WORKING PAPERS

EAST-WEST CENTER WORKING PAPERS

EAST-WEST CENTER

The U.S. Congress established the East-West Center in 1960 to foster mutual understanding and cooperation among the governments and peoples of the Asia Pacific region including the United States. Funding for the Center comes from the U.S. government with additional support provided by private agencies, individuals, corporations, and Asian and Pacific governments.

*East-West Center Working Papers* are circulated for comment and to inform interested colleagues about work in progress at the Center.

For more information about the Center or to order publications, contact:

Publication Sales Office
East-West Center
1601 East-West Road
Honolulu, Hawaii 96848-1601

Telephone: 808-944-7145
Facsimile: 808-944-7376
Email: ewcbooks@EastWestCenter.org
Website: www.EastWestCenter.org

EAST-WEST CENTER WORKING PAPERS

**Economics Series**

No. 84, August 2005

# The IMF and the Liberalization of Capital Flows

**Joseph P. Joyce and Ilan Noy**

**Joseph P. Joyce is the Stanford Calderwood Chair** in Economics at Wellesley College. Professor Joyce also held visiting positions at the International Monetary Fund, the Federal Reserve Bank of Boston, the Brookings Institution, and the Center for International Affairs at Harvard University. He has a Ph.D. from Boston University. Email: jjoyce@wellesley.edu.

**Ilan Noy is an Assistant Professor of Economics** at the University of Hawaii at Manoa and was a visiting fellow at the East-West Center. He has a Ph.D. from the University of California, Santa Cruz.

# The IMF and the Liberalization of Capital Flows

by

Joseph P. Joyce*
Department of Economics
Wellesley College
Wellesley, MA 02481
jjoyce@wellesley.edu

Ilan Noy
Department of Economics
University of Hawaii
Honolulu, HI 96822
noy@hawaii.edu

June 2005

ABSTRACT

We evaluate the claim that the International Monetary Fund precipitated financial crises during the 1990s by pressuring countries to liberalize their capital accounts prematurely. Using data from a panel of developing economies from the 1982-98 period, we examine whether the changes in the regime governing capital flows took place during participation in IMF programs. We find evidence that IMF program participation is correlated with capital account liberalization episodes during the 1990s. We use alternative indicators of capital account openness to test the robustness of our results. To determine whether decontrol was premature, we compare the economic and financial characteristics of countries that decontrolled during IMF programs with those of countries who did so independently.

F3: International Finance
Key words: IMF programs; capital account liberalization

* E-mail: jjoyce@wellesley.edu; Telephone: 781-283-2160; Fax: 781-283-2177. We thank Michael Hutchison, Hiro Ito and Abdul Abiad for sharing their data and the East West Center for financial support.

# The IMF and the Liberalization of Capital Flows

## 1. Introduction

The Asian financial crisis of 1997/98 was followed by a wave of analyses that sought to determine its causes. One charge that emerged frequently was that the IMF had indirectly precipitated the crisis by pressuring countries to liberalize their capital accounts prematurely. Desai (2003), for example wrote: "…the IMF encouraged a disaster-prone policy gamble of capital account liberalization in these economies before they had put their "structural house" in order."[1] Similarly, Stiglitz (2002) states that "…many of the policies that the IMF pushed, in particular, premature capital market liberalization, have contributed to global instability."[2]

The IMF did play a role in the movement towards capital account decontrol that took place during the 1990s. Fund economists, like others, pointed out the advantages to developing economies of access to global capital markets. In September 1997, the IMF's policy-making Interim Committee proposed that the liberalization of capital flows be made a goal for the Fund's members—a proposal that was relegated to the sidelines and then dropped as the IMF sought to stem the massive capital outflows from East Asia.

However, the liberalization of capital flows was part of a global reaction against the Keynesian ideology of the post-World War II period. Under the Bretton Woods system, fixed exchange rates and capital controls protected countries from destabilizing external shocks. The counter-movement that began with the breakdown of the Bretton Woods system in the 1970s and accelerated in the 1980s sought to remove government controls and allow markets to operate freely.[3] This trend in the developing economies was called the "Washington Consensus" by Williamson (1990), who included the decontrol of foreign direct investment (but not portfolio flows) in the list of policy measures. Simmons and Elkins (2003, 2004) have argued that capital

decontrol was part of a process of policy diffusion that took place as countries competed for international capital.

Whether or not the IMF was indeed associated with the wave of capital account liberalization is an empirical issue that can be examined. This paper offers an analysis of the determinants of the decontrol of capital accounts in developing economies. We use data from a panel of developing economies during the period 1982-98 to determine whether the changes in the regime governing capital flows took place during IMF programs. We also investigate the impact of other factors, such as currency crises, that may have affected the decision to decontrol. In addition, to assess whether liberalization was premature we compare conditions in countries that liberalized while participating in IMF programs with those that decontrolled independently.

While other studies have investigated the conditions that accompany the use (or absence) of capital controls, this paper explicitly addresses the issue of the timing of the change from a closed to an open capital regime, and is the first to use rigorous testing methods to investigate the linkage between that decision and the IMF. Our results are significant for a clearer understanding of the role of the Fund in capital account liberalization as well as economic reform in general. Our work also has relevance for the discussion on the sequencing of capital market deregulation.

The next section reviews the evidence on the determinants of capital controls. Section 3 outlines the data and methodology used in the empirical analysis. Section 4 presents our results, including tests of robustness and also a comparison of economic conditions in countries that liberalized with and without IMF programs. The last section offers our conclusions.

## 2. Determinants of Capital Controls

There have been a number of studies of the determinants of capital controls since Epstein and Schor's (1992) pathbreaking work. Table 1 presents a summary of the major works, with the size and dates of their samples and the main results.[4] The dependent variable in the majority of these studies was a binary indicator of the presence of capital controls available from the IMF, and an appropriate estimation model (probit, logit) was utilized to test the significance of proposed determinants of capital controls.

The results varied by period and by level of development. However, a number of empirical relationships seem robust to alternative specifications. Richer countries, as measured by per-capita GDP, are less likely to maintain controls, as are countries with independent central banks. Countries with larger trade sectors are more likely to have liberalized capital flows, as have been countries with larger reserve/import coverage. Some of the studies reported that left-wing governments were more inclined to maintain controls, as were governments with large consumption/GDP shares.

The actual decontrol of the capital account may take place within the context of an IMF program. The IMF's Articles of Agreement allowed countries to retain capital controls, and during the Bretton Woods period most countries did so. However, private capital flows were an important component in the adjustment process to the oil shock of 1973, and they subsequently continued to grow in size and importance.[5] The developed countries removed their restrictions on capital flows during the 1970s and 1980s. A number of countries in Asia moved in the same direction during this period, and were followed in turn by several South American economies at the end of the 1980s. African and Middle Eastern countries did not move as far in opening their capital accounts.[6]

Using archival sources, Abdelal (2005) has traced the evolution of the IMF's position on this issue, which he shows emanated from the IMF's management with the support of the U.S. and the United Kingdom. Within the IMF, the leading advocates of decontrol were former Managing Director Michel Cadmessus and Manuel Guitián, then director of the Monetary and Exchange Affairs Department. Guitián (1995), for example, wrote that "…a strong case can be made in support of rapid and decisive liberalization of capital transactions."[7]

While capital decontrol was never an explicit goal of the IMF and therefore could not be made part of the conditions associated with Fund programs, the IMF did at times advocate movement towards liberalization. A 1995 IMF Occasional Paper by a staff team, for example, observed:

> While generally eschewing an activist policy of urging rapid liberalization, the institution has in some cases encouraged developing countries to open their economies to foreign capital inflows and to liberalize restrictions on capital account transactions.[8]

The IMF's Independent Evaluation Office (IEO) examined the Fund's position on capital account liberalization in a sample of developing countries during the 1990s. The IEO found that "…a number of IMF-supported programs with some of the sample countries included references to aspects of capital account liberalization in the letters of intent (LOIs) or accompanying policy memorandums."[9] But the IEO's report concluded that "In none of the program cases examined did the IMF require capital account liberalization as formal conditionality, although aspects of it were often included in the authorities' overall policy package presented to the IMF.[10]

Leiteritz (2005) ties the shift in the IMF's position on capital account decontrol to the U.S. policy of promoting access for U.S. financial firms to foreign markets. Similarly, DeLong

and Eichengreen (2002) claim that the Clinton administration's "…support for capital account liberalization flowed naturally from its belief in free and open markets," as well as a belief that controls provided opportunities for corruption and were difficult to administer.[11] Abdelal (2005), however, points out that the private financial sector in the U.S. (Wall Street) and the Institute for International Finance, which represents major banks, were much less enthusiastic than the Clinton administration about the transition towards capital decontrol.

This movement culminated in the proposal at the IMF's 1997 Annual Meeting to make the liberalization of capital movements one of the IMF's goals and to extend the Fund's jurisdiction to this area. The events in Asia, however, overshadowed the discussion, and increased challenges to the proposed Amendment. U.S. Congressional opposition and the Russian crisis combined to terminate the proposal in 1998.

There has been relatively little econometric evidence on the impact of the IMF on the process of decontrol. Simmons and Elkins (2004) found that the use of IMF credit was associated with capital account restrictions, which they attribute to the existence of capital flight at the times of the adoption of a Fund program. Abiad and Mody (2005) reported that IMF programs have a strong impact on financial reform in countries that are highly repressed, but this effect declines as repression is diminished.

A change in regulation may also occur in response to some discrete event, such as a crisis.[12] The direction of the change in such an occurrence, however, is ambiguous. On the one hand, a government may impose controls in order to stem capital outflows; on the other hand, capital account liberalization may serve as a signaling device for government officials to establish their reliability with global capital markets.

Haggard and Maxfield (1993) describe a sequence in which a populist government enacts expansionary economic policies, which result in capital flight. The government attempts to assuage the situation through the imposition of trade and capital controls, but a crisis ensues. A new team of policymakers emerges, either within the ruling party or as a result of an election or a regime change. The new policymakers seek to enhance the credibility of their government, and use the liberalization of the capital account as a tool for doing so. Convertibility signals the government's intention to undertake reforms, and also constrains its ability to engage in budget deficit financing.[13]

Haggard and Maxfield (1996) point out that there will be domestic coalitions on both sides of the issue of capital account liberalization. Crises are likely to increase the power of those in favor of liberalization. They find evidence in favor of the proposition that balance of payments crises can prompt an increase in the openness of domestic financial markets in the experiences of Indonesia (1970, 1987-88), Mexico (1978, 1983 and 1988), and Chile (1974, 1976-1980).

Rowlands (1999) tested Haggard and Maxfield's (1993, 1996) hypothesis. He used data for the period 1970-1994, which showed that liberalization occurred when the current account balance was improving, foreign reserves rising and the exchange rate appreciating. He interpreted these results as refuting the hypothesis, but also attributed the disparity to differences in the definition of liberalization and measurement issues.

Simmons and Elkins (2004), on the other hand, used a definition of currency crises based on Eichengreen, Rose and Wyplosz (1995), and found that such crises were associated with capital account liberalization. Abiad and Mody (2005) studied financial reform more broadly using an index of measures that included restrictions on international financial transactions. They reported that crises result in changes in the status quo, but the nature of the change depended on

the type of crisis. Balance of payments crises increased the likelihood of reform, but banking crises had the opposite effect.

These two hypotheses—that decontrol takes place during an IMF program *or* that decontrol is a form of signaling during a crisis—are not mutually exclusive. Governments may adopt IMF programs in response to crises in the external sector, and the program itself serves as a type of commitment device. On the other hand, not all countries facing crises adopt Fund programs, and not all IMF programs are put into place in response to currency crises.

In the analysis below, we differentiate between these two accounts of the process of capital decontrol. Our paper distinguishes between the impact on liberalization of IMF programs and the consequences resulting from the occurrence of currency crises. We also interact the two variables to determine whether the nature of the effects varies in the presence of the other phenomenon.

## 3. Data and Methodology

We begin the sample period in 1982 and obtained data for 53 developing and emerging market economies.[14] As this paper's focus is on the linkages between participation in IMF programs and the liberalization of the capital account, we first discuss the data on IMF programs and capital account controls. We then outline the methodology we use in order to identify the impact of the IMF on the decision to liberalize. Details on the sources of the remaining data are listed in Appendix A.

### 3.1 IMF Programs

The main IMF facilities designed to meet balance of payments stabilization needs are the Stand-By Arrangements (SBA) and the Extended Fund Facility (EFF), while those designed for longer-term development goals have been the concessionary programs, the Structural Adjustment Facility and Enhanced Structural Adjustment Facility (SAF and ESAF), which have been renamed as the Poverty Reduction and Growth Facility (PRGF). In general, Fund members can access credit tranches beyond the first 25% of their allowed quota only after a program agreement is signed between the IMF and the member's government. Conditionality ties the disbursement of credit in phases to the fulfillment of policies that the government has agreed to implement. We therefore define an IMF program as a signed agreement between the IMF and a sovereign government for a future distribution of resources.[15]

The distribution of IMF programs by type (nonconcessionary/concessionary), by region, and by decade is shown in Table 2. There were 241 nonconcessionary and 74 concessionary programs initiated and approved for our sample between 1982 and 1999. The nonconcessionary stabilization programs were primarily directed to Latin America (27% of program approvals) and Africa (35%). Predictably, given the poverty in the region, African recipients dominate the long-term concessionary structural programs with 61% of those programs.

### 3.2 Capital Controls

We conduct our initial analysis using the binary measure for restrictions on the capital account taken from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAR).* This measure is the only internationally comparable indicator of the legal framework that governs the capital account available for a large sample of countries on an annual

basis. The IMF changed its methodology after 1996 to provide a more detailed measure of the rules and restrictions governing the capital account. Glick and Hutchison (2005) extended the original *AREAR* series through 1998, using the descriptions of country practices provided in the IMF's annual reports, and we incorporate their data into ours.[16] As already noted, this is by far the most frequently used measure for capital controls.

To examine the robustness of our results, we also used two other measures of capital account openness. The first is that developed by Miniane (2004), who utilized the new criteria developed by the IMF, and extended these backwards to 1983 for a set of developing and developed countries. From this detailed data, Miniane (2004) constructed an index of openness that ranges from zero to one, that we transformed so that one signifies a completely unrestricted capital account. There are data for 14 developing countries in this data set.

The second indicator of capital account openness was developed by Chinn and Ito (2005a, 2005b). They used the data reported in the *AREAR* on the existence of multiple exchange rates, restrictions on the current and capital accounts (where the latter is measured as the proportion of the last five years without controls) and requirements to surrender export proceeds in order to capture the intensity of controls on capital account transactions. Their index of openness is the first standardized principal component of the four variables above, and ranges from -2.5 in the case of full control to 2.5 in the case of complete liberalization. The data is available for 108 developed and developing countries for 1970-2000. Given our interest, we utilize only data for developing countries for 1982-1998.

Descriptive statistics for the *AREAR*, Miniane and Chinn-Ito data are provided in Table 2, and their correlations in Appendix C. We note that the Middle East appears to be the most open while Africa has by far the most restrictive capital accounts. Appendix B lists the countries that

decontrolled capital flows and the dates of liberalization in the two data sets. Alternative measures that examine the *de facto* openness of the capital account are also occasionally used in research on openness in international capital markets, but these are not directly relevant to our interest in the impact of the IMF on a government's decision to change its *de jure* treatment of capital flows.[17]

### 3.3 Estimation Methodology

The *AREAR* data on capital account liberalizations, which is the measure we focus on, is binary. Since we are interested in isolating the IMF's impact on the decision to liberalize the capital account, we estimate a multivariate probit specification of the determination of the openness of the capital account. We postulate a probit model of this form:

$$\left[ prob(CAPLIB_{it} = 1) \right] = F(\beta X_{it} + \gamma P_{it} + \delta IMF_{it}) \qquad (1)$$

where *CAPLIB* is a binary variable denoting the *de jure* openness of the capital account, *X* is a vector of macroeconomic and financial variables, *P* is a vector of political and institutional measures and *IMF* is a measure denoting participation in an IMF program. In order to make the signs of the coefficients using the data sets comparable, we transform the IMF's *AREAR* data so that the dependent variable takes the value of unity when there is an unregulated capital account and zero otherwise.

We first specify a series of benchmark regressions with macroeconomic and political control variables, based on the previous work summarized in Table 1.[18] We started with a full set of control variables, and incrementally delete the least significant variable verifying each step with a reduction in the Akaike Information Criterion (AIC). We then augment these variables with various measures of participation in IMF programs. The estimations include country fixed

effects (not reported) and a correction for heteroscedasticity. The pseudo $R^2$ is computed using the definition from Zavoina and McElvey (1975).

The Miniane (2004) and the Chinn and Ito (2005a) capital account openness indices, which we use to examine the robustness of our results, are continuous. For these, we use similar specifications to those in the previous tables with a fixed effects least squares estimation methodology and a correction for heteroscedasticity.

## 4.1 Results

Table 3 reports the results for the benchmark regressions, using the transformed *AREAR's* indicator of capital controls as the dependent variable. Several of the economic variables were significant. An increase in the reserve coverage of imports is associated with a liberalized capital account; Leblang (1997) and Rowlands (1999) reported similar results. Trade openness is associated with unregulated capital flows, as Brooks (2004), Brune et al. (2001), Grilli and Milesi-Ferretti (1995), Milesi-Ferretti (1998), Rowlands (1999) and Simmons and Elkins (2004) also found. An increase in government consumption is linked to the use of controls, which is most likely due to the government's need to levy taxes.[19] This result was consistent with those reported by Brune et al. (2001), Glick and Hutchison (2005), Grilli and Milesi-Ferretti (1995) and Milesi-Ferretti (1998).

A rise in short-term debt is associated with an open capital account. The binary indicator of a currency crisis is not significant in any of the specifications. Several other economic variables that have been mentioned in the literature were also not significant in our results and were subsequently dropped from the empirical analysis. These included a foreign interest rate

(weighted average of G3 rates), the current account scaled by GDP, per-capita GDP, an indicator of banking crises, the government budget surplus, and the type of exchange rate regime.

Several political variables were also initially included in the benchmark regression. An increase in government unity, measured by the sum of the squared seat shares of all parties in the government (a Herfindahl index), was associated with more controls, and this effect was significant at the 1% level. This result suggests that decontrol occurs when the government is divided, and may not be able to withstand external pressure. This may also be related to the finding reported by Glick and Hutchison (2005), Grilli and Milesi-Ferretti (1995) and Milesi-Ferretti (1998) that an increase in the number of government changes was inversely related to the presence of capital controls.

Corruption was inversely related to the existence of regulations on capital flows and significant at the 5% significance level, indicating that a government can extract rents from these controls. The remaining political variables, including indicators of left-wing partisanship, democracy and the holding of elections, were not significant and were subsequently dropped.

A dummy variable for the 1990s was negative and significant in the initial benchmark regression. This indicates that after controlling for all the other effects we identified, there were many countries that maintained controls during the 1990s despite an apparent wave of deregulation.

In Table 4 we added additional variables to the benchmark regression, equation 3.3 of Table 3, which had the lowest Akaike Information Criterion (AIC).[20] In equation 4.1, a dummy variable reflecting the existence of an IMF program is added, and appears with a positive sign: those countries that adopted IMF programs were less likely to have controls. The pseudo $R^2$ rises from 0.59 in equation 3.3 to 0.67 in equation 4.1. The 1990s variable continues to have a

significant negative coefficient, whereas the coefficient of the indicator of currency crises is not significant.

In the following equation we replaced the one IMF variable with two, one for IMF programs in the 1980s and one for programs in the 1990s. The coefficient associated with the latter variable is significant at the 1% level and is almost 2.5 times bigger than the IMF program coefficient in the previous specification, whereas the 1980s program variable is not significant. Countries with IMF programs in the 1990s were significantly *less* likely to have controls, even though the negative coefficient on the 1990s variable shows that controls were more common in other countries during the decade.

In equation 4.3, we limit the observations to the 1990s. The IMF program variable continues to be positive and strongly significant, and maintains the same magnitude as that reported in equation 4.2. Moreover, the currency crisis variable, which was not significant in either of the first two specifications, has a negative sign here which is significant. Countries with currency crises during the decade of the 1990s were more likely to maintain controls.[21]

We interact the IMF program variable with currency crisis and non-crisis indicators in equation 4.4. Neither has a significant coefficient, although the IMF-crisis variable has a coefficient that is twice as big as the IMF-non-crisis variable.

In equation 4.5 we differentiate between the nonconcessionary IMF programs, such as the Stand-by Arrangements, and the long-run facilities, such as the Enhanced Structural Adjustment Facility. Both coefficients are positive, but the coefficient of the concessionary programs is significant at the 10% level and is three times as big as the coefficient on the nonconcessionary program indicator, which is not statistically significant. This result is plausible, as capital account

liberalization is consistent with the structural adjustment policies that are part of the concessionary facilities.

In equation 4.6 we add the size of the IMF program relative to GDP as a variable. The coefficient is not significant for program size but the binary IMF program variable retains its magnitude and significance.

Using the *AREAR* data to capture the effect of IMF programs on the actual transition to a liberalized capital regime may be an imprecise procedure. The existence of IMF programs can be consistent with such a regime, but may not have been a direct determinant of the changeover. Therefore, in order to focus on the actual transition to a regime of unregulated capital flows, in Table 5 the dependent variable is a binary variable from a two-year window, the year of liberalization and the preceding year. Observations in which the capital account was already open for more than two years were discarded.

The 1990s variable is now significant with a *positive* coefficient; while there were many countries with capital controls in place during this decade, the probability that a country would deregulate rose during the 1990s. Moreover, a variable (NEWIMF) indicating the initiation of an IMF program is also positive and significant; a country was more likely to liberalize immediately after an agreement was signed with the IMF. The currency crisis variable is not significant here; there is no sign that a country with a crisis was likely to relax controls, and this result does not change in subsequent specifications.

The sample used for the estimation of equation 5.2 consisted of developing countries with a GDP per capita of at least $1,500. The coefficient on the IMF program variable is again positive, only slightly smaller and significant at the 10% level, as is the 1990s variable. The

sample period is restricted to the 1990s for equation 5.3, and the IMF program variable is now larger and significant at the 1% level.

We introduced the size of the IMF program scaled by GDP (IMFSIZE) as an independent variable in equation 5.4 to test whether the IMF had more leverage in cases of larger programs or a larger stake in pushing for reform. The coefficient has a 'plausible' positive sign and is almost significant at the conventional 10% level. In equation 5.5, we used two interactive variables, the new IMF program and the currency crisis variable, and the IMF program and a no-crisis variable. The coefficient on the latter is almost twice as large and statistically significant, suggesting that countries were more likely to liberalize during an IMF program in the absence of a crisis.

## 4.2 Tests of Robustness

In the remaining tables we use the two other indicators of liberalization, those of Miniane (2004) and Chinn-Ito (2005a, 2005b). Table 6 replicates the benchmark specifications of Table 3 using the Miniane data in equations 6.1 and 6.2. Many (but not all) of the economic variables that were significant in the previous table are significant again, including trade openness, government consumption and short-term debt. In addition, inflation has a negative coefficient, which is highly significant, as does the government budget surplus. The current account variable has a positive sign and is significant at the 10% level. The latter result suggests that decontrol took place under the appropriate circumstance of external balance.

Government unity is significant here, but with a positive sign; the difference with the coefficient reported in Table 4 may be due to the difference in the samples or the nature of the data. Several other political variables are also significant. Countries with left-wing executives, for example, are more likely to move towards decontrol, whereas democratic regimes are less

likely to make that change. The 1990s variable appears with a positive coefficient, indicating that the process of decontrol strengthened during the decade.

In Table 7 we add variables regarding IMF programs to the benchmark specification for the Miniane data, equation 6.2 of Table 6. In equation 7.1, the IMF variable appears with an insignificant coefficient, while the 1990s variable is positive and significant. In the following equation we distinguish between IMF programs of the 1980s and those that occurred in the 1990s. The former has a negative coefficient significant at the 10% level, whereas the latter has a positive coefficient, which is not significant here.

In equation 7.3, we introduce the interactive IMF and currency crisis variable that we had used in Table 4. It appears here with a negative and significant coefficient; capital controls were more common in the context of an IMF program that was enacted during a currency crisis. But when we separate out the crises of the 1990s, the coefficient of the latter variable appears with a positive coefficient that is almost the same in size as the negative coefficient associated with all crises. This is another indication that there was a pronounced change in IMF policy during the 1990s.

Finally, we use the Chinn-Ito index as the dependent variable, and in equations 6.3 and 6.4 we report the results of estimations with the control variables. Government consumption, short-term debt, inflation, and the current account are again significant determinants of decontrol (with the same signs), as are the foreign interest rate and GDP per capita. Corruption is also significant as is the partisanship variable, although at the 10% level.

In Table 8 we add the program and other variables to the benchmark equation, equation 6.4. The results in the first two equations are virtually identical to those reported in Table 7: the 1990s dummy has a positive significant coefficient, while the IMF program variable for the

1990s is positive and significant at the 10% level. In equation 8.3, where we interact the IMF program variable with the crisis and non-crisis variables, the coefficients are not significant. However, when we interact the initial year of the IMF program with the crisis/no crisis variables, the former interactive variable is positive and significant; this suggests that countries were more likely to decontrol the capital account during a crisis only if an IMF program agreement was simultaneously signed. For this specification, the coefficient of the currency crisis variable itself is negative and significant at the 10% level.

It is possible that our continuous measures of capital account openness (the 0 - 1 Miniane index and the Chinn-Ito –2.5 - +2.5 index) ignore differences in the degree of openness or repression that occur for those observations that occupy the extreme ends of these measures. If indeed we are dealing with censored data, a Tobit estimation will be appropriate and deal with the bias inherent in the linear least squares estimation procedures we previously used. To examine whether this non-linear specification significantly alters our results we repeat two specifications that are important for our argument (eqs. 7.2 and 8.2) using a Tobit procedure (eqs. 7.5 and 8.5). The results are very similar and include even larger coefficients and higher statistical significance for the IMF variables. The coefficient of the currency crisis variable is negative and significant at the 5% level when the Chinn-Ito index is utilized.

Another possible bias might be due to reverse causality from the decision to have liberalized financial markets to participation in IMF programs (the argument being that liberalizing countries will be more likely to choose to participate in an IMF program). While we do not find this linkage convincing, we attempted to verify the robustness of our results by instrumenting for the decision to participate in an IMF program. As usually occurs in such cases,

it is difficult to find an appropriate instrument, i.e., one that is correlated with the acceptance of an IMF program but not with the decision to decontrol the capital account.

One possible instrument is the country's past experience with the IMF. Conway (1994) showed that past participation is a statistically significant indicator of the current likelihood to adopt a program, while Bird et al. (2004) and Joyce (2005) established that recidivism is an important aspect of countries' experience with the IMF. Therefore we estimated a number of specifications using past participation (computed as the number of years, out of the previous 10 years, in which the country participated in a program) as an instrument for current participation in an IMF program, using a standard 2SLS procedure. The signs for the variables of interest, especially the coefficients on the IMF binary indicator, are always the same but these frequently lose their statistical significance. This might be because the sample is significantly smaller (we can no longer use the earlier observations) or because the instrumental variable (past participation) is only weakly correlated with current participation.

### 4.3 Initial Conditions

Desai (2003) and Stiglitz (2002) and other critics of the IMF have charged that not only did the IMF pressure countries to decontrol the capital account, but that this was done before the countries were ready for capital flows. We compared characteristics of countries that decontrolled during their participation in IMF programs with those that liberalized without the IMF. Table 9 reports the mean values of several macroeconomic indicators for these two groups in the year before liberalization (t-1) as well as the year of liberalization. We used the Chinn-Ito measurement of capital decontrol to identify the countries that liberalized, as that measurement yielded the largest number of episodes of liberalization.

The countries that decontrolled capital flows during an IMF program had on average larger current account deficits, smaller reserve coverage, higher inflation and larger budget deficits in the year before liberalization than the countries which removed capital account restrictions independently. The average current account deficit in the former group, for example, was 5.5% of GDP versus 2.6% for the latter, and this difference is significant at the 10% level. Reserves covered an average 2.5 months of imports for the IMF group and 4.2 months for those that liberalized without the IMF, and this difference is significant at the 1% level. Inflation for the first group averaged 204% versus 178% for the second, while the government budget showed an average deficit of -4.3% of GDP for the IMF group as opposed to -2.8% for the independent group. These two pairs of mean values were not significantly different.

However, the countries that decontrolled during participation in IMF programs showed markedly larger improvements in economic conditions in the year when the program began and capital restrictions were removed. The current account deficit fell to an average 3.5%, and the two means are no longer significantly different. Reserve coverage increased to an average of 3 months in the IMF-affiliated group, while reserve coverage for the second group declined somewhat; the difference is only significant at the 10% level. The rate of inflation in the group with programs declined to 31.4%, which is substantially lower than the rate of 124.8% in the non-program group. Finally, the government budget deficit came down to -3.3% in the group with the programs, while declining only very slightly in the other group.

In addition to the macroeconomic environment for liberalizing countries described in Table 9, we also report details on the financial systems of those countries in Table 10. Once again, we distinguish between IMF supported liberalizations and non-IMF ones. There are few noticeable differences between the two groups. The non-IMF observations tend to have

somewhat deeper financial systems (higher ratios of liquid liabilities, deposit bank assets and private credit to GDP) while IMF liberalizing countries have a higher ratio of central bank assets (to GDP). Only the differences in the mean values of the central bank asset and private credit ratios are significant. All the first four measures increase slightly after liberalization in the IMF program countries. We also notice a decrease in a concentration index of the financial sector following liberalization, and an increase in stock market capitalization that is only apparent for the non-IMF liberalizing countries.

The countries that liberalized during the IMF programs, therefore, did record adverse macroeconomic conditions before they liberalized. However, the domestic authorities adjusted their policies, apparently in response to the IMF program, and as a result a stronger macroeconomic environment accompanied capital decontrol. There was no immediate adverse impact resulting from the liberalization of the capital account on other macroeconomic indicators.

## 5. Conclusions

The empirical evidence reported in this paper is consistent with the hypothesis that capital account decontrol in developing countries took place within the context of IMF programs, particularly during the 1990s. There is some evidence that the change in the capital account regime was more likely to occur during the IMF's concessionary programs. However, Fund programs were also significant determinants of capital account decontrol in countries with higher incomes that are generally not the typical clients for concessionary loans.

There is also some evidence that liberalization was less likely to occur during a currency crisis. When the *AREAR* data are utilized, we find that countries were more likely to *impose*

controls when a crisis occurred during the 1990s, and a similar relationship was found when the Chinn-Ito data and the Tobit estimation method were utilized. When we interact the IMF program variable with the crisis variable, the nature of the relationship depends on the choice of indicator of openness.

There is nothing in our findings to suggest that countries liberalized against their will. Edwards (2003) points out that the initial push for economic opening in the early 1980s came from policymakers, many of them from Latin America, and many countries decontrolled capital flows at this time without pressure from the IMF. Cho (2003), Nasution (2003) and Nidhiprabha (2003), in studies of liberalization and reform in South Korea, Indonesia and Thailand, found that domestic advocates, including commercial bankers and government economists, were influential in the process of deregulation. In the case of Thailand, Nidhiprabha (2003) adds that "…the IMF gave them indirect support by providing the standby loan agreement in case of capital outflows after exchange control liberalization and thus encouraged the perception that nothing could go wrong with an open capital account."[22]

The IMF's Independent Evaluation Office, which examined the IMF's policy stance on this issue, concluded:

> In summary, the IMF undoubtedly encouraged countries that wanted to move ahead with capital account liberalization, and even acted as a cheerleader when it wished to do so, especially before the East Asian crisis, but there is no evidence that it exerted significant leverage to push countries to move faster than they were willing to go.[23]

The IMF's decision to advocate decontrol seems to have been taken without placing sufficient emphasis on the necessary financial conditions to ensure stability after capital flows

were deregulated. Advocates of decontrol may have thought that these flows would themselves create the conditions. Guitián (1995), a forceful advocate of liberalization within the IMF, wrote "…An open capital account will constrain domestic policies to the extent necessary to bring about balance and stability to the economy."[24] DeLong and Eichengreen (2002) found that within the U.S. administration, "…there was a hope that by forcing the pace of financial liberalization, countries might be compelled to more quickly upgrade their domestic regulations and institutions."[25]

In retrospect, those hopes were overly optimistic. The events of 1997 and 1998 caused a reassessment of the benefits and costs of capital flows, and the IMF now has a much more nuanced stance on this issue. Prasad et al. (2003), for example, found little evidence that financial globalization was associated with higher output growth, and may have contributed to increased consumption volatility. They conclude that financial integration should be done cautiously, and advocate implementation on a case-by-case basis. Another recent paper by the IMF (2002) has presented a sequencing methodology that includes achieving macroeconomic stability and promoting financial supervision in the first stage.

The IMF's position on capital controls will continue to evolve as circumstances change. Private capital flows to developing economies increased to $200 billion in 2003, their highest levels in five years.[26] Meanwhile, the US has pursued its goal of capital decontrol within bilateral trade agreements with Singapore and Chile. The movement towards liberalization may have been halted, but it will reemerge in future years, and the IMF will undoubtedly have a key place in the ensuing discussions.

NOTES

[1] Desai (2003), p. 217.

[2] Stiglitz (2002), p.15.

[3] See Blyth (2002) and Skidelsky (1995) for accounts of the main economic and political trends of this period.

[4] Eichengreen (2001) surveys the literature on capital controls.

[5] See Helleiner (1994) for an account of the reemergence of global capital flows.

[6] See Quinn (2003) for an overview of the record of capital account liberalization.

[7] Guitián (1995), p. 86. Guitián presented this paper at a conference in Korea in 1992, and Edwards (2003), who edited the conference volume, writes that the paper was one of the first to express the change in the IMF's view on capital account convertibility.

[8] IMF (1995), p. 6.

[9] IEO (2005), p. 51.

[10] IEO (2005), p.92.

[11] DeLong and Eichengreen (2002), p. 237.

[12] See Drazen (2000), Ch. 10.8, for a review of the literature on economic crises and reform.

[13] Bartolini and Drazen (1997) also treat capital liberalization as a signaling device. In their model, governments that depend on the revenues from taxes on capital are more likely to impose restrictions. Investors use current policies as a signal of future intentions, and therefore invest in countries where controls are unlikely.

[14] According to the IMF (1995), it began to encourage capital account convertibility in the mid-1980s.

[15] Precautionary programs, which are signed to have an agreement in place should a country require the funds, are included in our definition. In addition, in some cases disbursements beyond the first tranche are not made because they are no longer necessary or the IMF decides its conditionality has not been met. In either case, we include these in our list of programs.

[16] A thorough description of this data and a comprehensive discussion of alternative measures are found in Edison et al. (2004), particularly Table 1, p. 224-5.

[17] Recent examples of research that use *de facto* measures are Lane and Milesi-Ferretti (2001), Aizenman and Noy (2003) and Edwards (2005).

[18] Appendix C reports the correlations of the economic and political variables.

[19] On capital controls as a source of government revenue, see Aizenman and Noy (2003).

[20] The results for the control variables are comparable to those reported in Table 3, and are available from the authors.

[21] We also used three different measurements of political crisis. In a few cases, we found a significant negative coefficient, consistent with the finding that crises lead to more controls. However, these results (available from the authors) were not robust to alternative specifications.

[22] Nidhiprabha (2003), p. 40.

[23] IEO (2005), p. 94. Williamson (2004) comes to a similar conclusion.

[24] Guitián (1995), p. 85.

[25] DeLong and Eichengreen (2002), p. 251.

[26] See World Bank (2004).

Table 1

Determinants of Capital Controls

| Authors | Sample | Impact on Capital Controls |
|---|---|---|
| Epstein and Schorr (1992) | 16 developed, 1968-86 | Independent central bank, fiscal budget (-); left-wing gov't (+) |
| Alesina, Grilli and Milesi-Ferretti (1994) | 20 OECD, 1950-89 | Independent central bank (-); fixed exchange rate, stable, durable, and majority governments (+) |
| Grilli and Milesi-Ferretti (1995) | 21 developed and 40 developing countries, 1966-89 | Independent central bank, government changes, (X+M)/GDP (-); turnover of central bankers, government coups, government consumption/GDP (+) |
| Leblang (1997) | 20 OECD, 71 other, 1967-92 | Reserves/imports, GDP per capita, exchange rate variability (-); international borrowing, fixed ex rate, seignorage (+) |
| Quinn and Inclán (1997) | 21 OECD, 1950-88 | Left-wing governments, right-wing with less competitive markets (+); right-wing governments, left-wing with skilled labor (-) |
| Milesi-Ferretti (1998) | 21 developed and 40 developing countries, 1966-89 | Government changes, (X+M)/GDP (-); government consumption/GDP, government coups, turnover of central bankers (+) |
| Johnston and Tamirisa (1998) | 45 developing and transition, 1996 | Balance of payments and macroeconomic management, financial market and regulatory development, economic size and development |
| Rowlands (1999) | 90 countries, 1970-94 | (X+M)/GDP, international interest rate, GDP per capita (+); current account/GDP, % change in reserves (-) |
| Brune, Garrett, Guisinger and Sorens (2001) | 140 countries, 1976-98 | (X+M)/GDP, FDI/GDP, per capita GDP, democratic regimes (-); government consumption/GDP, fixed exchange rates (+) |
| Simmons and Elkins (2004) | 182 countries, 1967-96 | GDP per capita, currency crisis, (X+M)/GDP, democracy (-) |
| Brooks (2004) | 40 OECD and Latin American countries, 1980-99 | Financial sector strength, asset-rich central banks, (X+M)/GDP (-); left-wing governments (+) |
| Glick and Hutchison (2005) | 69 developing countries, 1975-97 | Current account/GDP, X+M/GDP, government changes (-) |

Note: In cases of mixed samples we report results for developing countries.

Table 2

Sample Descriptive Statistics for IMF and Liberalization Variables

| | Non-concessionary programs | Concessionary programs | Liberalized Capital Account | Average for Miniane Index | Average for Chinn-Ito Index |
|---|---|---|---|---|---|
| Latin America | 65 | 6 | 31% | 0.16 | -0.24 |
| East Asia | 20 | 4 | 34% | 0.42 | 0.91 |
| Middle East | 7 | 1 | 48% | | 0.55 |
| Africa | 85 | 45 | 1% | | -0.67 |
| Other | 64 | 18 | 11% | | -0.46 |
| 1980s | 74 | 32 | 16% | 0.21 | -0.56 |
| 1990s | 67 | 42 | 19% | 0.28 | 0.08 |

Note: Nonconcessionary programs include Stand-By Arrangements and Extended Fund Facilities. Concessionary programs include the Structural Adjustment Facility and the Enhanced Structural Adjustment Facility. The third column reports the number of country/year observations with liberalized accounts as a percent of total observations. The fourth and fifth columns present averages for the Miniane and Chinn-Ito Indices on the degree of capital account liberalization (see text for details).

Table 3

Political and Economic Determinants of Capital Controls (*AREAR* Data)

| | *Eq. 3.1* | *Eq. 3.2* | *Eq. 3.3* | *Eq. 3.4* |
|---|---|---|---|---|
| RES | 0.09*** | 0.08*** | 0.08*** | 0.08*** |
| | (3.22) | (3.93) | (3.93) | (4.00) |
| TRAD | 0.01*** | 0.01*** | 0.01*** | 0.01*** |
| | (4.45) | (5.66) | (5.72) | (6.15) |
| GCON | -0.06*** | -0.06*** | -0.07*** | -0.07*** |
| | (3.08) | (4.01) | (4.63) | (4.94) |
| STDBT | 0.01 | 0.01** | 0.01* | 0.01* |
| | (0.73) | (2.10) | (1.92) | (1.63) |
| CURCR | -0.25 | -0.22 | -0.24 | -0.25 |
| | (1.29) | (1.26) | (1.37) | (1.47) |
| CORPT | -0.17** | -0.13** | -0.14** | -0.14** |
| | (2.16) | (2.01) | (2.16) | (2.25) |
| UNITY | -0.96*** | -0.78*** | -0.86*** | -0.91*** |
| | (4.05) | (3.99) | (5.05) | (5.42) |
| 1990s | -0.33** | -0.23* | -0.21* | -0.21 |
| | (1.98) | (1.68) | (1.57) | (1.55) |
| INF | -0.13 | -0.16 | -0.19 | |
| | (0.79) | (0.97) | (1.07) | |
| FINT | 0.02 | -0.03 | | |
| | (0.59) | (0.88) | | |
| CURAC | -0.01 | | | |
| | (0.60) | | | |
| GDPCAP | 0.00 | | | |
| | (0.29) | | | |
| BANCRI | 0.02 | | | |
| | (0.14) | | | |
| GBUD | 0.01 | | | |
| | (0.28) | | | |
| EXREG | 0.17 | | | |
| | (1.06) | | | |
| LEFT | -0.07 | | | |
| | (0.38) | | | |
| DEM | 0.00 | | | |
| | (0.10) | | | |
| ELECT | 0.06 | | | |
| | (0.36) | | | |
| Observations | 503 | 649 | 649 | 659 |
| Psuedo $R^2$ | 0.57 | 0.57 | 0.59 | 0.47 |
| Akaike IC | 0.84 | 0.77 | 0.76 | 0.77 |

Note: Dependent variable is either 0 (full controls) or 1 (no controls). For definitions of variables, see Appendix. T-statistics in parentheses; significance levels are 10% *, 5% ** and 1%***.

Table 4

The IMF and Capital Controls (*AREAR* Data)

| | *Eq. 4.1* | *Eq. 4.2* | *Eq. 4.3* | *Eq. 4.4* | *Eq. 4.5* | *Eq. 4.6* |
|---|---|---|---|---|---|---|
| CURCR | -0.26 | -0.26 | -0.65** | -0.42 | -0.26 | -0.26 |
| | (1.47) | (1.43) | (2.15) | (1.46) | (1.46) | (1.45) |
| 1990s | -0.28** | -0.76*** | | -0.28** | -0.28** | -0.28** |
| | (1.98) | (3.61) | | (1.98) | (2.09) | (1.99) |
| IMF | 0.27** | | 0.67*** | | | 0.30** |
| | (1.96) | | (3.26) | | | (2.06) |
| IMF80s | | -0.18 | | | | |
| | | (0.89) | | | | |
| IMF90s | | 0.70*** | | | | |
| | | (3.56) | | | | |
| IMF*CURCR | | | | 0.50 | | |
| | | | | (1.45) | | |
| IMF*NOCURCR | | | | 0.23 | | |
| | | | | (1.54) | | |
| SRIMF | | | | | 0.12 | |
| | | | | | (0.88) | |
| LRIMF | | | | | 0.37* | |
| | | | | | (1.81) | |
| IMFSIZE | | | | | | -1.04 |
| | | | | | | (0.65) |
| Observations | 649 | 649 | 361 | 649 | 649 | 649 |
| Pseudo $R^2$ | 0.67 | 0.63 | 0.86 | 0.67 | 0.64 | 0.65 |
| Akaike IC | 0.76 | 0.75 | 0.80 | 0.77 | 0.77 | 0.77 |

Note: See note for Table 3. Additional control variables included in all specifications are those of Eq. 3.3. The sample in Eq. 4.3 is restricted to the 1990s.

Table 5

The IMF and Capital Controls - Robustness (AREAR Data)

| | *Eq. 5.1* | *Eq. 5.2* | *Eq. 5.3* | *Eq. 5.4* | *Eq. 5.5* |
|---|---|---|---|---|---|
| CURCR | -0.31 | -0.27 | -0.40 | -0.32 | -0.25 |
| | (1.17) | (0.90) | (1.32) | (1.20) | (0.91) |
| 1990s | 0.57** | 0.55* | | 0.59** | 0.57** |
| | (2.32) | (1.91) | | (2.37) | (2.33) |
| NEWIMF | 0.64** | 0.54* | 0.83*** | 0.61** | |
| | (2.32) | (1.64) | (2.74) | (2.21) | |
| IMFSIZE | | | | 2.77 | |
| | | | | (1.53) | |
| NEWIMF*CURCR | | | | | 0.47 |
| | | | | | (1.25) |
| NEWIMF*NOCURCR | | | | | 0.81** |
| | | | | | (2.13) |
| Observations | 557 | 411 | 308 | 557 | 557 |
| Psuedo $R^2$ | 0.55 | 0.56 | 0.52 | 0.65 | 0.55 |
| Akaike IC | 0.41 | 0.44 | 0.61 | 0.40 | 0.41 |

Note: The dependent variable denotes the onset of capital account liberalization: 0 = non-liberalized capital account or 1 = liberalization during a two year window. Additional control variables are those of Eq. 3.3. The sample in Eq. 5.2 is restricted to countries with a GDP per capita of $1500 and above (PPP adjusted), while the sample in Eq. 5.3 is restricted to the 1990s.

Table 6

Political and Economic Determinants of Capital Controls (Alternative Indices)

| | *Miniane Index* | | *Chinn-Ito Index* | |
|---|---|---|---|---|
| | *Eq. 6.1* | *Eq. 6.2* | *Eq. 6.3* | *Eq. 6.4* |
| RES | -0.00 | | 0.02 | |
| | (0.71) | | (0.65) | |
| TRAD | 0.00* | 0.00* | 0.00 | |
| | (1.79) | (1.77) | (0.03) | |
| GCON | 0.01*** | 0.01*** | 0.11*** | 0.05*** |
| | (4.34) | (4.62) | (5.91) | (3.71) |
| STDBT | 0.00* | 0.00* | 0.01** | 0.01** |
| | (1.74) | (1.63) | (2.13) | (2.44) |
| CURCR | -0.01 | | -0.06 | |
| | (0.87) | | (0.70) | |
| CORPT | 0.00 | | 0.14** | 0.08** |
| | (0.21) | | (2.52) | (2.02) |
| UNITY | 0.06* | 0.06** | -0.01 | |
| | (1.92) | (1.98) | (0.06) | |
| 1990s | 0.09*** | 0.08*** | 0.48*** | 0.42*** |
| | (5.11) | (5.74) | (5.45) | (5.80) |
| INF | -0.00*** | -0.00*** | -0.04*** | -0.02*** |
| | (2.55) | (2.72) | (4.70) | (3.61) |
| FINT | 0.00 | | -0.08*** | -0.08*** |
| | (0.84) | | (3.72) | (4.36) |
| CURAC | 0.00* | 0.00* | 0.02** | 0.01*** |
| | (1.71) | (1.59) | (2.34) | (2.54) |
| GDPCAP | -0.00 | | 0.00 | 0.00* |
| | (0.18) | | (0.89) | (1.56) |
| BANCRI | 0.00 | | -0.16* | |
| | (0.17) | | (1.87) | |
| GBUD | -0.01** | -0.01* | 0.03*** | 0.03*** |
| | (2.28) | (2.39) | (2.65) | (2.89) |
| EXREG | 0.01 | | -0.00 | |
| | (0.39) | | (0.04) | |
| LEFT | 0.09*** | 0.07*** | -0.09 | -0.19* |
| | (2.69) | (2.63) | (0.66) | (1.56) |
| DEM | -0.00* | -0.01** | -0.01 | -0.01 |
| | (1.70) | (2.42) | (0.85) | (1.53) |
| ELECT | 0.00 | | 0.02 | |
| | (0.21) | | (0.22) | |
| Observations | 152 | 155 | 478 | 629 |
| Adjusted $R^2$ | 0.85 | 0.86 | 0.77 | 0.77 |
| Akaike IC | 0.52 | 0.54 | 2.14 | 2.04 |

Note: Dependent variable for 6.1-6.2 is an ordinal measure of the degree of capital controls ranging from 0=full controls to 1=no controls; see Miniane (2004) for details. Dependent variable for 6.3-6.4 is an ordinal measure of the degree of capital controls ranging from –2.5=full controls to +2.5=no controls; see Chinn and Ito (2005b) for details. For definitions of all other variables, see Appendix. T-statistics in parentheses; significance levels are 10% *, 5% ** and 1%***.

Table 7
The IMF and Capital Controls (Miniane Index)

| | *Eq. 7.1* | *Eq. 7.2* | *Eq. 7.3* | *Eq. 7. 4* | *Eq. 7.5* TOBIT |
|---|---|---|---|---|---|
| CURCR | | | 0.02 | 0.01 | |
| | | | (1.31) | (0.92) | |
| 1990s | 0.06*** | 0.03*** | 0.06*** | 0.05*** | -0.04 |
| | (4.76) | (3.70) | (4.97) | (3.52) | (0.82) |
| IMF | -0.00 | | 0.02 | 0.01 | |
| | (0.00) | | (1.10) | (0.29) | |
| IMF80s | | -0.04* | | | -0.19*** |
| | | (1.75) | | | (4.25) |
| IMF90s | | 0.08 | | | 0.08*** |
| | | (1.01) | | | (2.03) |
| IMF*CURCR | | | -0.05** | -0.09*** | |
| | | | (2.23) | (3.88) | |
| IMF*CURCR90s | | | | 0.10*** | |
| | | | | (3.96) | |
| Observations | 195 | 195 | 195 | 184 | 195 |
| Adjusted $R^2$ | 0.92 | 0.89 | 0.92 | 0.93 | |
| Akaike IC | -2.68 | -2.72 | -2.66 | -2.68 | |

Note: see note for Table 6. Additional control variables are those of Eq. 6.2.

Table 8
The IMF and Capital Controls (Chinn-Ito Index)

| | *Eq. 8.1* | *Eq. 8.2* | *Eq. 8.4* | *Eq. 8.5* | *Eq. 8.3* TOBIT |
|---|---|---|---|---|---|
| CURCR | | -0.09 | -0.17 | -0.13* | -0.29** |
| | | (1.16) | (1.45) | (1.78) | (2.01) |
| 1990s | 0.41*** | 0.24*** | 0.40*** | 0.40*** | 0.02 |
| | (5.48) | (2.39) | (5.01) | (4.99) | (0.13) |
| IMF | 0.08 | | | | |
| | (1.26) | | | | |
| IMF80s | | -0.11 | | | -0.25* |
| | | (1.41) | | | (1.58) |
| IMF90s | | 0.19* | | | 0.39** |
| | | (1.76) | | | (2.25) |
| IMF*CURCR | | | 0.15 | | |
| | | | (1.16) | | |
| IMF*CURNOCR | | | -0.01 | | |
| | | | (0.12) | | |
| NEWIMF*CURCR | | | | 0.28* | |
| | | | | (1.70) | |
| NEWIMF*NOCURCR | | | | -0.04 | |
| | | | | (0.35) | |
| Observations | 629 | 537 | 537 | 537 | 537 |
| Adjusted $R^2$ | 0.77 | 0.78 | 0.78 | 0.78 | |
| Akaike IC | 2.04 | 2.07 | 2.08 | 2.08 | |

Note: see note for Table 6. Additional control variables are those of Eq. 6.4.

Table 9

Comparison of Macroeconomic Conditions at Time of Liberalization,
With and Without IMF Programs

Year t-1

| Liberalizations with IMF Programs | | | | | Liberalizations without IMF Programs | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std Dev | Number | | | Mean | Std Dev | Number |
| CURAC* | -5.51 | 9.22 | 64 | | CURAC* | -2.58 | 7.51 | 58 |
| RES*** | 2.46 | 2.07 | 65 | | RES*** | 4.21 | 4.39 | 56 |
| INF | 204.60 | 1422.63 | 68 | | INF | 178.26 | 1023.12 | 74 |
| GBUD | -4.31 | 4.52 | 43 | | GBUD | -2.76 | 5.45 | 55 |

Year t

| Liberalizations with IMF Programs | | | | | Liberalizations without IMF Programs | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std Dev | Number | | | Mean | Std Dev | Number |
| CURAC | -3.46 | 8.20 | 64 | | CURAC | -2.65 | 8.42 | 64 |
| RES* | 3.02 | 2.31 | 66 | | RES* | 4.07 | 3.90 | 62 |
| INF | 31.36 | 49.39 | 67 | | INF | 124.82 | 875.37 | 73 |
| GBUD | -3.27 | 4.69 | 43 | | GBUD | -2.66 | 5.30 | 56 |

Note: *, **, and *** indicate whether the means of the variables with and without and IMF program are significantly different at the 10%, 5%, and 1% confidence levels, respectively.

Table 10

Comparison of Financial Conditions at time of Liberalization,
With and Without IMF Programs

Year t-1

| Liberalizations with IMF Programs | | | | | Liberalizations without IMF Programs | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std Dev | Number | | | Mean | Std Dev | Number |
| LIQG | 0.29 | 0.18 | 65 | | LIQG | 0.33 | 0.19 | 70 |
| CBASG** | 0.12 | 0.09 | 64 | | CBASG** | 0.08 | 0.09 | 62 |
| DBASG | 0.23 | 0.16 | 65 | | DBASG | 0.26 | 0.18 | 67 |
| CREDTG** | 0.20 | 0.13 | 64 | | CREDTG** | 0.26 | 0.18 | 66 |
| CONCNT | 0.72 | 0.21 | 25 | | CONCNT | 0.76 | 0.25 | 13 |
| STOCKG | 0.20 | 0.27 | 26 | | STOCKG | 0.20 | 0.31 | 22 |

Year t

| Liberalizations with IMF Programs | | | | | Liberalizations without IMF Programs | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std Dev | Number | | | Mean | Std Dev | Number |
| LIQG | 0.30 | 0.18 | 64 | | LIQG | 0.34 | 0.20 | 69 |
| CBASG** | 0.14 | 0.17 | 64 | | CBASG** | 0.08 | 0.09 | 62 |
| DBASG | 0.24 | 0.16 | 65 | | DBASG | 0.27 | 0.19 | 69 |
| CREDTG** | 0.21 | 0.14 | 63 | | CREDTG** | 0.27 | 0.19 | 68 |
| CONCNT | 0.69 | 0.21 | 28 | | CONCNT | 0.73 | 0.24 | 18 |
| STOCKG | 0.20 | 0.26 | 26 | | STOCKG | 0.24 | 0.36 | 25 |

Note: *, **, and *** indicate whether the means of the variables with and without and IMF program are significantly different at the 10%, 5%, and 1% confidence levels, respectively.

## Appendix A: Data

| Variable | Definition | Source |
|---|---|---|
| BANCRI | Banking Crisis | Caprio and Klingebiel (1999) [a] |
| CBASG | Central bank assets (% of GDP) | Beck et al. (1999) [a] |
| CHINITO | Capital Account Liberalization Index (-2.5 - +2.5) | Chinn and Ito (2005b) |
| CONCNT | Concentration (of financial sector) | Beck et al. (1999) [a] |
| CORPT | Corruption | *International Country Risk Guide* |
| CREDTG | Private credit by deposit money banks and other financial institutions (% of GDP) | Beck et al. (1999) [a] |
| CURAC | Current Account (% of GDP) | *World Development Indicators* |
| CURCR | Currency Crisis | Glick and Hutchison (2005) |
| DBASG | Deposit money bank assets (% of GDP) | Beck et al. (1999) [a] |
| DEM | Democratic Regime | *Polity IV* dataset |
| ELECT | Elections (0/1) | *Database of Political Institutions* [a] |
| EXREG | Exchange Rate Regime | *AREAR* dataset |
| FINT | Foreign Interest Rate | *International Finance Statistics* |
| GBUD | Government Budget Surplus | *World Development Indicators* |
| GCON | Government Consumption (% of GDP) | *World Development Indicators* |
| GDPCAP | GDP per capita (PPP$) | *World Development Indicators* |
| IMF | IMF Program | IMF *Annual Reports* |
| IMFSIZE | IMF Program Size (% of GDP) | IMF *Annual Reports* |
| INF | Inflation (% Change in CPI) | *International Finance Statistics* |
| KAL | Capital Account Liberalization (0/1) | *AREAR* dataset |
| LEFT | Left Wing Executive | *Database of Political Institutions* [a] |
| LIQG | Liquid liabilities (% of GDP) | Beck et al. (1999) [a] |
| LRIMF | Long-Run IMF Program (SAF, ESAF) | IMF *Annual Reports* |
| MINIANE | Capital Account Liberalization Index (0 - 1) | Miniane (2004) |
| NEWIMF | New IMF Program | IMF *Annual Reports* |
| NOCURCR | No Currency Crisis | Glick and Hutchison (2005) |
| RES | Foreign Exchange Reserves (in Months of Imports) | *International Finance Statistics* |
| SRIMF | Short-Run IMF Program (SBA, EFF) | IMF *Annual Reports* |
| STDBT | Short-Term Debt (% of Total Debt) | *World Development Indicators* |
| STOCKG | Stock market capitalization (% of GDP) | Beck et al. (1999) [a] |
| TRAD | Exports plus Imports (% of GDP) | *World Development Indicators* |
| UNITY | Government Unity (Herfindhal Index) | *Database of Political Institutions* [a] |

[a] Available at www.worldbank.org

## Appendix B

## Capital Account Liberalizations Dates (1982-1998)

| **Liberalizations with IMF involvement** | | **Liberalizations without IMF involvement** | |
|---|---|---|---|
| *AREAR*-Capital Account Liberalization Binary Index | | | |
| Argentina 1993 | Kenya 1996 | Mauritius 1996 | |
| Bolivia 1986 | Nicaragua 1996 | Paraguay 1982, 1996 | |
| Costa Rica 1980, 1995 | Niger 1995 | Seychelles 1997 | |
| Ecuador 1988, 1995 | Peru 1993 | Singapore 1978 | |
| El Salvador 1996 | Uganda 1997 | Trinidad and Tobago 1994 | |
| Gambia 1991 | Uruguay 1996 | | |
| Guatemala 1989 | Venezuela 1996 | | |
| Honduras 1993 | Zambia 1996 | | |
| Jamaica 1996 | | | |
| Miniane Index [a] | | | |
| Argentina 1987, 1989, 1993, 1996 | | Brazil 1997 | |
| Ecuador 1984, 1986, 1988, 1991, 1994 | | Colombia 1996 | |
| Korea 1998 | | South Africa 1994 | |
| Mexico 1991, 1996 | | Turkey 1989 | |
| Philippines 1992, 1996 | | | |
| Chinn-Ito Index [a] | | | |
| Argentina 1993-5, 1997 | Madagascar 1997-8 | Algeria 1988 | Singapore 1982 |
| Bangladesh 1992-5 | Malawi 1995 | Bahamas 1990-4 | South Africa 1993-5 |
| Barbados 1993-5 | Mali 1990-4 | Bahrain 1997 | Swaziland 1982 |
| Benin 1990-4 | Mauritania 1989, 1993, 1996 | Belize 1991-4 | Thailand 1990-4 |
| Bolivia 1986-9, 1997 | Mauritius 1984 | Bolivia 1983 | Trinidad 1992-6 |
| Brazil 1998 | Mexico 1987, 1990-4 | Botswana 1987, 1995-8 | Tunisia 1992-5 |
| Burkina Faso 1990-4 | Morocco 1986, 1993-5 | Burkina Faso 1985 | Turkey 1989-94 |
| Cameroon 1993-5 | Nepal 1995 | Chile 1995 | |
| Central African R. 1991-5 | Nicaragua 1993-7 | China 1993 | |
| Chad 1993-5 | Niger 1984 | Colombia 1990, 1996 | |
| Congo 1995 | Papua New Guinea 1990-4 | Dominican R. 1995 | |
| Costa Rica 1991, 1994-8 | Peru 1982, 1991-7 | Ecuador 1993-8 | |
| Cote d'Ivoire 1993-5 | Philippines 1985, 1992, 1995 | Fiji 1992-5 | |
| Dominican R. 1991 | Rwanda 1994-5 | Haiti 1991-4 | |
| Egypt 1994-8 | Senegal 1990-4 | Indonesia 1982 | |
| El Salvador 1992-7 | Sierra Leone 1986, 1995 | Iran 1984 | |
| Gabon 1990-4 | South Africa 1982 | Israel 1993-5 | |
| The Gambia 1986-7, 1990-4 | Sri Lanka 1992-5 | Korea 1988-94 | |
| Ghana 1994-5 | Tanzania 1993 | Lesotho 1982 | |
| Guatemala 1988-94 | Turkey 1982 | Malaysia 1982 | |
| Haiti 1997 | Uganda 1984, 1993-8 | Mauritius 1993-7 | |
| Honduras 1993-7 | Uruguay 1996 | Nicaragua 1990 | |
| Jamaica 1992, 1996-8 | Venezuela 1988-2, 1996-8 | Niger 1990-4 | |
| Jordan 1995-8 | Zambia 1985-7, 1996-8 | Nigeria 1986, 1998 | |
| Kenya 1996-8 | Zimbabwe 1994 | Paraguay 1983, 1989, 1992-7 | |
| Lesotho 1991-4 | | Sierra Leone 1983, 1990-1 | |

[a] The liberalization dates are annual observations in which the index increases.

## Appendix C

### Correlations of Macroeconomic Variables

| | Miniane Index | AREAR Index |
|---|---|---|
| Chinn-Ito Index | 0.72 | 0.72 |
| Miniane Index | | 0.74 |

| | CUR | INF | GCON | GBUD | STDEBT | INTF | RES |
|---|---|---|---|---|---|---|---|
| TRAD | -0.06 | -0.04 | 0.39 | 0.12 | 0.18 | -0.02 | -0.16 |
| CUR | | -0.11 | -0.21 | 0.36 | -0.01 | -0.16 | 0.35 |
| INF | | | 0.03 | -0.09 | 0.05 | 0.00 | -0.04 |
| GCON | | | | -0.21 | 0.01 | 0.07 | -0.04 |
| GBUD | | | | | 0.09 | -0.15 | 0.38 |
| STDEBT | | | | | | 0.07 | -0.11 |
| INTF | | | | | | | -0.07 |

| | LEFT | DEM | ELEC | COR |
|---|---|---|---|---|
| UNITY | 0.16 | -0.26 | 0.00 | -0.12 |
| LEFT | | -0.08 | -0.04 | 0.12 |
| DEM | | | 0.11 | 0.26 |
| ELEC | | | | 0.05 |

Note: See Appendix for definitions and sources of variables.

REFERENCES

Abdelal, Rawi. 2005. "Freedom and Its Risks: The IMF and the Capital Account." HBS Working Paper No. 05-056. Cambridge, MA: Harvard University.

Abiad, Abdul and Ashoka Mody. 2005. "Financial Reform: What Shakes It? What Shapes It?" *American Economic Review* 95 (1): 66-88.

Aizenman, Joshua and Ilan Noy. 2003. "Endogenous Financial Openness: Efficiency and Political Economy Considerations." NBER Working Paper No. 10144. Cambridge, MA: National Bureau of Economic Research.

Alesina, Alberto, Vittorio Grilli and Gian Maria Milesi-Ferretti. 1994. "The Political Economy of Capital Controls." In Leonardo Leiderman and Assaf Razin (eds.), *Capital Mobility: The Impact on Consumption, Investment and Growth*. Cambridge: Cambridge University Press, p. 289-321.

Bartolini, Leonard and Allan Drazen. 1997. "Capital-Account Liberalization as a Signal." *American Economic Review* 87 (1): 138-154.

Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine. 1999. "A New Database on Financial Development and Structure." Mimeo, World Bank.

Bird, Graham, Mumtaz Hussain and Joseph P. Joyce. 2004. "Many Happy Returns? Recidivism and the IMF." *Journal of International Money and Finance* 23 (2): 231-251.

Blyth, Mark. 2002. *Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century*. Cambridge, UK: Cambridge University Press.

Brooks, Sarah M. 2004. "Explaining Capital Account Liberalization in Latin America." *World Politics* 56 (3): 389-430.

Brune, Nancy, Geoffrey Garett, Alexandra Guisinger and Jason Sorens. 2001. "The Political Economy of Capital Account Liberalization." Working Paper.

Caprio, Gerard and Daniela Klingbiel. 1999. "Episodes of Systemic and Borderline Financial Crises." Washington, DC: World Bank.

Chinn, Menzie and Hito Ito. 2005a. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions." NBER working paper #11370, May.

Chinn, Menzie and Hito Ito. 2005b. "Notes on the Calculation of the Chinn-Ito Financial Openness Variable." Mimeo.

Cho, Yoon Je. 2003. "The Political Economy of Financial Liberalization and the Crisis in South Korea." In Chung H. Lee (ed.), *Financial Liberalization and the Economic Crisis in Asia*. London and New York: Routledge, p. 82-103.

Conway, Patrick. 1994. "IMF Lending Programs: Participation and Impact." *Journal of Development Economics* 45 (2): 355-391.

DeLong, Brad and Barry Eichengreen. 2002. "Between Meltdown and Moral Hazard: The International Monetary and Financial Policies of the Clinton Administration." In Jeffrey Frankel and Peter Orszag (eds.), *American Economic Policy in the 1990s*. Cambridge, MA: MIT Press.

Desai, Padma. 2003. *Financial Crisis, Contagion, and Containment*. Princeton, NJ: Princeton University Press.

Drazen, Allen. 2000. *Political Economy in Macroeconomics*. Princeton, NJ: Princeton University Press.

Edison, Hali J., Michael W. Klein, Luca Antonio Ricci and Torsten Sløk. 2004. "Capital Account Liberalization and Economic Performance: Survey and Synthesis." *IMF Staff Papers* 51 (2): 220-256.

Edwards, Sebastian. 2003. "Review of Joseph E. Stiglitz's *Globalization and its Discontents*." *Journal of Development Economics* 70 (1): 252-257.

Edwards, Sebastian. 2005. "Capital Controls, Sudden Stops, and Current Account Reversals." NBER working paper #11170.

Eichengreen, Barry. 2001. "Capital Account Liberalization: What Do Cross-Country Studies Tell Us?" *World Bank Economic Review* 15 (3): 341-365.

Eichengreen, Barry, Andrew Rose and Charles Wyplosz. 1995. "Exchange Market Mayhem: The Antecedents and Aftermath of Speculative Attacks." *Economic Policy* no. 21: 45-61.

Epstein, Gerald A. and Juliet B. Schor. 1992. "Structural Determinants and Economic Effects of Capital Controls in OECD Countries." In Tariq Banuri and Juliet B. Schor (eds.), *Financial Openness and National Autonomy: Opportunities and Constraints*. Oxford: Clarendon Press, p. 136-161.

Glick, Reuven and Michael Hutchison. 2005. "Capital Controls and Exchange Rate Instability in Developing Economies." *Journal of International Money and Finance* 24 (3): 387-412.

Grilli, Vittorio and Gian Maria Milesi-Ferretti. 1995. "Economic Effects and Structural Determinants of Capital Controls." *IMF Staff Papers* 43 (3): 517-51.

Guitián, Manuel. 1995. "Capital Account Liberalization: Bringing Policy in Line with Reality." In Sebastian Edwards (ed.), *Capital Controls, Exchange Rates, and Monetary Policy in the World Economy.* Cambridge, UK: Cambridge University Press, p. 71-90.

Haggard, Stephan and Sylvia Maxfield. 1993. "The Political Economy of Capital Account Liberalisation." In Helmut Riesen and Bernhard Fischer (eds.), *Financial Opening: Policy Issues and Experiences in Developing Countries*. Paris: OECD, p. 65-83.

Haggard, Stephan and Sylvia Maxfield. 1996. “The Political Economy of Financial Internationalization in the Developing World.” *International Organization* 50 (1): 35-68.

Hellenier, Eric. 1994. *States and the Reemergence of Global Finance: From Bretton Woods to the 1990s*. Ithaca, NY: Cornell University Press.

Independent Evaluation Office. 2005. *Report on the Evaluation of the IMF’s Approach to Capital Account Liberalization*. Washington, DC: IMF.

International Monetary Fund. 1995. *Capital Account Convertibility: Review of Experience and Implications for IMF Policies*. Occasional Paper no. 131. Washington, DC: IMF.

International Monetary Fund. 2002. *Capital Account Liberalization and Financial Sector Stability*. Occasional Paper no. 211. Washington, DC: IMF.

Johnston, R. Barry and Natalia T. Tamirisa. 1998. “Why Do Countries Use Capital Controls?” IMF Working Paper No. 98/181. Washington, DC: IMF.

Joyce, Joseph P. 2005. "Time Present and Time Past: A Duration Analysis of IMF Program Spells." *Review of International Economics* 13 (2): 283-297.

Lane, Philip and Gian Maria Milesi-Ferretti. 2001. “The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Nations.” *Journal of International Economics* 55 (2): 263–94.

Leblang, David A. 1997. “Domestic and Systemic Determinants of Capital Controls in the Developed and Developing World.” *International Studies Quarterly* 41 (3): 435-454.

Leiteritz, Ralf J. 2005. “Explaining Organisational Outcomes: The International Monetary Fund and Capital Account Liberalisation.” *Journal of International Relations and Development* (forthcoming).

Milesi-Ferretti, Gian Maria. 1998. “Why Capital Controls? Theory and Evidence.” In Sylvester Eijffinger and Harry Huizanga (eds.), *Positive Policy Economy: Theory and Evidence*. Cambridge, UK: Cambridge University Press, p. 217-247.

Miniane, Jacques. 2004. “A New Set of Measures on Capital Account Restrictions.” *IMF Staff Papers* 51 (2): 276-308.

Naustion, Anwar. 2003. “Financial Sector Reform and Indonesia’s Economic Crisis of 1997-98.” In Chung H. Lee (ed.), *Financial Liberalization and the Economic Crisis in Asia*. London and New York: Routledge, p. 47-81.

Nidhiprabha, Bhanupong. 2003. “Premature Liberalization and Economic Crisis in Thailand.” In Chung H. Lee (ed.), *Financial Liberalization and the Economic Crisis in Asia*. London and New York: Routledge, p. 27-46.

Prasad, Eswar S., Kenneth Rogoff, Shang-Jin Wei and M. Ayhan Kose. 2003. *Effects of Financial Globalization on Developing Countries: Some Empirical Evidence*. IMF Occasional Paper No. 220. Washington, DC: IMF.

Quinn, Dennis P. 2003. "Capital Account Liberalization and Financial Globalization, 1890-1990: A Synoptic View." *International Journal of Finance and Economics* 8 (3): 189-204.

Quinn, Dennis P. and Carla Inclán. 1997. "The Origins of Financial Openness: A Study of Current and Capital Account Liberalization." *American Journal of Political Science* 41 (3): 771-813.

Rowlands, Dane. 1999. "IMF Resource Management in a World of Mobile Capital." *Canadian Journal of Development Studies* 20 (3): 465-87.

Simmons, Beth A. and Zachary Elkins. 2003. "Globalization and Policy Diffusion: Explaining Three Decades of Liberalization." In Miles Kahler and David A. Lake (eds.), *Governance in a Global Economy: Political Authority in Transition*. Princeton, NJ: Princeton University Pres, p. 275-304.

Simmons, Beth A. and Zachary Elkins. 2004. "The Globalization of Liberalization: Policy Diffusion in the International Political Economy." *American Political Science Review* 98 (1): 171-189.

Skidelsky, Robert. 1995. *The Road from Serfdom*. London: Penguin Press.

Stiglitz, Joseph E. 2002. *Globalization and Its Discontents*. New York and London: W. W. Norton.

Williamson, John. 1990. "What Washington Means by Policy Reform." In John Williamson (ed.), *Latin American Adjustment: How Much has Happened?* Washington, DC: Institute for International Economics, p. 7-28.

Williamson, John. 2004. "The Years of Emerging Market Crises: A Review of Feldstein." *Journal of Economic Literature* 42 (3): 822-37.

World Bank. 2004. *Global Development Finance 2004: Harnessing Cyclical Gains for Development*. Washington, DC: World Bank.

Zavoina, William and Richard D. McKelvey. 1975. "A Statistical Model for the Analysis of Ordinal Level Dependent Variables." *Journal of Mathematical Sociology* 4**:**103-120.