient is positive. Equity market liberalization has a larger and more significant effect on a country's performance than liberalizing its capital account.

Columns 4 and 5 show the effect on investment. The surprising result here is that EML has a negative effect on investment. Almost all other studies of equity market liberalization find positive effects on investment (Henry 2000b, 2003, Bekaert et al 2000, 2003). Liberalizing the capital account improves investment levels in the country.

Consumption on the other hand is reduced when either type of liberalization is undertaken, though a more open capital account reduces consumption by more than an open stock market. These results on consumption tie in with the results reported in column 6 of Table 5, where FDI, Bank loans and Long-term debt all reduce consumption. The coefficients are consistent as seen from the Sargan and Arellano-Bond test statistic.

5.3. Financial Development and Liberalization

There is a large literature on the effects of financial development on growth. Thus it is important to take into account the level of a country's financial development and how the effects of liberalization may vary depending on this development. To study this aspect I look separately at the

development of the stock market and at the overall financial development of an economy. These results are explained in detail in the two sections below.

5.3.1 Stock Market Development and Effects of Liberalization

Equity market liberalization is a policy that allows foreign investor to buy domestic equities. To be able to undertake equity market liberalization a country should have a stock market. Given the existence of a stock market, the development of the domestic equity market will determine the benefits the country can derive from this liberalization. We may expect that with better developed stock markets, the growth effects of liberalization will be higher. A measure commonly used to capture the development of the stock market is the stock market capitalization as share of GDP. This serves as a proxy for the size of the stock market. This effect is captured by including an interactive term between stock market capitalization and the EML and CAL dummies.

Table 7 reports the effects of having a better developed stock market. Column 1 reports the effects of equity market liberalization. The coefficient on EML is still positive and statistically significant. There is also a positive and significant coefficient on the interaction term, which implies that there is an additional growth effect of having a larger stock market. For a 1% increase in stock market capitalization, there is an additional growth effect of 0.045%.

In the second column neither the CAL dummy nor the interaction term has any effect on growth. This is likely since CAL allows all types of inflows not just equity flows, the development of the stock market may have little ability to impact the growth effects of debt flows. Therefore to account for the growth effects of these debt flows I include other measures of financial development discussed in section 5.3.2 below.

5.3.2 Financial Development and Effects of Liberalization

As a measure of financial depth I use a World Bank measure developed by Beck, Demirguc-Kunt and Levine (1999). They have three separate measures which include: FD1 defined as the ratio of private credit to GDP; FD2 defined as private credit plus stock market valuation to GDP; and FD3 defined as FD2 plus private and public bond market capitalization as a share of GDP. I use their last measure FD3 which accounts for private credit, the stock market as well as bond market capitalization to capture the overall financial development of the economy. I call this measure FD. The results are reported in Table 8. In column 1, the effect of financial development with EML is considered using an interactive term with the liberalization dummy and the financial development variable. The coefficient on this term is positive and significant at the 10% level. For capital account liberalization, the dummy has no significant effect on growth but the interactive term has a positive and statistically significant effect on growth. Thus countries with better developed financially systems can reap larger benefits of growth. A 1% increase in financial depth variable leads to a 1.925% increase in growth rate of output.

5.4. Macroeconomic Reforms and Liberalization

I include other macroeconomic reform variables to see if the change in growth rate may be a result of other economic factors not accounted for. To correct for this possible error I include a trade liberalization dummy. I estimate a model that includes EML, CAL and trade liberalization. Table 9 presents these results. As seen in column 1 the coefficient on EML gets bigger and is still significant when other policy reforms are added to the same regression. This coefficient is now 5.030. CAL has a negative and insignificant effect on growth. Trade liberalization increase growth by 1.485, a result confirmed by a number of other studies on the relation between trade and growth.

Another macroeconomic policy reform pursued by countries is inflation stabilization. This policy action may also contribute to higher growth effects in the economy. In column 2 and 3, I include

along with the two liberalization dummies, the inflation rate calculated using the GDP deflator. There is not much change in the liberalization variables. Inflation however has a negative significant effect on growth as has been found by Barro (1997), and this is usually driven by very high inflation rates as seen in Latin American countries. I introduce a dummy for Latin America, which now produces a positive significant effect of inflation on growth.

Having captured the effects of liberalization on growth, I now shift my focus from output effects to the effect on the capital flows itself. In section 6 below I look at how capital flows respond to currency crises or a liberalization policy.

6. Capital Flows, Crises and Liberalization

A final issue I would like to address in this section is that of the response of capital inflows to a shock to the economy, whether a negative shock such as a currency crisis or a positive one such as the reduction or complete removal of capital controls.

The 1990s have been witness to a fair number of financial crises in developing countries. During these crises, a natural reaction by investors is the timely withdrawal of their resources to safeguard their investment in emerging markets hit by financial turmoil. While it is interesting to study the output losses as a consequence of these turnarounds, looking at the behavior of these reversals after a crisis is in itself important. How do different flows behave after a particular crisis event? How long do flows take to recover after the crisis? Which flows are the first to recover? These are some of the questions that can be studied.

Using impulse response functions I conduct an experiment of the reaction of flows to a shock to the system. Figure 4, 5 and 6 below show the effect of a one-time shock and the response of four capital flow series, FDI, portfolio equity and bond flows and bank loans measured in millions of US$. The data for this experiment is quarterly starting with the first quarter of 1980 and ending in the fourth

quarter of 2000. The sample contains 23 countries[11], the remaining countries are dropped due to lack of data. The data come from the IMF's International Financial Statistics.

Each flow is represented by an autoregressive model with three lags, a contemporaneous and a one-period lagged shock variable to capture a delayed response of the shock.

$$CF_t = \alpha_0 + \alpha_1 CF_{t-1} + \alpha_2 CF_{t-2} + \alpha_3 CF_{t-3} + \gamma_0 D_t + \gamma_1 D_{t-1} + \varepsilon_t$$

where CF – capital flows, D – is the one time shock to they system (either a currency crisis dummy or a liberalization policy dummy).

Figure 4, shows the effect of a currency crisis on the various capital flows. In panels (a), FDI falls immediately following a crisis by about $20 millions but recover soon after in the second quarter. Portfolio equity flows in panel (b) also fall to a much greater extent than FDI by about $500 million and are slightly slower in their recovery with a marginal increase in the third quarter. The remaining two flows bond flows and bank loans, fall by around $800 million and $ 600 million respectively and take about two year (eight quarters) to return to their pre crisis levels.

These impulse response functions are consistent with the results elsewhere in the paper that confirm the instability of debt flows and slower recovery periods.

Figures 5 and 6 show the impulse response functions after a country pursues a policy of liberalization. In figure 5, with an equity market liberalization, all flows other than bank loans rise sharply. Bank loans fall slightly by about $20 million. On the other hand, Figure 6 shows the effects on capital flows of a capital account liberalization. Here the flows that seem to flow in large numbers post liberalization are largely debt flows. FDI flows fall by $300 million dollars after the capital account has been liberalized.

[11] The list of countries included: Argentina, Bangladesh, Brazil, Chile, Columbia, Ecuador, Guatemala, India, Indonesia, Israel, Jordan, Korea, Mexico, Nicaragua, Pakistan, Peru, Philippines, South Africa, Sri Lanka, Thailand, Turkey, Venezuela and Zimbabwe.

Increases in portfolio flows, whether equity or bonds, seem to be robust to the type of liberalization. FDI and Bank loans exhibit different response under different liberalization conditions.

7. Summary and Conclusions.

Policy makers' most common recommendations to countries that consider opening their capital markets is, that they encourage equity flows and avoid the destabilizing debt flows. This policy prescription translates into the need for countries to pursue liberalization in stages. A safe place for emerging countries to begin would be to allow foreign investors access to their domestic stock markets. This type of liberalization is likely to generate large gains for these nations. A necessary condition for countries to be able to attract and extract maximum benefits from all types of flows, equity and debt, is a well-developed financial structure, which many developing countries lack. They can buy time to build a strong financial system while still receiving the benefits of foreign capital that comes in, in the form of FDI.

In this paper I have shown that countries can achieve higher rates of growth by opening their stock markets to foreign investors before opening their entire capital accounts. With a sample of 58 developing countries from 1975-2000, my results show that equity such as FDI or portfolio equity flows have a strong positive and significant effect on output growth. Equity flows on average lead to 1.4 % increase in output growth. Debt flows on the other hand, portfolio bond flows and bank loans, have negative or no significant effect on output growth. On average debt flows reduced growth by about 0.6%.

The results further suggest that while stock market liberalization improves growth by about 3.8%, capital account liberalization has no significant effect on growth. These growth effects are larger for countries with a larger stock market and with better financial systems.

Looking at the effects of these liberalizations in conjunction with other reform does not reduce their effect on growth. In general the equity market effect is robust to the inclusion of other reform variables such as trade liberalization as well as inflation stabilization.

Thus the conclusion of my research seems to be that liberalizing equity markets should be a priority for developing countries.

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APPENDIX A: A Technical Note

Dynamic panel model include a lagged dependent variable y_{it-1}as a regressor, as a consequence y_{it-1} is correlated with the error and thus the OLS estimator will be biased and inconsistent.

$$y_{it} - y_{it-1} = \delta(y_{it-1} - y_{it-2}) + (v_{it} - v_{it-1}) \qquad (i)$$

Anderson and Hsiao (1981) suggested first differencing the model to get rid of the individual unit specific effects and then using y_{it-2} as an instrument for $\Delta y_{it-1} = (y_{it-1} - y_{it-2})$. These instruments will not be correlated with the error as long as the errors themselves are not serially correlated. This instrumental variables (IV) estimation techniques leads to consistent but not necessarily efficient parameters because it does not make use of all moment conditions.

Arellano and Bond (1991) argue that additional instruments can be obtained in a dynamic panel data model by making use of the orthogonality conditions that exist between lagged values of y_{it} and the errors v_{it}. They suggest that following matrix of instruments:

$$W_i = \begin{bmatrix} [y_{i1}] & & 0 \\ & [y_{i1}, y_{i2}] & \\ & & . \\ & & . \\ 0 & & [y_{i1}, \ldots\ldots y_i, y_{T-2}] \end{bmatrix}$$

The moment conditions are then given by: $E(W_i' \Delta v_i) = 0$. Premultiplying equation (i) above by W' gives:

$$W' \Delta y = W'(\Delta y_{-1})\delta + W' \Delta v \qquad (ii)$$

Performing GLS on equation (ii) gives the Arellano Bond preliminary one-step consistent estimator $\hat{\delta}_1$. The GMM estimator is the two step Arellano Bond estimator which is obtained by replacing Δv in equation (ii) above with differenced residuals form the preliminary consistent estimator $\hat{\delta}_1$. This is given by:

$$\hat{\delta}_2 = \left[(\Delta y_{-1})' W \hat{V}_N^{-1} W' (\Delta y_{-1})\right]^{-1} \left[(\Delta y_{-1})' W \hat{V}_N^{-1} W' (\Delta y)\right] \qquad \text{(iii)}$$

where V_N is given by:

$$V_N = \sum_{i=1}^{N} W_i' (\Delta v_i)(\Delta v_i)' W_i$$

APPENDIX B: Data Sources

The sample covers 58 developing countries from the period 1975-2000. The sources for all the data series are listed below.

Macro Time Series

GDP – Growth rate of per capita GDP (constant 1995 dollars) from World Development Indicators (2003).

Savings – Gross Domestic Savings (as a % of GDP) from WDI (2003)

Government – Government Consumption (as a % of GDP) from WDI (2003)

Trade – Sum of Exports and Imports (as a % of GDP) from WDI (2003)

TOT - Terms of Trade (as a % of GDP) from WDI (2003)

FDI – Foreign Direct Investment (as a % of GDP) from WDI (2003)

PEF – Portfolio Equity Flows (as a % of GDP) from WDI (2003)

PBF- Portfolio Bond Flows (as a % of GDP) from WDI (2003)

Bank Loans – Commercial Bank Lending (as a % of GDP) from WDI (2003)

Country Characteristics

Income Level	Dummy variable for different incomes levels from the Global Development Network Growth Database (2002).
Private Credit	Private credit by deposit money banks and other financial institutions (as a % of GDP) from Financial Structure and Economic Development Database (2003).
MCap	Stock Market capitalization (as a % of GDP) from Financial Structure and Economic Development Database (2003).
Bond Cap	Private and public bond market capitalization (as a % of GDP) from Financial Structure and Economic Development Database (2003).
FD	Financial Development = private credit +mcap + bond cap from Financial Structure and Economic Development Database (2003)

Other Variables

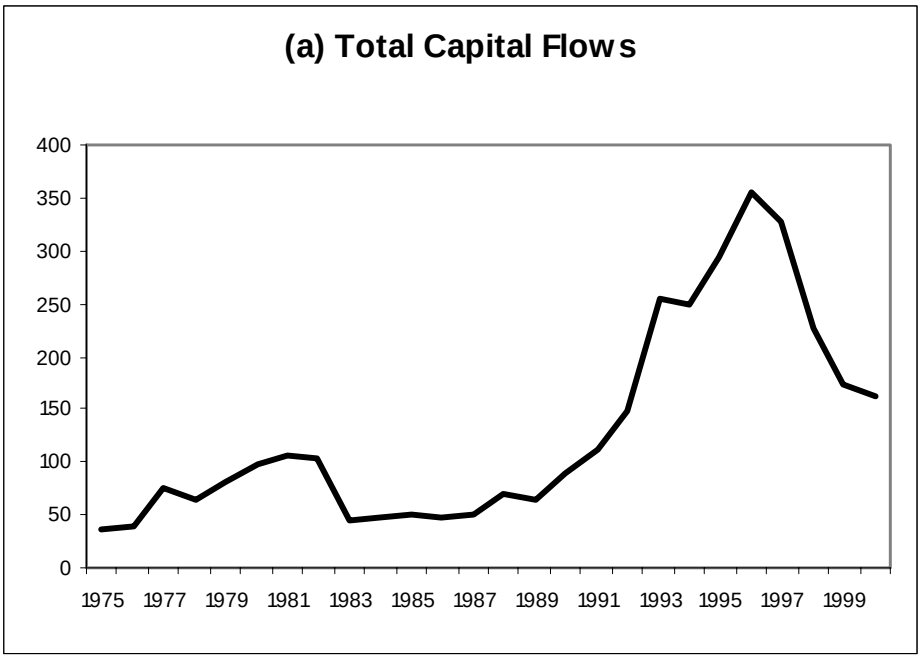
EML	Dummy for equity market liberalization, from Bekaert et al (2000, 2001, and 2003).
CAL	Dummy for capital account liberalization, from Wyplosz (2001).
Trade Lib	Dummy for trade liberalization, from Wacziarg and Welch (2002).
Latin	Dummy for Latin American countries.
Currency Crises	Dummy for currency crises.

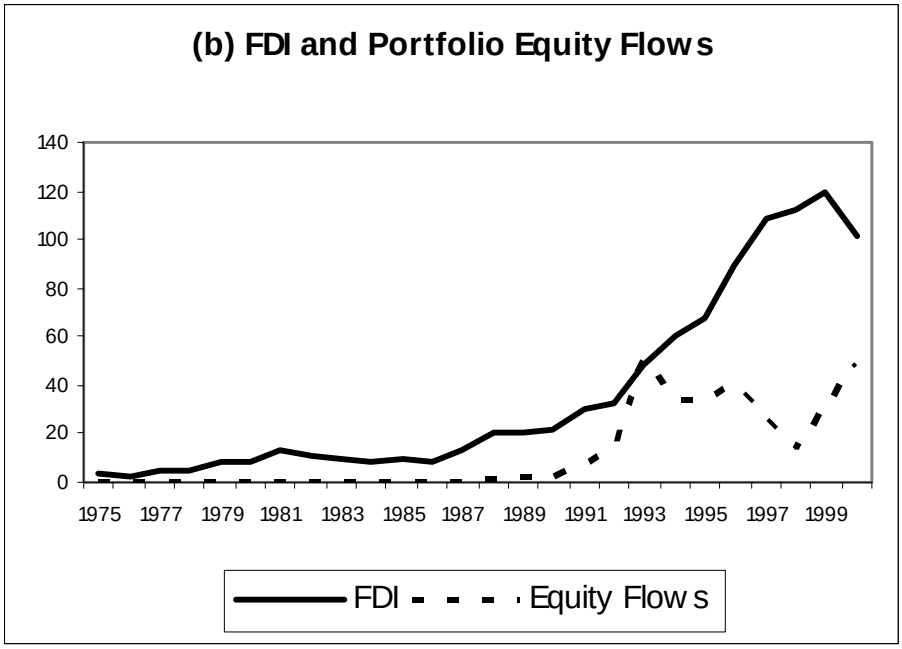
APPENDIX C: Liberalization Dates

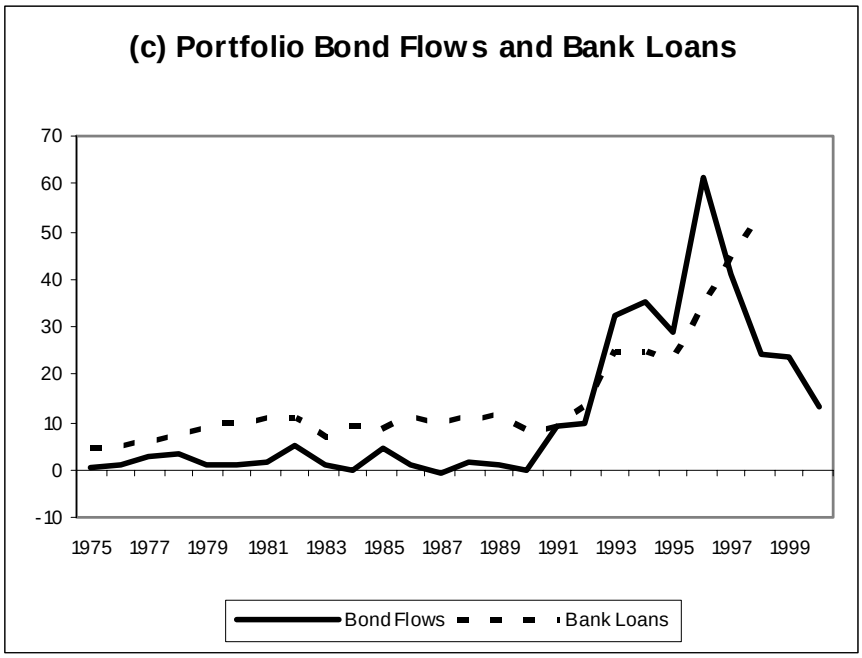
Country	Equity Market	Capital Account	Trade
Algeria	NL	NL	NL
Argentina	Nov-89	93-98	1991
Bangladesh	Jun-91	NL	1996
Barbados	NL	NL	1975
Benin	NL	NL	1990
Botswana	NL	NL	1979
Brazil	May-91	NL	1991
Burkina Faso	NL	NL	1998
Cameroon	NL	NL	1993
Chile	Jan-92	NL	1976
Colombia	Feb-91	NL	1986
Congo, Rep	NL	NL	NL
Costa Rica	NL	80, 81, 95	1986
Cote d'ivoire	1995	NL	1994
Dominican	NL	NL	1992
Ecuador	NL	75-85, 88-92, 95	75-82, 91-00
Egypt	92	NL	1995
El Salvador	NL	NL	1989
Gabon	NL	NL	NL
Gambia	NL	91-95	1985
Ghana	NL	NL	1985
Guatemala	NL	75-79, 89-95	1988
Honduras	NL	75-79, 93-95	1991
India	Nov-92	NL	NL
Indonesia	Sept-89	75-95	1975
Iran	NL	75-77	NL
Israel	Nov-93	NL	1985
Jamaica	Sept-91	NL	1989
Jordan	Dec-95	NL	1975
Kenya	Jan-95	NL	1993
Korea	Jan-92	NL	1975
Madagascar	NL	NL	1996
Malaysia	Dec-88	75-95	1975
Mali	NL	NL	1988
Mauritius	NL	NL	1975
Mexico	May-89	75-81	1986
Morocco	June-88	NL	1984
Nepal	NL	NL	1991
Nicaragua	NL	75-77	1991
Niger	NL	1995	1994
Nigeria	Aug-95	NL	NL
Pakistan	Feb-91	NL	NL
Paraguay	NL	82-83	1989
Peru*	Jan-92	78-83, 93-95	1991
Philippines	Jun-91	NL	1988
Senegal	NL	NL	NL
Singapore	1973*	78-98	1975
South Africa	96	NL	1991
Sri Lanka	Jan-90	NL	77-83, 91-98
Thailand	Sept-87	NL	1975
Togo	NL	NL	NL

Country	Equity Market	Capital Account	Trade
Trinidad and Tobago	Apr-97	94-95	1992
Tunisia	June-95	NL	1989
Turkey	Aug-89	NL	1989
Uruguay	NL	78-92	1990
Venezuela	Jan-90	75-83	89-93, 96-98
Zambia	NL	NL	1993
Zimbabwe	June-93	NL	NL

Figure 1: Capital Flows: 58 Countries, 1975-2000.






(c) Portfolio Bond Flows and Bank Loans
70
60
50
40
30
20
10
0
-10
1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999
Bond Flows
Bank Loans

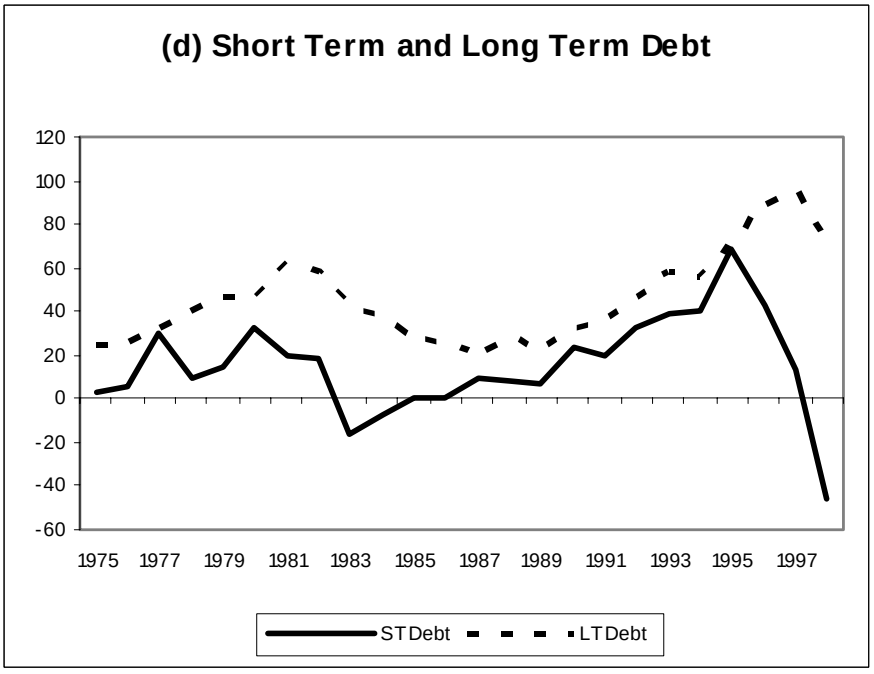

(d) Short Term and Long Term Debt
120
100
80
60
40
20
0
-20
-40
-60
1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997
ST Debt
LT Debt

Figure 2: Average Growth of Output by Type of Liberalization: 58 Countries, 1975-2000

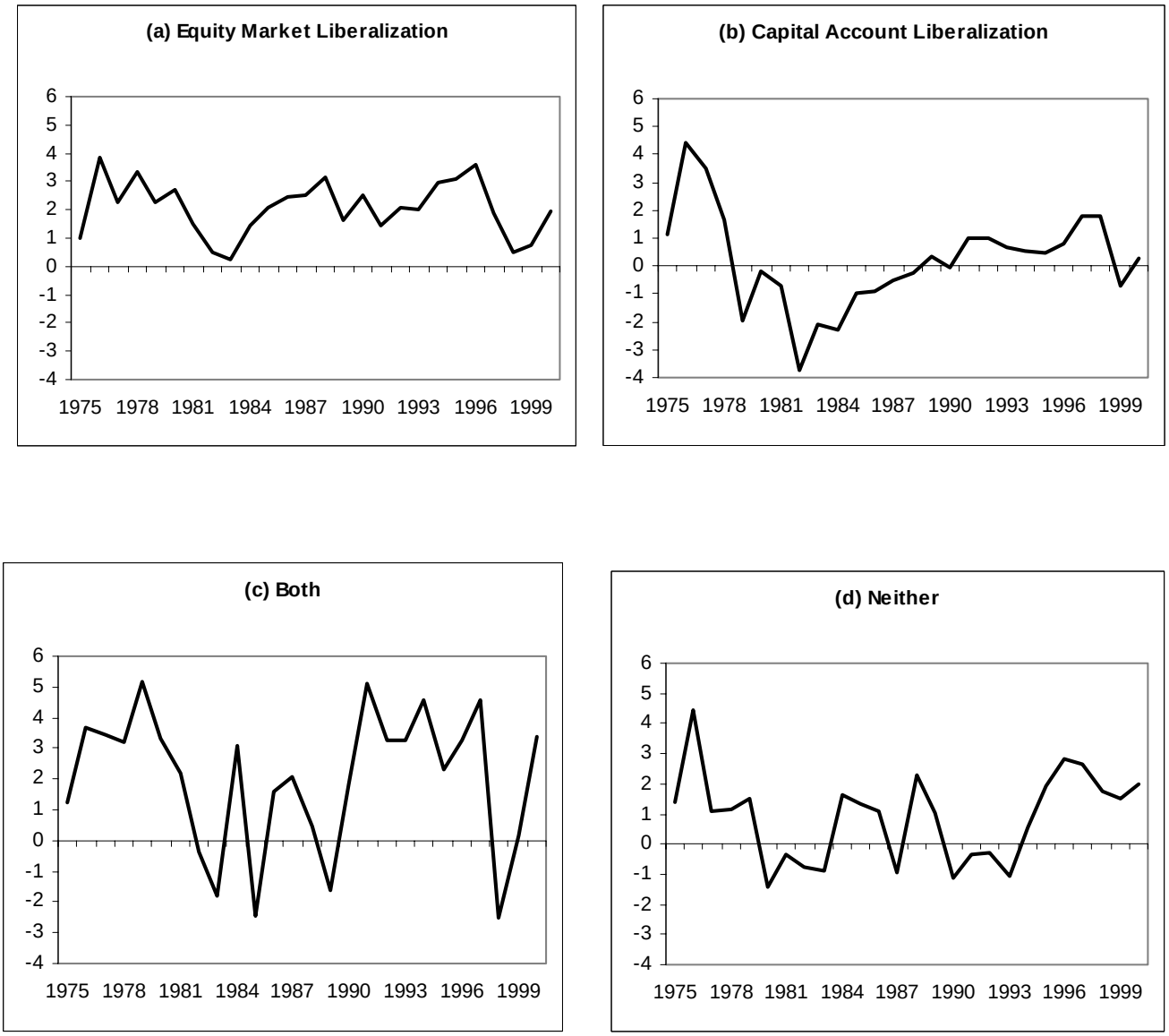
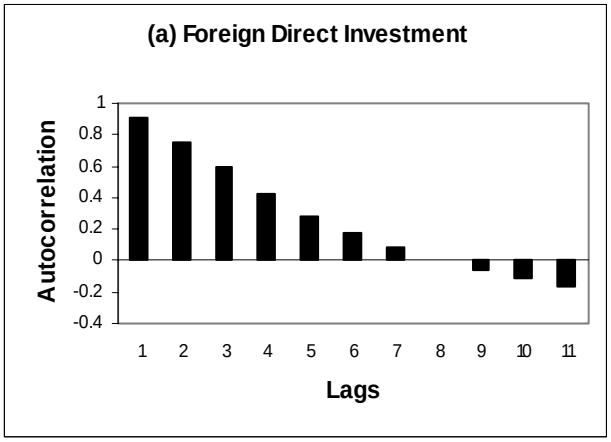
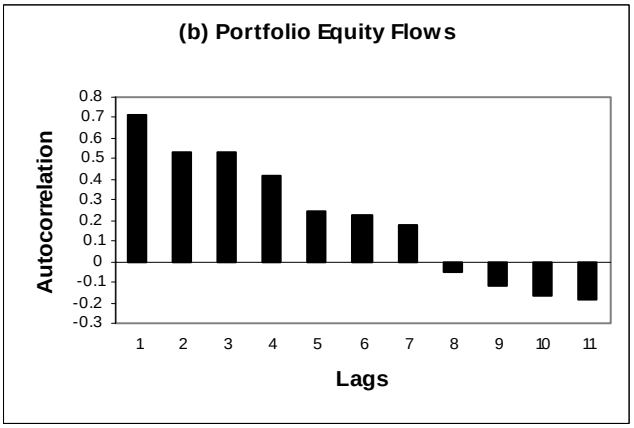
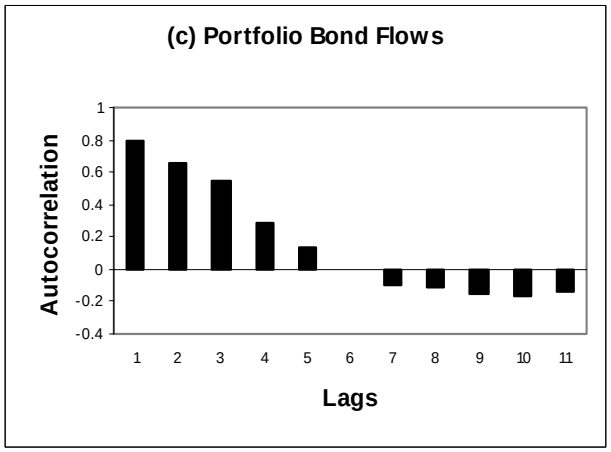
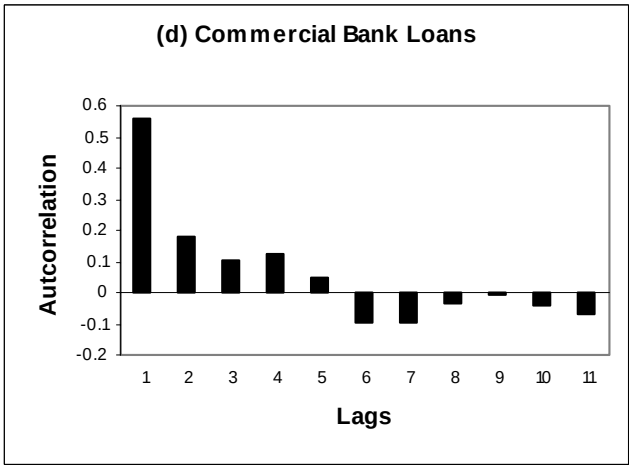


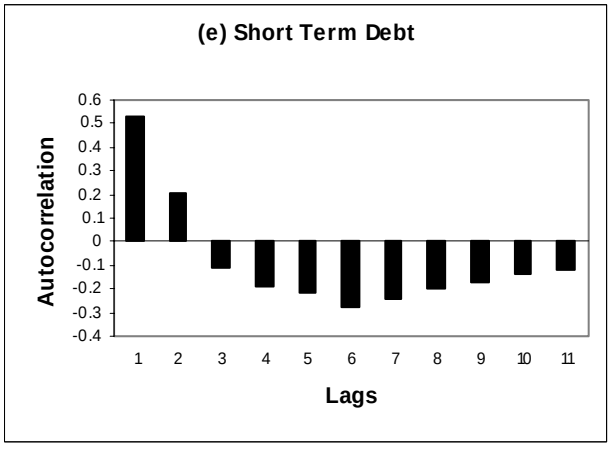
Figure 3: Autocorrelation Function of Capital Flows.











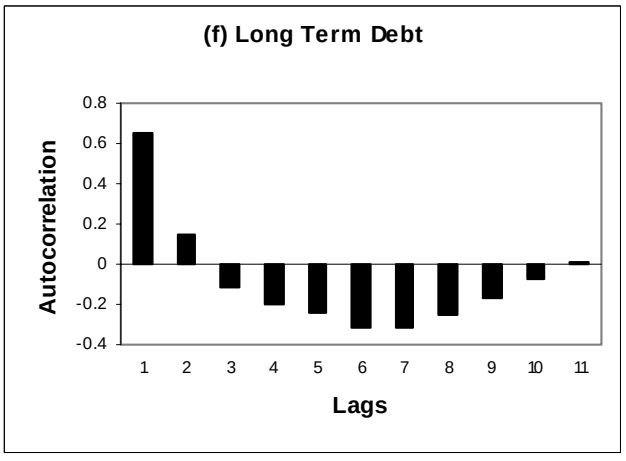
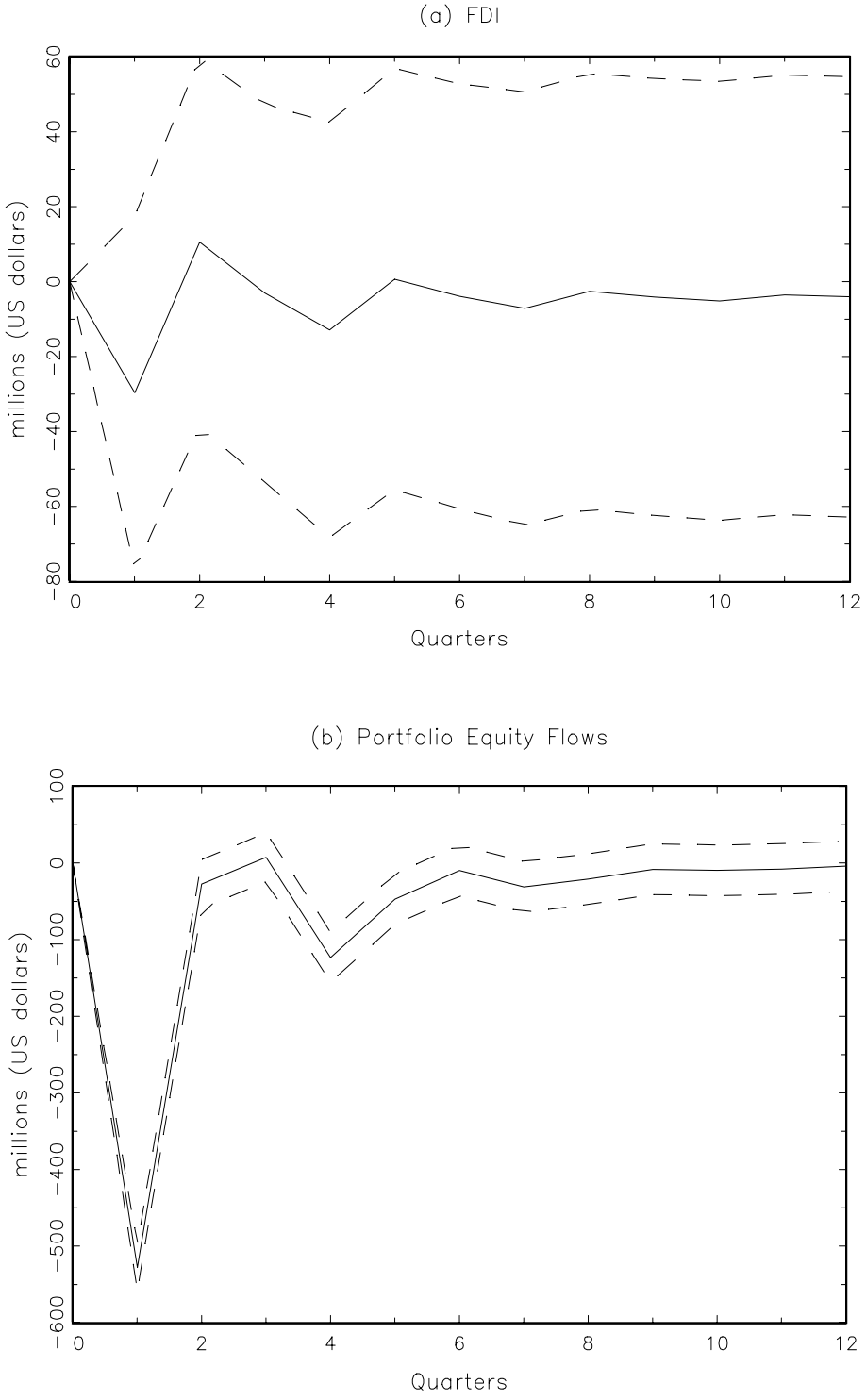
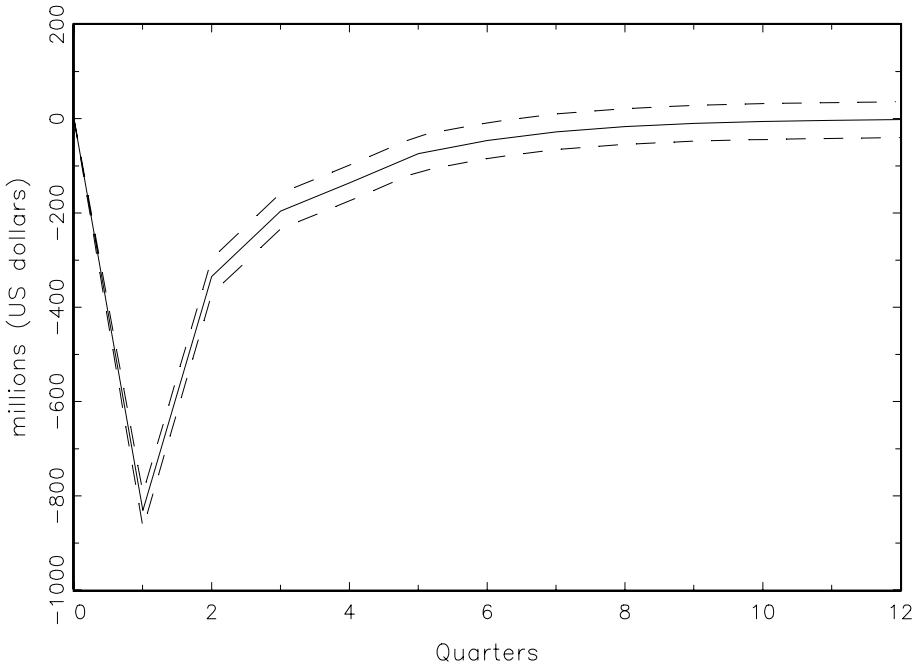


Figure 4: Impulse Response of Capital Flows to Currency Crisis: 23 Countries, 1980.1-2000.4



(c) Portfolio Bond Flows



(d) Bank Loans

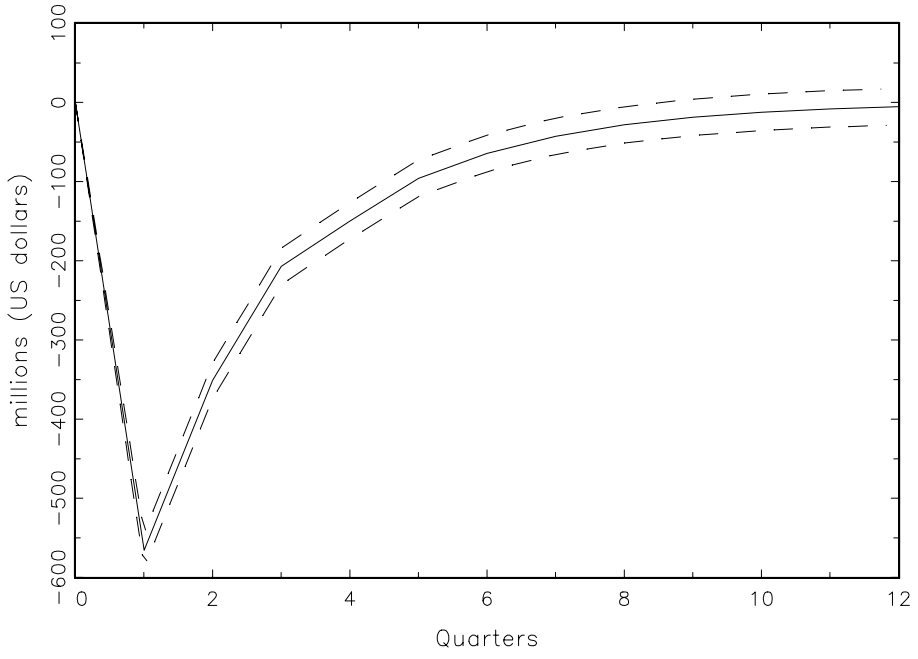
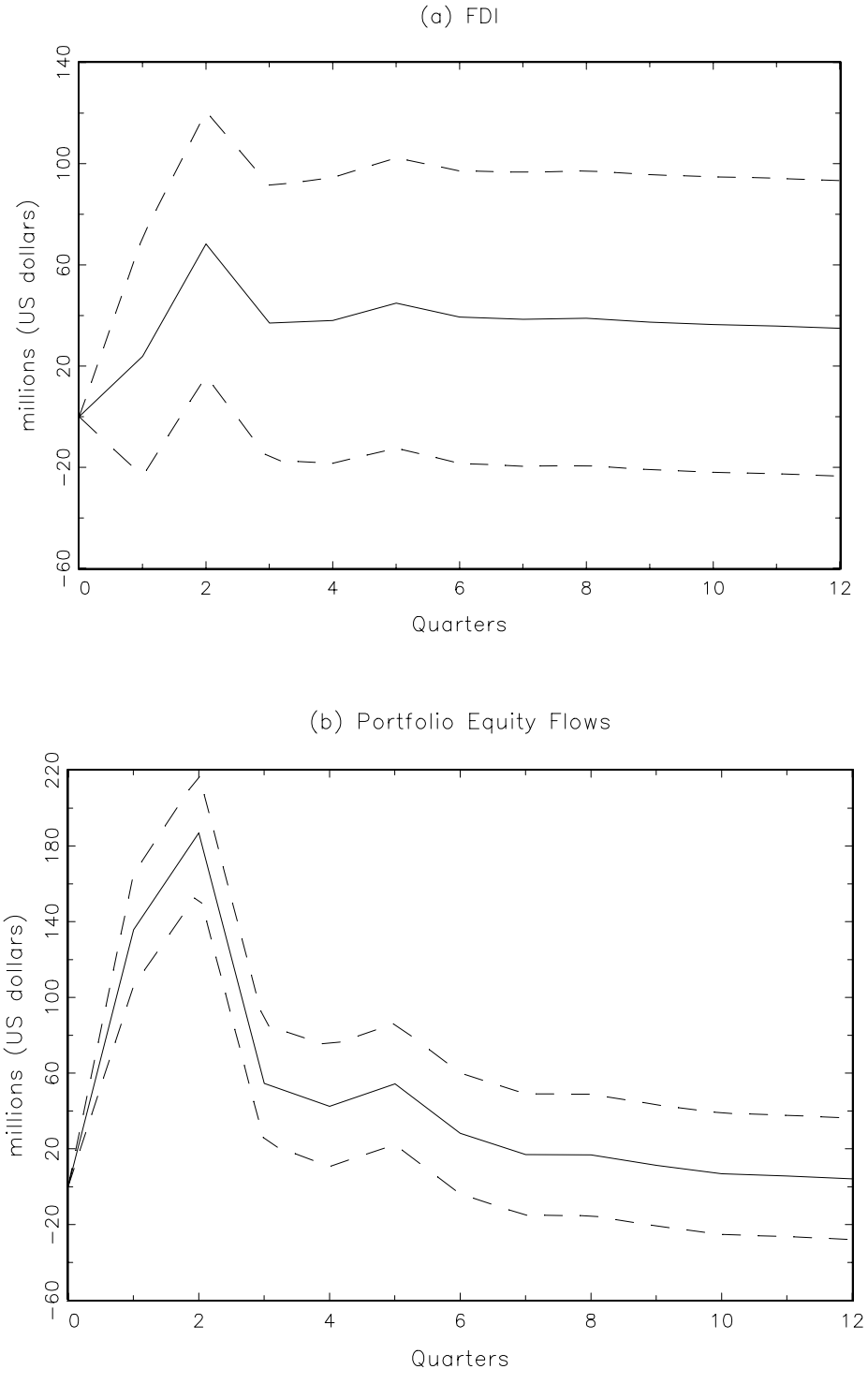
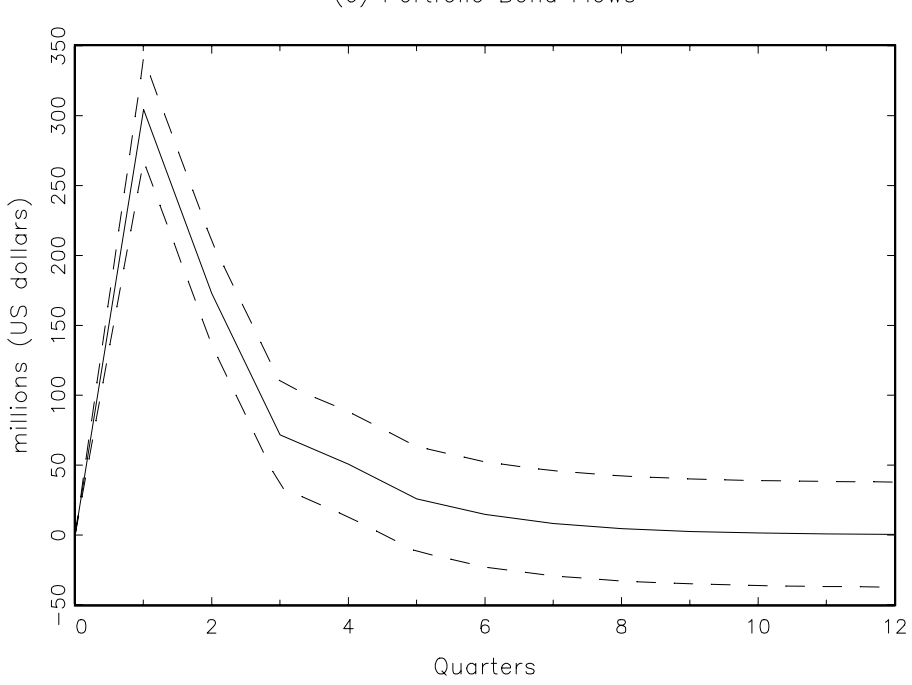


Figure 5: Impulse Response of Capital Flows to Equity Market Liberalization: 23 Countries, 1980.1-2000.4




(c) Portfolio Bond Flows
millions (US dollars)
−50
0
50
100
150
200
250
300
350
0
2
4
6
8
10
12
Quarters

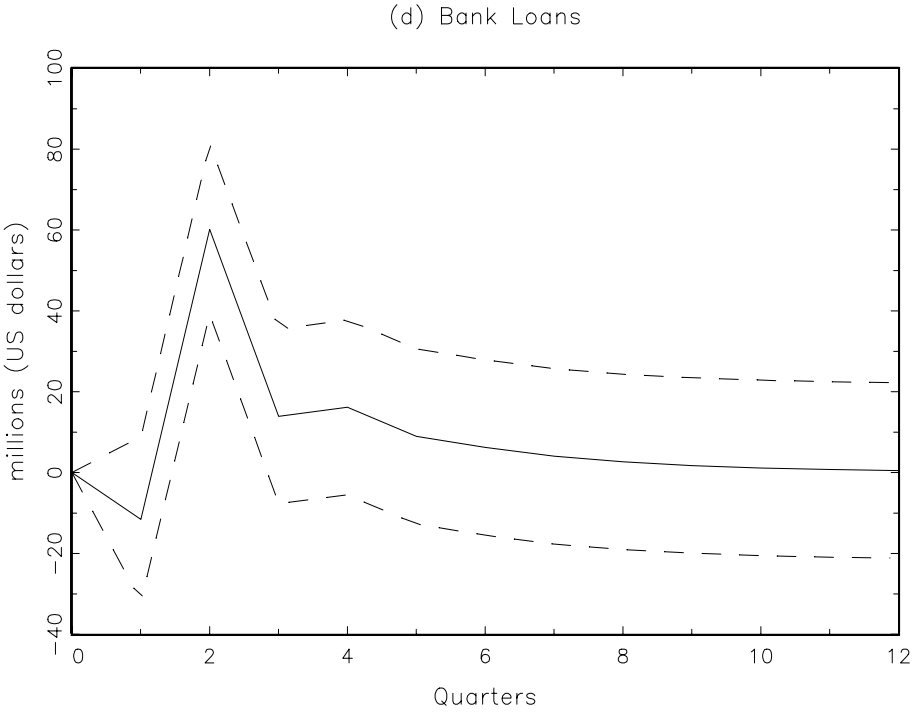
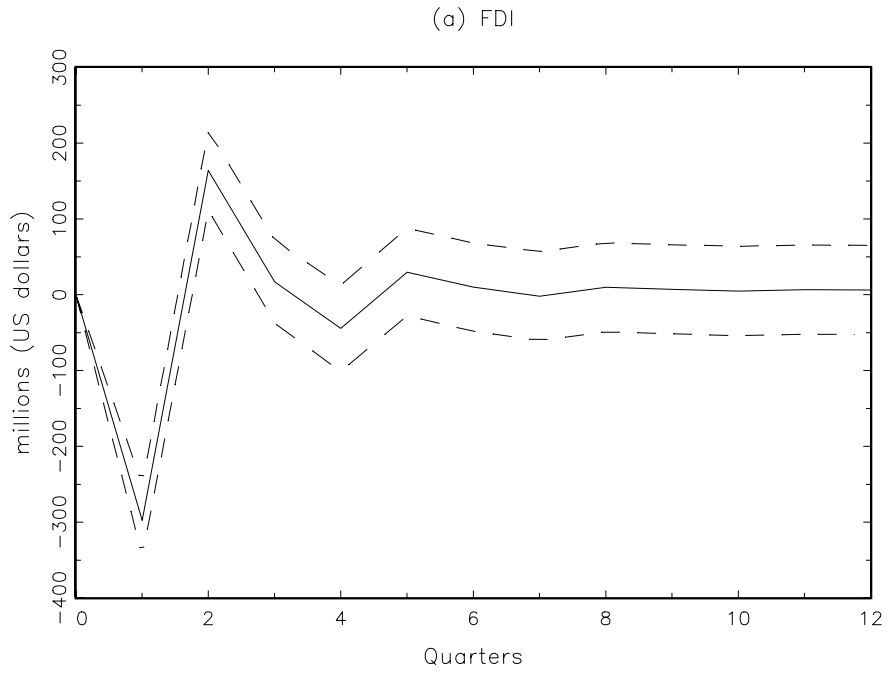
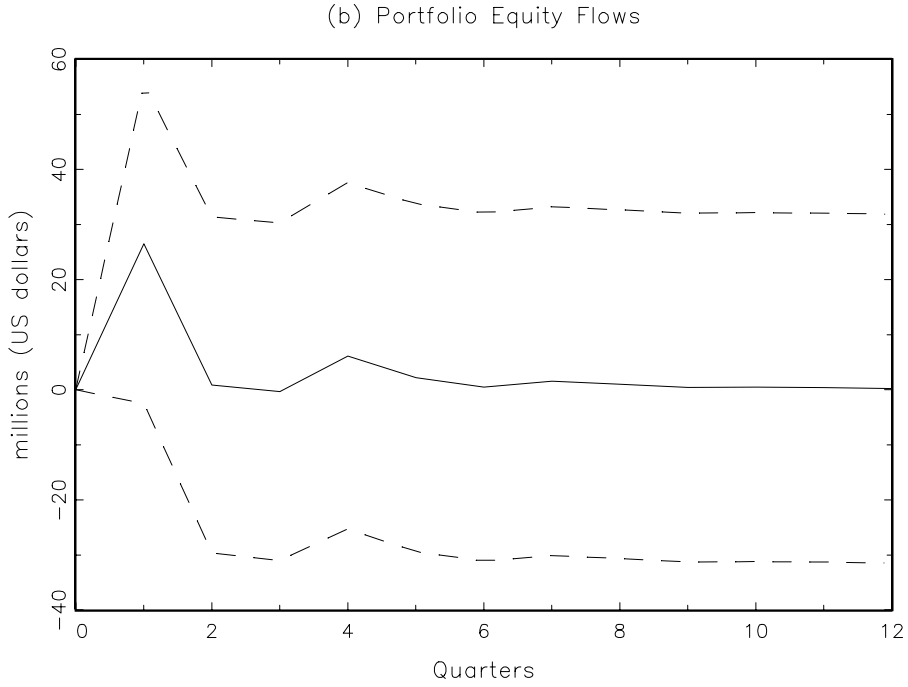
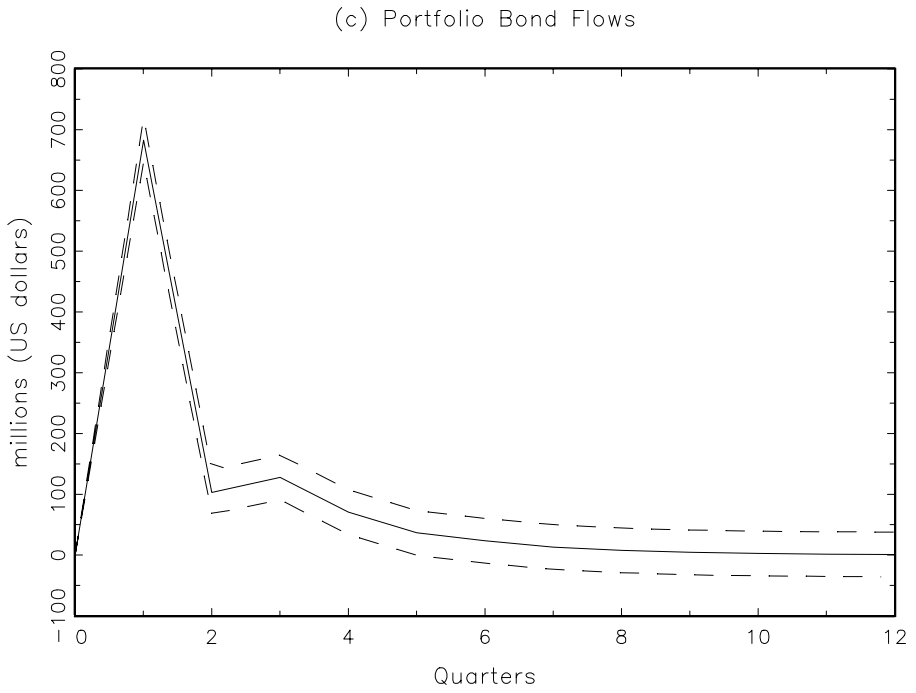

(d) Bank Loans
millions (US dollars)
−40
−20
0
20
40
60
80
100
0
2
4
6
8
10
12
Quarters

Figure 6: Impulse Response of Capital Flows to Capital Account Liberalization: 23 Countries, 1980.1-2000.4






(c) Portfolio Bond Flows
millions (US dollars)
800
700
600
500
400
300
200
100
0
−100
0
2
4
6
8
10
12
Quarters

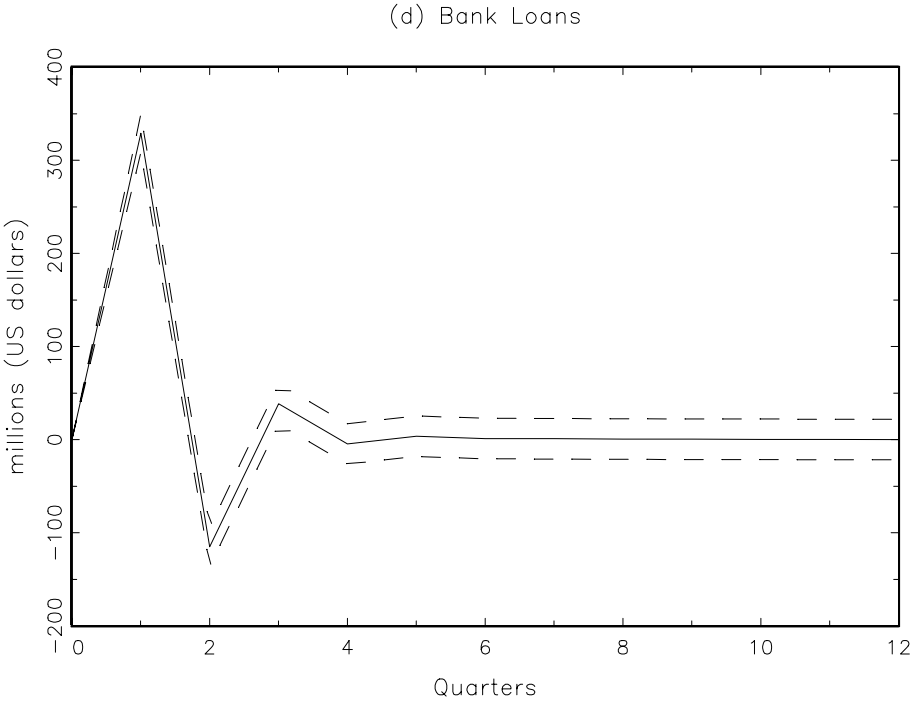

(d) Bank Loans
millions (US dollars)
400
300
200
100
0
−100
−200
0
2
4
6
8
10
12
Quarters

Table 1: List of Country by Type of Liberalization

Liberalization	Country
Equity Market Liberalization	Bangladesh, Brazil, Chile, Colombia, Cote d'Iviore, Egypt, India, Israel, Jamaica, Jordon, Kenya, Korea, Morocco, Nigeria, Pakistan, Philippines, South Africa, Sri Lanka, Thailand, Tunisia, Turkey, Zimbabwe.
Capital Account Liberalization	Costa Rica, Ecuador, Gambia, Guatemala, Honduras, Iran, Nicaragua, Niger, Paraguay, Uruguay
Both	Argentina, Indonesia, Malaysia, Mexico, Peru, Singapore, Trinidad, Venezuela
None	Algeria, Barbados, Benin, Botswana, Burkina Faso, Cameroon, Dominican Republic, El Salvador, Gabon, Ghana, Madagascar, Mali, Mauritius, Nepal, Senegal, Togo, Trinidad and Tobago, Zambia.

Table 1: Net Private Capital Flows to Emerging Market and Developing Countries:

(Billions of U.S. dollars)

	1996	1997	1998	1999	2000	2001	2002	2003
Total Net private capital flows	197	195	71	88	47	48	61	120
Foreign direct investment	116	145	155	173	177	191	144	148
Private portfolio flows	86	63	42	67	16	-91	-100	-11
Other	-6	-13	-126	152	-147	-52	17	-16
International Bank Lending	110	70	-72	-75	-36	-27	-37	65
International Bond Financing	43	83	38	36	40	43	40	70

Source: IMF, *World Economic Outlook*.

Table 2: Summary Statistics

A: Macro Variables - Full Sample (58 countries, 1975-2000)

Variable	Mean	Std Dev	Min	Max	N
GDP growth	1.39	4.91	-28.73	31.23	1507
Savings	18.11	11.83	-20.5	72.98	1506
Investment	22.51	7.78	-5.74	73.49	1505
Consumption	81.88	11.77	27.02	120.5	1505
Government Consumption	13.72	5.86	2.98	54.515	1497
Trade	65.83	49.18	6.32	439.023	1506
Terms of Trade	20.54	8.22	-15.94	30.99	606

B: Capital Flow Variables - Full Sample (58 countries, 1975-2000)

Variable	Mean	Std Dev	Min	Max	N
Foreign Direct Investment	1.37	2.19	-10.18	17.13	1480
Portfolio Equity Flows	0.13	0.54	-0.49	10.24	1398
Portfolio Bond Flows	0.17	0.79	-3.39	13.70	1398
Bank Loans	0.51	1.01	0	17.06	1312
Short Term Debt	14.53	11.18	0	88.93	1400
Long Term Debt	3.24	4.28	-11.86	57.55	1312

Note: All variables other than terms of trade (tot) are ratios to GDP, for the period 1975-2000.

C: Macro Variables – Liberalized and Non Liberalized Sample.

Variable		Mean	Std Dev	Min	Max	N
GDP Growth						
Equity Market						
	Lib = 0	1.10	5.06	-28.73	31.23	1216
	Lib = 1	2.61	4.01	-14.53	11.41	291
Capital Account						
	Lib = 0	1.25	4.96	-28.73	31.22	1336
	Lib = 1	2.47	4.36	-13.85	13.26	171
Trade						
	Lib = 0	0.55	5.39	-28.73	31.22	827
	Lib = 1	2.41	4.03	-16.51	21.77	680
Investment						
Equity Market						
	Lib = 0	21.99	7.69	-5.74	73.49	1214
	Lib = 1	24.70	7.80	10.22	48.49	291
Capital Account						
	Lib = 0	22.10	7.60	-5.74	73.49	1334
	Lib = 1	25.71	8.40	11.18	48.49	171
Trade						
	Lib = 0	21.72	7.93	-5.74	79.49	827
	Lib = 1	23.48	7.48	6.69	48.49	678
Consumption						
Equity Market						
	Lib = 0	83.08	10.17	27.02	120.5	1214
	Lib = 1	76.85	11.80	46.65	104.59	291
Capital Account						
	Lib = 0	82.87	11.53	27.02	120.5	1334
	Lib = 1	74.13	10.73	46.65	103.94	171
Trade						
	Lib = 0	82.44	11.67	27.02	113.5	827
	Lib = 1	81.19	11.86	46.65	120.5	678

D: Capital Flow Variables – Liberalized and Non Liberalized Sample.

Variable	Mean	Std Dev	Min	Max	N
Foreign Direct Investment					
Equity Market					
Lib = 0	1.01	1.7	-10.18	14.60	1189
Lib = 1	2.83	3.15	-2.96	17.14	291
Capital Account					
Lib = 0	1.21	1.93	-10.18	17.13	1309
Lib = 1	2.60	3.44	-2.37	15.20	171
Portfolio Equity Flows					
Equity Market					
Lib = 0	0.03	0.36	0	10.24	1140
Lib = 1	0.58	0.88	-0.49	5.53	258
Capital Account					
Lib = 0	0.12	0.51	-0.49	10.24	1248
Lib = 1	0.21	0.73	0	5.53	150
Portfolio Bond Flows					
Equity Market					
Lib = 0	0.08	0.66	-3.39	13.70	1140
Lib = 1	0.55	1.13	-2.82	6.55	258
Capital Account					
Lib = 0	0.14	0.75	-3.39	13.70	1248
Lib = 1	0.36	1.04	-2.82	7.08	150
Bank Loans					
Equity Market					
Lib = 0	0.46	0.99	0	17.06	1110
Lib = 1	0.80	1.07	0	7.13	202
Capital Account					
Lib = 0	0.47	1.02	0	17.05	1164
Lib = 1	0.86	0.84	0	4.77	148
Short-Term Debt					
Equity Market					
Lib = 0	14.25	11.33	0	88.93	1142
Lib = 1	15.76	10.44	0.56	57.49	258
Capital Account					
Lib = 0	14.0	11.22	0	88.93	1253
Lib = 1	18.99	0.84	0	52.99	147
Long-Term Debt					
Equity Market					
Lib = 0	3.58	4.5	-11.86	57.55	1110
Lib = 1	1.35	1.98	-5.09	6.65	202
Capital Account					
Lib = 0	3.27	4.41	-11.86	57.55	1164
Lib = 1	2.99	3.17	-8.26	14.34	148

Table 3: Pairwise Correlations

A: Liberalization and Macro Variables - Full Sample (58 countries, 1975-2000)

	EML	CAL	Growth	Investment	Consumption
EML	1.0000				
CAL	0.0583*	1.0000			
Growth	0.1217**	0.0788**	1.0000		
Investment	0.1373**	0.1473**	0.3578**	1.0000	
Consumption	-0.2091**	-0.236**	-0.224**	-0.5928**	1.0000

B: Liberalization and Capital Flows - Full Sample (58 countries, 1975-2000)

	EML	CAL	FDI	PEF	PBF	Bank Loans	ST debt	LT debt
EML	1.00							
CAL	0.058*	1.00						
FDI	0.33**	0.20**	1.00					
Equity	0.40**	0.05	0.17**	1.00				
Bonds	0.23**	0.09**	0.09**	0.13**	1.00			
Bank Loans	0.12**	0.12**	0.05	0.08**	0.05	1.00		
ST Debt	0.05*	0.14**	0.02	0.12**	0.14**	0.10**	1.00	
LT Debt	-0.19**	-0.02	-0.4	-0.06*	0.08**	-0.08**	-0.02	1.00

C: Macro Variables and Capital Flows - Full Sample (58 countries, 1975-2000)

	Growth	Investment	Consumption
FDI	0.1635**	0.3233**	-0.2487**
Equity	0.1076**	0.1065**	-0.1245**
Bonds	0.0604*	0.0947**	-0.0951**
Bank Loans	-0.0655*	0.0219	-0.1494**
ST Debt	0.0464	0.2075*	-0.2283**
LT Debt	-0.0506	0.1438**	0.2196**

D: Liberalizations - Full Sample (58 countries, 1975-2000)

	EML	CAL	TRADE
EML	1.0000		
CAL	0.0583*	1.0000	
TRADE	0.3768**	0.1378**	1.0000

Notes: EML – Equity Market Liberalization, CAL – Capital Account Liberalization, ST Debt – Short Term Debt, LT Debt – Long Term Debt, TRADE – Trade Liberalization
* significant at 5%; ** significant at 1%

Table 4: Coefficient of Variation for different capital flows.

	FDI	**PEF**	**PBF**	**Bank Loan**	**ST Debt**	**LT Debt**
C. V.	1.075	1.083	1.40	0.914	1.566	0.555

Table 5: Effect of Different Capital Flows on GDP, Investment and Consumption[1].

Variable[2]	GDP	GDP	Invt	Invt	Cons	Cons
Constant	-0.772**	-0.647**	-0.295**	-0.352**	0.650**	0.552**
	(0.060)	(0.048)	(0.012)	(0.026)	(0.024)	(0.034)
Lag DV	0.173**	0.169**	0.622**	0.636**	-0.336**	-0.420**
	(0.021)	(0.020)	(0.014)	(0.019)	(0.071)	(0.095)
Savings	-0.190**	-0.176**	-0.041**	-0.037**	-0.329**	-0.422**
	(0.027)	(0.024)	(0.010)	(0.013)	(0.064)	(0.084)
Govt Cons	-0.427**	-0.408**	-0.403**	-0.358**	0.286**	0.335**
	(0.043)	(0.060)	(0.014)	(0.032)	(0.016)	(0.018)
Trade	0.186**	0.164**	0.012	0.014*	-0.049**	-0.027**
	(0.012)	(0.016)	(0.007)	(0.006)	(0.006)	(0.005)
Ltot	0.119**	0.139**	0.086**	0.120**	0.074**	0.077**
	(0.032)	(0.045)	(0.029)	(0.029)	(0.020)	(0.028)
FDI	0.727**	0.706**	-0.187**	-0.147**	-0.538**	-0.554**
	(0.034)	(0.067)	(0.032)	(0.050)	(0.039)	(0.035)
PEF	2.069**	1.937**	1.521**	1.389**	0.465**	0.301
	(0.396)	(0.348)	(0.087)	(0.142)	(0.140)	(0.196)
PBF	-0.082	-0.132	-0.154	-0.024	0.194**	0.249**
	(0.168)	(0.148)	(0.180)	(0.035)	(0.062)	(0.075)
Bank Loans	-0.516**	-0.394**	0.009	-0.079	0.137**	-0.104**
	(0.080)	(0.065)	(0.069)	(0.044)	(0.018)	(0.027)
ST Debt		-0.159**		-0.046*		0.087**
		(0.014)		(0.021)		(0.008)
LT Debt		0.065*		-0.155**		-0.227**
		(0.031)		(0.022)		(0.015)
Sargan Test[3]	39.41	41.68	39.90	37.33	40.87	39.47
A-Bond Test[4]	-1.79	-1.65	-0.13	-0.33	-1.15	-0.19

Notes:
1. There are 58 countries from 1975-2000.
2. All variables are in differences. The explanatory variables are lagged one period. Instruments are used in levels. The instruments used are savings, Govt. Cons, Trade and Ltot, adding the different capital flows as instruments did not change the results.
3. The Sargan test statistics is a test of overidentifying restrictions.
4. The Arellano Bond Test (A-Bond) test the null of no second order serial autocorrelation in the residuals.

Standard errors in parentheses. * significant at 5%; ** significant at 1%

Table 6: Effects of Different Types of Liberalizations

Variable[1]	GDP	GDP	Invt	Invt	Cons	Cons
Constant	-0.752**	-0.650**	-0.304**	-0.292**	0.468**	0.339**
	(0.037)	(0.035)	(0.024)	(0.025)	(0.020)	(0.032)
Lag DV	0.126**	0.127**	0.629**	0.590**	-0.323**	-0.298
	(0.006)	(0.011)	(0.015)	(0.009)	(0.038)	(0.208)
Savings	-0.158**	-0.127**	0.012	0.047**	-0.401**	-0.504*
	(0.019)	(0.028)	(0.011)	(0.008)	(0.037)	(0.204)
Govt Cons	-0.494**	-0.394**	-0.558**	-0.519**	0.397**	0.178**
	(0.036)	(0.046)	(0.025)	(0.031)	(0.020)	(0.018)
Trade	0.128**	0.128**	-0.031**	-0.030**	-0.081**	-0.053**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.010)
Ltot	0.083	0.110*	0.123**	0.122*	0.101*	0.017
	(0.050)	(0.046)	(0.030)	(0.049)	(0.045)	(0.020)
EML[2]	3.814**		-1.513*		-1.261**	
	(0.660)		(0.635)		(0.365)	
CAL[3]		0.117		1.206**		-2.628**
		(0.407)		(0.420)		(0.319)
Sargan Test	43.50	36.04	33.58	39.65	42.42	35.72
ABond Test	-1.63	-1.63	-2.17	-2.23	-1.38	-1.21

1. Dependent variables are GDP – GDP growth, Invt –Investment and Cons – Consumption.
2. EML – Equity Market Liberalization, a binary variable, 1 in the year that a country's stock market is liberalized, 0 otherwise.
3. CAL – Capital Account Liberalization, a binary variable, 1 in the year that a country's capital account is liberalized, 0 otherwise.
4. Instruments are: savings, Govt. Cons, Trade and Ltot and predicted probabilities from a probit regression on the liberalization dummies to account problems arising from self-selection bias.

Standard errors in parentheses

* significant at 5%; ** significant at 1%

Table 7: Liberalizations Effects of Stock Market Development

Variable	1	2
Constant	-0.664**	-0.312**
	(0.073)	(0.107)
GDP	0.110	0.148*
	(0.067)	(0.068)
Savings	-0.261**	-0.204**
	(0.073)	(0.030)
Govt Cons	0.267	0.130*
	(0.347)	(0.064)
Trade	0.093**	0.099**
	(0.026)	(0.026)
Ltot	0.016	0.003
	(0.052)	(0.042)
EML	3.300	
	(3.118)	
EMLxMCap[1]	0.045*	
	(0.018)	
CAL		3.469
		(2.950)
CALxMCap		0.010
		(0.010)
Sargan Test	19.41	20.88
ABond Test	-0.85	-1.00

1. Mcap – Stock Market capitalization as a ratio to GDP.
Standard errors in parentheses
* significant at 5%; ** significant at 1%

Table 8: Liberalizations Effects of Financial Development

Variable	1	2
Constant	-0.805**	-0.710**
	(0.044)	(0.060)
GDP	0.121**	0.138**
	(0.005)	(0.005)
Savings	-0.145**	-0.160**
	(0.023)	(0.023)
Govt Cons	-0.515**	-0.471**
	(0.034)	(0.038)
Trade	0.131**	0.148**
	(0.009)	(0.008)
Ltot	0.066	0.050
	(0.067)	(0.077)
EML	1.784	
	(1.468)	
EMlxFD[1]	2.713	
	(1.488)	
CAL		-1.285
		(1.220)
CALxFD		1.925**
		(0.400)
Sargan Test	37.96	39.11
ABond Test	-1.62	-1.73

1. FD - Measure of overall financial development.
Standard errors in parentheses. * significant at 5%; ** significant at 1%

Table 9: Liberalizations Effects and Macroeconomic Reforms

Variable	1	2	3
Constant	-0.578**	-0.716**	-0.663**
	(0.052)	(0.069)	(0.061)
GDP	0.176**	0.112**	0.137**
	(0.021)	(0.007)	(.007)
Savings	-0.208**	-0.111**	-0.132**
	(0.066)	(0.026)	(0.024)
Govt Cons	-0.360**	-0.520**	-0.454**
	(0.046)	(0.044)	(0.049)
Trade	0.116**	0.112**	0.118**
	(0.014)	(0.008)	(0.009)
Ltot	-0.001	0.112*	0.067
	(0.026)	(0.052)	(0.057)
EML	5.030*	3.012*	
	(2.111)	(1.550)	
CAL	-0.038		-0.036
	(0.529)		(1.009)
TRADELIB[1]	1.485*		
	(0.607)		
Inflation		-0.017**	-0.175**
		(0.003)	(0.005)
Inflation[2]		0.016**	0.0168**
x Latin		(0.003)	(0.005)
Sargan Test	29.99	36.39	
ABond Test	-1.41	-1.63	

1. TRADELIB – Trade Liberalization dummy.
2. Interactive term between inflation and dummy for Latin American countries.
Standard errors in parentheses
* significant at 5%; ** significant at 1%