IMF Programs: Who Is Chosen and What are the Effects?

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Participation in IMF programs has become an option that more and more countries have chosen in recent decades. Almost all developing countries, except a small number such as Botswana, Iran, Malaysia, and Paraguay, have received IMF financial support at least once since 1970. Therefore, one question is why so many countries have sought financial assistance from the International Monetary Fund. Under what circumstances is a country more willing to come to the IMF for assistance and is the IMF more likely to agree on a loan? And when would a country benefit from participation in an IMF financial arrangement?

This paper addresses these questions. We investigate the determination and effects of IMF programs by using a cross-country panel data set, which comprises information on over 130 countries over the last three decades.

A number of studies, surveyed in Knight and Santaella (1997), have investigated the determination of IMF financial arrangements. This paper extends this work by showing the importance of institutional and geopolitical influences in IMF program approval and participation.

We find that each member country's political connections to the IMF affect the probability of loan approval. We proxy this political connection by several institutional and geopolitical variables—the size of the country's quota at the IMF, the size of the national staff at the IMF, and the political proximity to the major shareholding countries of the IMF, notably the United States. The quota reflects each member country's voting power at the IMF. The national staff variable is the share of own nationals among IMF economists. The political proximity to the United States is measured by the percentage of times that the

country has voted in the United Nations along with the United States. (We look at analogous variables for other important countries, such as France, Germany and the United Kingdom, but find no additional effects.) We find that, as an international organization influenced by the dominating power of the United States, the IMF apparently takes politics into account when making decisions on loans to developing countries. These patterns are of considerable interest for their own sake, but we also use them to form instrumental variables to isolate the effects of IMF lending on a country's economic performance.

Since its creation in 1944 at Bretton Woods, the role of the International Monetary Fund and the effectiveness of its programs have been controversial. The IMF has claimed to have contributed to the sustainable growth of its member countries by maintaining the stability of the international exchange and financial system and by providing financial support and policy advice. However, critics say that the IMF has expanded its activities into too many unproductive areas and perhaps caused more harm than good. They argue that the availability of IMF financial support often permits governments to pursue inappropriate policies longer than they otherwise would (Bandow and Vasquez, [1994]). IMF programs are often asserted to be "anti-growth" and to hurt, especially, poor nations. For example, IMF policies were claimed to make recessions only "deeper, longer, and harder" (Stiglitz [2000]). The availability of IMF lending has also been depicted as a source of "limitless bailouts" and "moral hazard" (Barro [1998]).

What matters ultimately is whether participation in an IMF program helps a country to improve its living standard in the long run. This paper investigates the effects of IMF financial arrangements on economic growth. Many studies have tried to assess the growth

effects of IMF program based on cross-country data. These studies have encountered a number of difficulties. One basic problem is to separate the effects of IMF programs from those of other factors. Program participation typically applies to countries that self-select themselves based on their economic and political circumstances. Specifically, countries that are experiencing economic difficulties tend to turn to the IMF for help, and it would be unfair to blame the IMF for these pre-existing conditions. Previous studies have tried to control for the endogeneity of IMF programs in various ways, but we do not regard these attempts as fully successful.

Our study extends the existing literature in the procedure for controlling for the endogeneity of IMF program approval and participation. In our cross-country econometric framework, we use as instrumental variables IMF quotas, IMF staff size, and political proximity to the United States. If we do not instrument, then we find that increased IMF program participation is associated with a contemporaneous reduction of economic growth. However, after controlling for endogeneity with our instrumental variables, we find no statistically significant contemporaneous (that is, five-year) impact of IMF program participation on economic growth. Our results contrast with the findings of recent studies that use other procedures, but not good instrumental variables, to take account of endogeneity.

The paper is organized as follows. Section I provides a brief discussion of the characteristics of the IMF and its financial programs. Section II uses probit and tobit equations for a cross-country panel to assess the factors that determine participation in an IMF financial arrangement. This political economy analysis of IMF decision-making is of

considerable interest for its own sake. Section III presents evidence on the effects of IMF

programs on growth. Concluding remarks follow in Section IV.

I. The Characteristics of the IMF and its Financial Arrangements

1.1. The Organization of the IMF

The IMF has become an almost universal financial institution, with its membership

rising from 44 states in 1946 to 183 at present. However, the members of the IMF do not

have an equal voice, unlike the General Assembly of the United Nations. Each member

country of the IMF contributes a quota subscription, as a sort of credit-union deposit to the

IMF. The quota is the basis for determining the voting power of the member: each member

has 250 basic votes plus one additional vote for each SDR 100,000 of quota. The initial

quotas of the original members were determined at the Bretton Woods Conference in 1944.

The allocation was based mainly on economic size, as measured by national income and

external trade value. Quotas of new members have been determined by similar principles.

The IMF charter calls for general quota reviews at intervals of not more than five

years. These reviews allow for adjustments of quotas to reflect changes in economic power.

There have been 12 general reviews since 1950, and 6 of these reviews resulted in an

increase in the total size of quotas. Most of these overall increases in quotas featured

equiproportional increases for the individual members (IMF [1998]).

The United States, which holds the largest portion of the quotas (currently

amounting to 37,149 million SDRs or 17.5% percent of the total), has the strongest

influence in the IMF's main decisions. Many important decisions require special voting

majorities of 85 percent.   Hence, the United States is the only member that has a *de facto*
veto power at the IMF.

The highest decision-making body of the IMF is the Board of Governors, which
consists of one governor and one alternate for each member country. The Governors are
usually ministers of finance or sometimes head of central banks of the member countries.
The Board of Governors delegates all except certain reserved powers to an Executive Board,
which makes the daily decisions of the IMF. There are 24 Executive Directors. Eight
Executive Directors are appointed by the largest eight shareholders—the United States,
Japan (6.3% of total IMF quotas), Germany (6.1%), France (5.1%), the United Kingdom
(5.1%), Saudi Arabia (3.3%), China (3.0%), and Russia (2.8%). The others are elected by
sixteen groupings of the remaining countries.

As of December 31, 1999, the IMF had a staff of 2297—693 assistant staff and
1604 professional staff. About two-thirds of the professional staff were economists (IMF
[2000, p.95]). The staff reflects the IMF's membership, coming from about 120 countries,
but is concentrated in advanced countries. In 1999, among all professional staff, about 29%
were from the United States and Canada and about 33% were from Western Europe.
Among developing countries, India, China, Argentina, Peru, and Pakistan had relatively
large numbers of professional staff.

1.2. IMF Financial Policies and Facilities

The basic conception of the IMF's role, which was envisioned at Bretton Woods in
1944, was to guard an "adjustable peg exchange rate system" and provide short-term

finance to deal with temporary current-account deficits for advanced countries. Thus, with

the breakdown of the par adjustable peg system in 1973, the IMF lost its major role as the

guarantor of fixed exchange rates among advanced countries. Nevertheless, the IMF did

not disappear, and its role expanded instead into many new areas. The collapse of the

Bretton Woods system was quickly followed by oil price shocks, which led to severe

payments imbalances for a large number of developing countries. After the developing

countries recovered from the debt crisis of the 1980s, other problems arose, including the

transitions of the former Communist countries and the Asian financial crisis. Eventually,

the IMF evolved into the "crisis manager" and "development financier" for developing

countries.[1]

The primary role of the IMF is to provide credits to member countries in balance-of-

payments difficulties. Credit is provided in relation to the quota of a member country. The

first tranche, 25% of the quota, is available automatically, without entailing any discussion

of policy. The use of IMF resources beyond the first tranche almost always requires an

arrangement between the IMF and the member country. Under an IMF arrangement, the

amount of resources committed is released in quarterly installments, subject to the

observance of policy benchmarks and performance criteria. This process is often referred

to as *conditionality*.

Stand-by Arrangement (SBA) and Extended Fund Facility (EFF) are the main IMF

programs designed to provide short-term balance-of-payments assistance for member

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[1] See Krueger (1998) and Bordo and James (2000) for detailed discussions of the changing role of the IMF.

countries.[2] The typical Stand-By Arrangement covers a period of 1 to 2 years, with

repayments scheduled between $3\,{}^1\!/_4$ and 5 years from the date of the borrowing. The

Extended Fund Facility program, introduced in 1974, was aimed at providing somewhat

longer-term financing in larger amounts. The EFF arrangement typically lasts up to 3 years,

with repayments made over a period of $4\,{}^1\!/_2$ to 10 years.

The SBA and EFF programs did not cover very low-income countries. Confronted

by increasing criticism, the IMF developed several new lending programs to provide long-

term loans at subsidized interest rates for very poor countries. The Fund established the

Structural Adjustment Facility (SAF) in 1986 and the Enhanced Structural Adjustment

Facility (ESAF) in 1987. The interest rate charged is 0.5% and repayments are scheduled

over 5-10 years after a 5-year grace period. Most ESAF cases were with Sub-Saharan

African countries and former planned economies. In 1999, the ESAF was replaced by the

Poverty Reduction and Growth Facility (PRGF). Probably these activities should be

viewed more as foreign aid, rather than lending or adjustment programs.

Table 1 shows the number and amounts approved for all types of IMF programs

over the period 1970 to 2000.[3] Over the last three decades, a total of 725 programs were

approved. This total includes 594 short-term and mid-term stabilization programs (SBA

and EFF), which are the focus of our analysis. The number of these short-term programs

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[2] A number of other short -term IMF arrangements have been introduced to supplement SBA and EFF. The se
arrangements include the Supplemented Reserve Facility (SRF), the Country Stabilization Fund (CSF), the
Compensatory and Contingent Financing Facility (CCFF), and the Systematic Transformation Facility (STF).
See IMF (1998) for details.
[3] The amount of loan approved was not always drawn by the member country. This situation can arise if the
IMF terminated the arrangement because the borrower did not meet the conditionality, or if the country ended
up not using its full allotment. Sometimes a country utilized an IMF program to build credibility and did not
use the borrowing facility at all.

peaked in the early 1980s with the Latin American debt crisis. Although the number declined subsequently, the average size of the loans jumped because of the financial crises experienced by larger countries, such as Mexico, Brazil, Russia, and South Korea.

II. Determination of IMF Program Approval and Participation

2.1. Determinants of IMF Financial Arrangements

Participation in an IMF program is a joint decision between a member country and the IMF. IMF lending does not, by any means, accompany every currency crisis. Over the period 1970 to 1999, only one-third of currency-crisis observations were linked with IMF program participation in the same year or one year later (see Park and Lee [2001]). On the other side, many IMF programs occur in the absence of a currency crisis. For example, Hutchison (2001) notes that, in a sample of 67 developing countries over the period 1975-1997, only 18% of IMF program participation observations were associated with currency crises. Similar patterns apply to banking crises. In our sample over the period 1975-1997, only about one-fourth of banking-crisis observations were associated with IMF program participation in previous, current or following year.

To capture the economic determinants of IMF lending, we use a number of standard variables that can be found in the previous literature. Some of these factors can be viewed as influences on a country's demand for loans and others as effects on the IMF's willingness to supply loans. The variables that we include for each country and time period are a dummy for the presence of a currency crisis, a dummy for the presence of a banking crisis, the level of international reserves in relation to imports, per capita GDP, the lagged

growth rate of GDP, [4] and a dummy variable for whether a country is included in the set of rich OECD countries.

The key innovation of our analysis is that we see the IMF as a bureaucratic and political organization. In this respect, we consider a member country's political connections to the IMF as influences on the IMF's willingness to provide funds. We measure the connection to the IMF by two institutional variables (size of quota and size of professional staff) and by a geopolitical variable based on U.N. voting.

The first institutional variable is the country's share of IMF quotas. This share reflects a country's voting power and also matters directly for a portion of the lending available to a member. Our hypothesis is that, for given economic conditions, an IMF loan is more likely the higher the quota of a country.

The second institutional variable is the share of a country's nationals among the IMF professional staff of economists. Officially, to avoid conflicts of interest, the IMF does not allow staff members do not have direct influence on lending decisions for their home countries. Item 24 of the IMF Code of Conduct for Staff states: "The IMF will seek to avoid assigning nationals to work on policy issues relating specifically to IMF relations with their home country, unless needed for linguistic or other reasons." However, from the standpoint of having good information, the IMF would often like the input from the nationals of a target country. Therefore, although own nationals cannot work directly as

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[4] Previous studies , such as Conway (1994) and Knight and Santaella (1997), include other measures of economic performance, such as current -account deficits and inflation. We found that, once currency crisis, banking crisis, and lagged GDP growth were considered, these variables did not contribute significantly to the explanation of IMF lending.

desk economists or mission team members for their home countries, these nationals are often sought out for comments on country programs. In addition, the presence of own nationals on the staff can help a country to get more access to inside information and, thereby, make it easier to negotiate with the IMF for the terms of a program. Thus, overall, our hypothesis is that, for given economic conditions, a larger national staff at the IMF raises the probability of a loan.

We measure the national staff for each country by the number of home-country nationals currently working for the Fund. Unfortunately, we lack the information to refine the staff data to consider ranks of positions. Also, it would be interesting to consider the number of ex IMF staff economists who currently work in the governments of the various countries. However, we lack the information to make this extension.

One concern is that IMF quota and staff might reflect a member country's size, rather than a political connection, *per se*. Therefore, our empirical analysis of IMF lending also includes a direct measure of the size of the country—the level and square of the log of total GDP.

Another concern is that the IMF's staff size by nation is endogenously determined by a member country's involvement with IMF programs, rather than vice versa. However, the effect of a country's IMF program experience seems, in practice, not to have a large impact on hiring of that country's nationals. In particular, the distribution of IMF staff by country is a highly persisting variable. The correlation between the values in 1985 and in

1995 is 0.97 (0.91 in the sample of developing countries). For this reason, lagged program

participation turns out to lack explanatory power for the size of the national staff.[5]

Similarly, there could be a concern that a country's quota was endogenous, although

the tie to a country's past program experience would seem doubtful in this case. In any

event, quotas are extremely persistent over time, with much of the allocations determined

by the rules set out in 1944 at Bretton Woods.

The IMF is also a political organization governed by its major shareholders,

particularly the United States. For example, a common claim is that the IMF plays the roles

best suited to the national interests of the United States. In the Cold War era, the IMF often

supported countries—such as Argentina, Egypt, and Zaire—that were important to the

United States for foreign policy reasons, despite the absence of effective reforms (see

Krueger [1998] and Bordo and James [2000]). In the 1994 Mexican crisis, the IMF stand-

by program was unprecedentedly large, amounting to $17.8 billion or 688 percent of

Mexican's quota at the IMF. No doubt this loan resulted from the intense high-level

diplomacy between the U.S. government and the IMF. In one incident, the Clinton

Administration exerted such strong pressure for rapid action that the usual minimal notice

to Executive Directors was not given. Hence, in protest, some European Executive

Directors abstained in the voting (Krueger [1998]).

We use as a proxy for a country's political proximity to the United States the

fraction of the votes that each country cast in the U.N. General Assembly along with the

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[5] If we run a regression with the log of IMF staff share as the dependent variable, the significant explanatory
variable, aside from the log of the lagged staff share, is the log of the IMF quota share. A lagged program
participation variable is positive, but statistically insignificant.

United States.[6] This variable has been used to explain foreign-aid patterns in previous

research by Ball and Johnson (1996) and Alesina and Dollar (2000).

2.2. Empirical Framework

We have compiled data from 1975 to 1999. Although data are available for most

variables and countries on an annual basis, we do not have annual observations for the IMF

staff, which was obtained at five-year frequencies. Since we thought that little information

would be gained from annual observations, we arranged all of the data at five-year intervals.

Hence, our panel covers 131 countries over the five five-year periods 1975-79, 1980-84,

1985-89, 1990-94, and 1995-99. The panel is unbalanced, with the number of countries

varying each period.

We measure IMF program participation in two ways: approval and participation.

Approval is a binary variable indicating that there was at least one new agreement on

lending between the IMF and a member country during the five-year period. Thus, the

program approval variable equals one if the IMF and the country made an agreement in any

year of the five-year period. Participation in an IMF program is measured by the fraction

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[6] Data on voting patterns in the United Nations are complied from the Inter-University Consortium for Political and Social Research, University of Michigan, for 1975-85 and then updated from on-line data available at the United Nations (unbisnet.un.org). The variable is the fraction of times the United States and the country in question voted identically (either both voting yes, both voting no, or both voting abstention [or non-participation]) in all General Assembly plenary votes in a given year. Decisions adopted without votes and votes in which the country in question was not eligible to participate were excluded. The results reported below do not change qualitatively if we use some alternative measures, for example, if we exclude non-participation or abstention.

of time that a country operated under an IMF program during the five-year period. Thus, participation varies continuously between zero and one.

In this paper, we consider only the short-term IMF stabilization programs (SBA and EFF). As discussed before, there are substantial differences between stabilization programs and structural programs. Stabilization programs are more directly associated with balance-of-payments difficulties in member countries. Structural programs, such as SAF and ESAF, are more recent and more analogous to World Bank and foreign aid programs.

Using the approval of an IMF program as the dependent variable, we specify a probit model:

(1) $$I_{it}* = a + bX_{it} + gZ_{it} + d * time_t + u_{it},$$

(2) $$I_{it} = 1 \quad if \quad I_{it}* > 0$$
$$= 0 \quad if \quad I_{it}* \leq 0.$$

The dependent variable, $I_{it,}$ equals one if country i made a loan agreement with the IMF during period t and equals zero otherwise. The vector X denotes the country-specific economic factors that influence the existence of an IMF program. This vector includes dummies for a currency or banking crisis, the ratio of foreign reserves to imports, per capita GDP, total GDP, and lagged GDP growth. The regression also includes period dummies (time) to control for common effects of external factors such as world interest rates. The vector Z comprises the institutional and geopolitical factors that measure each country's

political connections to the IMF—the share of quotas, the share of IMF staff that are own nationals, and the political proximity to the United States (based on the U.N. voting pattern).

The currency and banking crisis variables are dummies for each country for each five-year period. The currency crisis variable equals one if at least one currency crisis occurred during the period and equals zero otherwise. The banking crisis variable is defined analogously.

The definition of a currency crisis is based on Frankel and Rose (1996), who identify these crises with large nominal depreciations of a country's currency over a short period. As in Park and Lee (2001), we define a currency crisis as a situation in which the nominal depreciation of the currency was at least 25 percent during any quarter of a year and exceeded by at least 10 percentage points the depreciation of the currency in the previous quarter.[7]

The identification of banking crises is more problematic. The typical method, used by Caprio and Klingebiel (1996), is to make subjective judgments using data on loan losses, the erosion of bank capital, and the extension of large-scale government assistance. We follow the same approach and extend the data up to 1998 based on Glick and Hutchison (1999) and Bordo et al. (2000).

Although program approval is a binary choice variable, IMF program participation can take on values between zero and one. The estimation in this case requires a censored-regression framework. The tobit equation is specified as:

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[7] We use a window of two years to isolate independent crises. That is, a currency or banking crisis that occurred within two years of a previous crisis is treated as part of the same crisis.

$$(3) \qquad F_{it}^* = a + bX_{it} + gZ_{it} + d*time_i + u_{it},$$

$$(4) \qquad F_{it} = \min[\,1, \max(\,0, F_{it}^*)\,],$$

where X, Z, and time are defined as before. The dependent variable, F_{it}, is the fraction of time for which country i participated in an IMF program during period t.

The specifications in equations (1)-(4) can be viewed as reduced-form models that reflect the demand for and supply of IMF loans. To minimize reverse-causality problems, all variables except currency and banking crisis are measured at the beginning of each period or as lagged values.

We have tried various functional forms for each model and selected the ones that deliver the best goodness-of-fit. It turns out that per capita GDP and the log of GDP each enter as quadratics. The IMF quota share, the IMF staff share, and the U.N. voting variables enter as their log values.[8]

The probit and tobit estimation models apply to the panel data set of 131 countries over the five five-year periods from 1975 to 1999. The summary statistics of all variables are shown in Table 2.

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[8] To keep the zero observations when making the log transformation, we add 0.0009 to each observation of staff share and 0.0002 to each observation of quota share. These values are the minimum non-zero observations for staff share and quota share in the sample. The results are not sensitive to the specific values added for the log transformations.

2.3. Estimation Results

Table 3 presents estimation results from the probit equations specified above. Column 1 excludes the IMF quota and staff shares and the U.N. voting variable. Column 2 adds the IMF staff share and U.N. voting, column 3 adds the IMF quote share and U.N. voting, and column 4 adds all three variables. Column 5 shows, corresponding to the results of column 4, the marginal effect of each independent variable on the probability of IMF loan approval, evaluated at the means of all the variables.

The dummy for a currency crisis is always statistically significant at the 1% level, whereas the dummy for a banking crisis is significant at the 5 or 10% level. Column 5 indicates that, holding other variables constant, the incidence of a currency crisis raises the probability of approval of an IMF arrangement by 15 percentage points, that is, from the mean approval rate of 0.35 to 0.50. The probability of an IMF program approval increases with a banking crisis by 11 percentage points.

The lagged growth rate of GDP is significantly negative. A decline in GDP growth by 1 percentage point raises the probability of IMF program approval by 1.3 percentage points. The ratio of international reserves to imports is also significantly negative. A decrease in international reserves by one month of imports raises the probability of an IMF loan by 3.3 percentage points.

Per capita GDP has a non-linear relationship with IMF program approval. The level is significantly positive and the square is significantly negative. Hence, the probability of having an IMF program initially *increases* with per capita GDP but later decreases. The

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switch occurs at a per capita GDP of around $2800 (1985 U.S. dollars), which is close to the sample median of $2,618. The overall marginal effect of per capita income at the sample mean of $4,460, is negative: an increase in per capita GDP by $1,000 lowers the approval probability by 4.2 percentage points.

We also find that, even after controlling for per capita GDP and its square, the dummy for a group of rich OECD countries[9] has a significantly negative effect on the probability of IMF program approval.

The positive relation between per capita GDP and IMF loan approval in the low range of per capita GDP likely reflects the IMF's reluctance to provide stabilization loans to countries that are not creditworthy.[10] The negative effect in the upper range of per capita GDP likely signals the decreased demand for IMF loans among the rich countries, which have other sources of credit. We also interpret the negative coefficient on the OECD dummy variable along these lines.

The log of total GDP enters as a level (significantly positive) and its square (significantly negative). This relationship implies that the probability of an IMF program approval increases with the size of the country but at a decreasing rate, and then eventually the overall marginal effect of log GDP on the probability of having an IMF program becomes negative at a log GDP of around 10.9. Therefore, the overall marginal effect of log GDP on the probability of IMF program approval is positive at its sample mean of 9.8.

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[9] This group consists of the countries other than Turkey that have been members of the OECD since the 1970s.
[10] The same type of regressions do not reveal this positive relation between per capita GDP and IMF program approval in the low range of per capita GDP when we include the SAF and ESAF structural programs.

The results in columns 2-4 indicate that the political variables are important for explaining IMF loan approval. Columns 2 and 3 show that the shares of IMF quotas and staff are each significantly positive at the 5% level when entered separately in the regression. When entered jointly in column 4, each variable becomes significant at the 10% level, and the two variables considered jointly are significant at the 5% level, p=0.03.

The numbers shown in column 5, which correspond to the results of column 4, imply that an increase in the log of the IMF staff share by 1.3 (the variable's standard deviation) from its mean of -5.67 to -4.37, which amounts to an increase from 0.0034 to 0.0127 in terms of the level of the IMF staff share, raises the probability of loan approval by 10 percentage points, holding the other variables constant. Similarly, an increase in the log of the IMF quota share by 1.3 (its standard deviation) from its mean of -5.89 to -4.59, which corresponds to an increase from 0.0028 to 0.0102 in terms of the level of the IMF quota share, raises the approval probability by 7 percentage points.

The results also show that a higher political proximity to the United States, as gauged by the U.N. voting pattern, helps a country to receive IMF program approval. According to column 5, an increase in the proximity variable by 0.5 (its standard deviation) increases the probability of IMF program approval by 12 percentage points.

Columns 6, 7 and 8 modify the results of column 4 to measure the U.N. voting variable in relation to France, Germany or the United Kingdom, rather than the United States. The estimated coefficients for France, Germany or the U.K. are significantly positive. However, when the French, German and the British U.N. voting variables are entered together with that for the United States in column 9, only the U.S. variable is

statistically significant (and positive, as before). Thus, the indication is that political connections with the United States are the ones that raise the probability of IMF lending. The apparent importance of political proximity to France, Germany, and the U.K. in columns 6 and 7 seems to reflect only the correlation of these U.N. voting patterns with that for the United States.

Figure 1 shows the effects of each explanatory variable on the probability of IMF program approval graphically. The effects are measured by the change of the probability of IMF program approval from a one-standard-deviation change of each explanatory variable. For instance, with being others constant, a country that has a relatively lower level of international reserve (1 standard deviation below the mean) encounters 9.4 percentage point lower probability of IMF program approval. The Figure illustrates the relative importance of the political connection to the IMF in raising the probability of loan approval. According to this result, a country that has more IMF staff, more IMF quota, and voted more often with the United States in the UN (1 standard deviation for each) is expected to have a higher probability of IMF loan approval by 9.6, 6.7, and 12.0 percentage point each.

Table 4 presents estimation results from the tobit equations for IMF program participation, as specified above. In general, the results are similar to those for program approval, which were shown in Table 3.

III. Impacts of IMF Programs on Growth

3.1. Methodological Issues

A number of previous studies have tried to assess the effects of IMF programs on economic performance (growth, inflation, the balance of payments, and so on) based on cross-country data. A variety of methodologies have been used for evaluating the effects of IMF programs.

To measure accurately the impact of an IMF adjustment program, we have to evaluate the performance of program countries in comparison with the performance that would have prevailed in the absence of the IMF assistance. In other words, we have to evaluate whether the IMF programs were associated with better or worse economic outcomes *than would otherwise have occurred.* It is difficult conceptually and practically to construct this counterfactual and to disentangle the effects of IMF programs from those of other factors.

The basic problem is that IMF program participation itself is an endogenous choice, as shown in the previous section. Program participation takes place for countries that self-select themselves based on their economic and political circumstances.

Many previous studies have used the "before-after" approach" or the "with-without" approach to assess the impact of an IMF adjustment program (see the survey in Haque and Khan [1998]). The "before-after" approach uses non-parametric statistical methods, which compare performance during a program with that prior to the program. Thus, this approach implicitly assumes that, had it not been for the program, the performance indicators would have taken their pre-crisis values.

The "with-without" methodology compares the behavior of key variables in the program countries to their behavior in non-program countries (a control group). Thus, this procedure implicitly assumes that only the (exogenous) imposition of the IMF program

distinguishes the program countries from the control group, that is, the external environment is assumed to affect program and non-program countries equally. We do not believe that the "before-after" and "with-without" approaches adequately address the selection-bias problem.

Following Goldstein and Montiel (1986), a number of studies adopted a new approach to assess the economic impact of IMF programs. This method is called the Generalized Evaluation Estimator (GEE). This approach attempts to correct for the non-random selection of program countries based on the Heckman selection model. The GEE method first estimates the equation for participation in an IMF program and then calculates Heckman's Inverse Mills Ratio. Then, it controls for non-random self-selection in the estimation of the parameters in the equations for economic performance by including the Inverse Mills Ratio in those equations. Thus, this approach tries to identify differences in initial conditions and policies undertaken in program and non-program countries and then control these differences statistically to isolate the effects of the programs on the post-program performance.

The GEE method has become "the estimator of choice in evaluating the effects of Fund-supported adjustment programs" (Haque and Khan [1998]). However, this method has several shortcomings. It is heavily parametric, for example, relying on restrictive assumptions on the distribution of error terms. Inclusion of an Inverse Mills Ratio does not always provide an adequate correction for selection bias. The significance of the Inverse Mills Ratio can be a reflection of misspecification in the performance or policy choice

equation. Similarly, the insignificance of the Inverse Mills Ratio can result either from no selection bias or from misspecification somewhere in the system.

An alternative approach is the classical instrument-variables technique. If available, an instrument that is exogenous to the dependent variable in the economic performance equation can be used to control for the endogeneity of IMF program participation. The only reason that this method has not been the "estimator of choice" in evaluating IMF (or other) programs is the lack of good instruments. We believe that our political/institutional analysis of IMF lending provides good candidates for instruments and, therefore, argues for the use of the instrumental-variables technique for policy evaluation.

3.2. Impacts of IMF Programs on Economic Growth

In this section we investigate the effects of IMF programs on economic growth. The previous literature contains conflicting results on the growth effects of IMF programs, depending on the sample and methodology. According to Haque and Khan (1998), among eleven studies based on the "before and after" or the "with and without" approach, only one found a statistically significant positive impact. The others found either a zero effect or weak positive impacts from IMF programs. Studies based on the GEE method present more diverse results. Kahn (1990) found that IMF program participation significantly lowered the growth rate in the program year, although the adverse effects diminished over time. Przeworski and Vreeland (2000) and Hutchison (2001) showed that participation in an IMF program led to sizable reductions in output growth. In contrast, Conway (1994) found that participation in an IMF program significantly raised the growth rate over the one

to two years subsequent to the program. Dicks-Mireaux, et al (2000) also found statistically significant beneficial effects of IMF structural adjustment programs on economic growth.

We assess the effects of IMF program participation on economic growth by extending previous work in several ways. Most importantly, we use an instrumental-variables approach, using the instruments suggested by our analysis of the determinants of IMF lending. The instruments that we employ are the IMF national staff and quota variables and the political proximity to the United States (based on the U.N. voting pattern).

In addition, previous studies used annual data to focus on the impact of IMF program participation over relatively short periods of time, mostly one or two years. However, it is hard to distinguish long-term growth from business cycles at an annual frequency. In contrast, our empirical analysis uses cross-country data at a five-year frequency. We utilize panel data for over 80 countries, and we utilize the cross-country growth framework that has been extensively investigated in the recent literature (see, for example, Barro [1997]). After controlling for other growth determinants isolated in this previous work, we can assess the impact of IMF program participation on growth over the contemporaneous five-year period and for the subsequent five-year period.

Since the general approach has been described in previous studies and is likely to be familiar, we include here only a brief discussion.[11] We consider the following variables as determinants of the growth rate of per capita GDP: (1) initial per capita GDP; (2) human resources (educational attainment, life expectancy, and fertility); (3) ratio of investment to

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[11] Our specification closely follows Barro (2001). The data set used in this paper will be available on-line in an updated version of the Barro and Lee panel data set.

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GDP; (4) changes in the terms of trade; and (5) institutional and policy variables (government consumption, rule of law, international openness, and inflation). For the measure of educational attainment, we use the average years of school attainment of males aged 25 and over at the secondary and higher school levels. Government consumption is measured by the ratio of government consumption (exclusive of outlays on education and defense) to GDP. The rule of law index comes from an evaluation by an international consulting firm that provides advice to international investors. The openness measure is the ratio of exports plus imports to GDP, filtered for the typical effect of country size (population and area) on this trade measure.

The growth equation also includes dummy variables for the occurrence of currency and banking crises. Barro (2001) showed that, in this empirical framework, currency and banking crises had significantly negative effects on growth in the contemporaneous five-year period. In the subsequent five-year period, the impacts became positive but smaller in magnitude than the initial effects.

Table 5 presents the regressions results. The dependent variables are the five-year growth rates of per capita GDP for the periods 1975-80, 1980-85, 1985-90, 1990-95, and 1995-2000. Estimation is by the three-stage least squares technique, using mostly lagged values of the independent variables as instruments (see the notes to Table 5). Most explanatory variables enter significantly with expected signs. Initial per capita GDP, fertility, and government consumption are significantly negative. Schooling, international openness, and the growth rate of the terms of trade have significantly positive effects. Some variables, notably inflation and investment ratio, are statistically insignificant in this

system. In Barro (2001), these variables were also insignificant when currency and banking crises variables were included.

The results show that contemporaneous currency and banking crises are each associated with significantly lower per capita growth. The magnitudes are 1.4% per year and 1.1% per year, respectively (column 1 of Table 5). However, in the subsequent five-year period, the crises tend to generate a partial growth rebound (see column 2 of the table).

Our primary interest is in the impact of IMF program participation. Column 1 of Table 5 includes contemporaneous IMF program participation as an independent variable. Column 2 allows also for a lagged effect. The results shown in these two columns are from three-stage least squares estimation, where we include the actual values of current and lagged IMF program participation in the instrument lists. Thus, these results do not take account of the endogeneity of IMF program participation.

Column 1 of Table 5 shows that contemporaneous participation in an IMF program is associated with lower per capita growth by about 0.9% per year. The estimated coefficient (-0.0088, s.e.=0.0039) is marginally significant at the 5% level. Column 2 shows that the retardation of growth due to an IMF program does not persist into the next five-year period (but is also not reversed)—the estimated coefficient is statistically insignificant (-0.0018, s.e.=0.0038).

In columns 3 and 4 of Table 5, the estimation technique changes to use the log of the IMF staff share, the log of the IMF quota share, and the log of the fraction of U.N. votes along with the United States as instruments for the IMF programs.[12] The result in column 3

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[12] Both columns include contemporaneous and lagged values of these variables in the instrument list.

should be compared with that in column 1. With the use of instruments for IMF program participation, the estimated coefficient on IMF program participation becomes smaller in magnitude and statistically insignificant (-0.0077, s.e. =0.0063). Similarly, in column 4, which adds lagged IMF program participation, the estimated coefficients on the IMF variables are individually and jointly insignificantly from zero. (The p-value for joint significance is 0.39.)

IV. Concluding Remarks

To be added.

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    An updated version (Mark 5.6) is available at nber.org.

Table 1. Approval of IMF Programs, Fiscal Years 1970-2000

Number of programs approved

(Total amount committed under arrangements in million of SDRs)

| Period | Stabilization Programs | | Structural Programs | | |
	SBA	EFF	SAF	ESAF/PRGF	Total
1970-1974	82				82
	(4,913)				(4,913)
1975-1979	83	7			90
	(8,091)	(1,895)			(9,945)
1980-1984	116	26			142
	(20,520)	(22,692)			(43,213)
1985-1989	90	3	29	7	129
	(14,117)	(1,277)	(1,455)	(955)	(17,804)
1990-1994	79	12	8	27	126
	(14,974)	(14,479)	(130)	(3,309)	(32,893)
1995-2000	72	24	1	59	156
	(83,250)	(36,659)	(182)	(6,961)	(126,052)

Notes: An approval of an IMF program indicates that a new IMF financial arrangement was approved for a country in the fiscal year (FY2000 indicates the period from May 1, 1999 to April 30, 2000). SBA is Stand-by Arrangement, EFF is Extended Fund Facility, SAF is Structural Adjustment Facility, and EASF is the Enhanced Structural Adjustment Facility. The ESAF was replaced by the Poverty Reduction and Growth Facility (PRGF) in 1999.

Source: IMF (2000), Appendix Table II-1.

Table 2. Summary of Variables

Sample: 617 observations from panel data of the five five-year periods from 1975 to 1999

Variable	Mean	Median	σ
Approval of IMF stabilization programs	0.353	0	0.478
Participation in IMF stabilization programs	0.253	0	0.351
GDP growth rate	0.030	0.033	0.055
International reserve (months of import)	3.257	2.618	2.839
Currency crisis	0.233	0	0.423
Bank crisis	0.251	0	0.434
Real GDP per capita (1985 U.S. thousand dollars)	4.460	2.497	4.643
Log (real GDP) (1985 U.S. million dollars)	9.753	9.470	2.109
Group of advanced OECD countries	0.178	0	0.383
Log (IMF quota share)	-5.891	-6.217	1.294
Log (IMF staff share)	-5.673	-5.795	1.259
Political proximity to the USA (log)	-1.434	-1.416	0.482
Political proximity to France (log)	-0.904	-0.990	0.338
Political proximity to Germany (log)	-0.811	-0.881	0.347
Political proximity to the U.K. (log)	-0.946	-1.024	0.360

Notes to Table 2

Approval is a dummy variable that equals one if a new IMF stabilization program was approved in any year of each of the periods 1975-1979, 1980-1984,…,1995-1999. Participation is the fraction of time that a country was in any IMF stabilization program in each five-year period. Per capita GDP and the log of real GDP come from Summers and Heston (1991), PWT 5.6. and updates based on GDP growth rates from the World Bank. The currency crisis dummy variable equals 1 if, as some point during the five-year period, there occurred at least a 25% nominal depreciation of a country's currency over a quarter of one of the years. The banking crisis variable equals one if at least one year of the period had a banking crisis, as defined by Caprio and Klingebiel (1996). The group of advanced OECD countries consists of countries other than Turkey that have been members of the OECD since the 1970s. The share of IMF staff nationals is the fraction of own nationals in IMF economists. The share of IMF quota is the fraction of each country's quota in the IMF total. Political proximity to the United States (France, Germany or the U.K.) is the log value of the fraction of times in which each country voted in the United Nations along with the United States (France, Germany or the U.K.) in all votes. All variables except IMF program approval and participation and the crisis dummies are the values at the beginning of each period.

Table 3. Determination of Approval of IMF Stabilization Programs

(Probit estimation based on panel data for the five five-year periods from 1975 to 1999)

	(1)	(2)	(3)	(4)	(5) marginal effect at the mean
GDP growth rate	-3.1128	-3.4323	-3.1730	-3.3048	-1.3182
	(1.1023)	(1.1340)	(1.1332)	(1.1387)	
International reserves	-0.0785	-0.0798	-0.0820	-0.0831	-0.0332
	(0.0240)	(0.0246)	(0.0246)	(0.0247)	
Currency crisis	0.4022	0.4091	0.3967	0.3896	0.1534
	(0.1394)	(0.1410)	(0.1409)	(0.1414)	
Banking crisis	0.3470	0.2799	0.3107	0.2789	0.1105
	(0.1448)	(0.1475)	(0.1460)	(0.1477)	
GDP per capita	0.1913	0.1672	0.1755	0.1809	
	(0.0841)	(0.0846)	(0.0857)	(0.0857)	-0.0420
GDP per capita Squared	-0.0303	-0.0300	-0.0318	-0.0320	
	(0.0091)	(0.0091)	(0.0093)	(0.0093)	
Log (GDP)	0.7743	0.8045	0.8625	0.8425	
	(0.2630)	(0.2666)	(0.2719)	(0.2698)	0.0104
Log (GDP) squared	-0.0326	-0.0360	-0.0415	-0.0420	
	(0.0135)	(0.0137)	(0.0143)	(0.0142)	
Group of advanced OECD countries	-0.5389	-0.9939	-0.8953	-1.0024	-0.3675
	(0.3427)	(0.3647)	(0.3597)	(0.3662)	
Log (IMF quota share)	--	--	0.2223	0.1907	0.0761
			(0.1103)	(0.1128)	
Log (IMF staff share)	--	0.1546	--	0.1291	0.0515
		(0.0789)		(0.0801)	
Political proximity to the U.S.	--	0.6674	0.6632	0.6229	0.2484
		(0.2293)	(0.2302)	(0.2316)	
Number of obs.	617	617	617	617	
Log L	-300.0	-292.9	-292.8	-291.5	

	(6)	(7)	(8)	(9)
GDP growth rate	-3.2104	-3.2417	-3.2184	-3.3110
	(1.1370)	(1.1354)	(1.1320)	(1.1438)
International reserves	-0.0897	-0.0848	-0.0845	-0.0831
	(0.0247)	(0.0246)	(0.0246)	(0.0248)
Currency crisis	0.3741	0.3754	0.3741	0.3902
	(0.1408)	(0.1409)	(0.1408)	(0.1419)
Banking crisis	0.2688	0.2753	0.2751	0.2845
	(0.1479)	(0.1476)	(0.1477)	(0.1488)
GDP per capita	0.1915	0.1923	0.1952	0.1766
	(0.0854)	(0.0854)	(0.0854)	(0.0860)
GDP per capita squared	-0.0320	-0.0323	-0.0325	-0.0309
	(0.0093)	(0.0093)	(0.0093)	(0.0093)
Log (GDP)	0.8565	0.8275	0.8447	0.7934
	(0.2690)	(0.2674)	(0.2681)	(0.2741)
Log (GDP) squared	-0.0430	-0.0413	-0.0425	-0.0397
	(0.0141)	(0.0141)	(0.0141)	(0.0145)
Group of advanced OECD countries	-1.0433	-1.0641	-1.0105	-0.9723
	(0.3849)	(0.3877)	(0.3586)	(0.3903)
Log (IMF quota share)	0.1879	0.1832	0.1908	0.1987
	(0.1136)	(0.1140)	(0.1138)	(0.1144)
Log (IMF staff share)	0.1393	0.1381	0.1388	0.1356
	(0.0799)	(0.0799)	(0.0799)	(0.0804)
Political proximity to the U.S.	--	--	--	0.8040
				(0.3943)
Political proximity to France	0.6309	--	--	-0.9107
	(0.3264)			(0.9550)
Political proximity to Germany	--	0.6668	--	1.3746
		(0.3376)		(1.3488)
Political proximity to the U.K.	--	--	0.5429	-2.4759
			(0.3221)	(1.5597)
Number of obs.	617	617	617	617
Log L	-293.3	-293.2	-293.7	-290.2

Notes to Table 3

The dependent variable is the approval of IMF programs, which is a dummy variable that equals one if a new IMF stabilization program was approved in any year of each of the periods 1975-1979, 1980-1984,…,1995-1999. See Table 2 for definitions of variables. Period dummies are included (not shown). Standard errors of the estimated coefficients are reported in parentheses. Column 5 shows, corresponding to the results of column 4, the marginal effect of each independent variable on the probability of IMF loan approval, evaluated at the means of all the variables. For per capita GDP (log GDP), the marginal effect is evaluated at the mean of per capita GDP (log GDP) jointly for both the level and the square terms.

Table 4. Determination of Participation in IMF Stabilization Programs

(Tobit estimation based on panel data for the five five-year periods from 1975 to 1999)

	(1)	**(2)**	**(3)**	**(4)**
GDP growth rate	-1.4587	-1.5502	-1.2909	-1.3497
	(0.6809)	(0.6729)	(0.6686)	(0.6690)
International reserves	-0.0557	-0.0551	-0.0573	-0.0580
	(0.0149)	(0.0147)	(0.0147)	(0.0147)
Currency crisis	0.2222	0.2203	0.2048	0.1983
	(0.0846)	(0.0830)	(0.0824)	(0.0823)
Banking crisis	0.1175	0.0697	0.0834	0.0689
	(0.0881)	(0.0870)	(0.0857)	(0.0861)
GDP per capita	0.1801	0.1559	0.1672	0.1696
	(0.0538)	(0.0523)	(0.0528)	(0.0525)
GDP per capita squared	-0.0271	-0.0259	-0.0279	-0.0280
	(0.0061)	(0.0058)	(0.0059)	(0.0059)
Log (GDP)	0.5779	0.5868	0.6390	0.6242
	(0.1626)	(0.1607)	(0.1623)	(0.1613)
Log (GDP) squared	-0.0247	-0.0264	-0.0328	-0.0328
	(0.0083)	(0.0082)	(0.0086)	(0.0085)
Group of advanced OECD countries	-0.3315	-0.6179	-0.5725	-0.6172
	(0.2180)	(0.2252)	(0.2219)	(0.2239)
Log (IMF quota share)	--	--	0.2275	0.2109
			(0.0703)	(0.0713)
Log (IMF staff share)	--	0.0902	--	0.0635
		(0.0466)		(0.0467)
Political proximity to the U.S.	--	0.4754	0.4524	0.4302
		(0.1396)	(0.1388)	(0.1392)
Number of obs.	617	617	617	617
Log L	-436.4	-427.6	-424.0	-423.0

Note: Participation is the fraction of time that a country was in any IMF stabilization program in each five-year period. See the notes to Table 2 and Table 3 for additional information.

Table 4, continued

	(5)	(6)	(7)	(8)
GDP growth rate	-1.2880	-1.3151	-1.3136	-1.3473
	(0.6733)	(0.6716)	(0.6727)	(0.6689)
International reserves	-0.0591	-0.0591	-0.0593	-0.0580
	(0.0148)	(0.0147)	(0.0148)	(0.0147)
Currency crisis	0.1918	0.1922	0.1929	0.1958
	(0.0826)	(0.0824)	(0.0825)	(0.0822)
Banking crisis	0.0652	0.0677	0.0673	0.0706
	(0.0867)	(0.0863)	(0.0866)	(0.0862)
GDP per capita	0.1753	0.1736	0.1763	0.1675
	(0.0528)	(0.0526)	(0.0527)	(0.0527)
GDP per capita squared	-0.0279	-0.0280	-0.0283	-0.0275
	(0.0059)	(0.0059)	(0.0059)	(0.0059)
Log (GDP)	0.6368	0.6194	0.6350	0.5982
	(0.1620)	(0.1611)	(0.1620)	(0.1629)
Log (GDP) squared	-0.0336	-0.0324	-0.0333	-0.0314
	(0.0086)	(0.0085)	(0.0086)	(0.0086)
Group of advanced OECD countries	-0.6567	-0.6982	-0.6717	-0.6472
	(0.2353)	(0.2365)	(0.2363)	(0.2365)
Log (IMF quota share)	0.2070	0.2007	0.2045	0.2068
	(0.0722)	(0.0722)	(0.0722)	(0.0719)
Log (IMF staff share)	0.0710	0.0676	0.0680	0.0645
	(0.0468)	(0.0467)	(0.0468)	(0.0467)
Political proximity to the U.S.	--	--	--	0.3799
				(0.2356)
Political proximity to France	0.4657	--	--	-0.0064
	(0.1934)			(0.5691)
Political proximity to Germany	--	0.5474	--	0.8528
		(0.1963)		(0.7821)
Political proximity to the U.K.	--	--	0.4829	-0.7322
			(0.1906)	(0.9148)
Number of obs.	617	617	617	617
Log L	-425.0	-423.9	-424.6	-422.4

Table 5. Regressions for Economic Growth
(Panel of five 5-year periods for 81 countries over the period 1975-2000)

	(1)	(2)	(3)	(4)
Instruments for IMF programs	Actual values of IMF program participation		IMF quotas, staff, and political proximity to the U.S.	
Log (per capita GDP)	-0.0268	-0.0267	-0.0254	-0.0253
	(0.0047)	(0.0047)	(0.0046)	(0.0048)
Male upper-level schooling	0.0044	0.0045	0.0041	0.0040
	(0.0021)	(0.0020)	(0.0020)	(0.0020)
Log (life expectancy)	0.0432	0.0412	0.0411	0.0400
	(0.0208)	(0.0209)	(0.0208)	(0.0216)
Log (total fertility rate)	-0.0247	-0.0245	-0.0247	-0.0245
	(0.0068)	(0.0067)	(0.0068)	(0.0066)
Investment/GDP	-0.0110	0.0063	-0.0095	0.0062
	(0.0344)	(0.0345)	(0.0034)	(0.0347)
Government consumption/GDP	-0.0988	-0.0937	-0.0882	-0.0860
	(0.0270)	(0.0266)	(0.0266)	(0.0261)
Rule-of-law index	0.0118	0.0109	0.0110	0.0090
	(0.0084)	(0.0083)	(0.0084)	(0.0082)
Openness measure	0.0153	0.0157	0.0148	0.0150
	(0.0048)	(0.0047)	(0.0047)	(0.0045)
Inflation rate	0.0014	0.0040	-0.0014	-0.0012
	(0.0085)	(0.0079)	(0.0073)	(0.0070)
Growth rate of terms of trade	0.0884	0.0914	0.0861	0.0875
	(0.0249)	(0.0247)	(0.0247)	(0.0247)
Contemporaneous currency crisis	-0.0139	-0.0142	-0.0137	-0.0137
	(0.0029)	(0.0029)	(0.0029)	(0.0028)
Lagged currency crisis	--	0.0054	--	0.0057
		(0.0029)		(0.0029)
Contemporaneous banking crisis	-0.0016	-0.0109	-0.0105	-0.0107
	(0.0026)	(0.0025)	(0.0025)	(0.0025)
Lagged banking crisis	--	0.0075	--	0.0075
		(0.0028)		(0.0028)
Contemporaneous IMF program participation	-0.0088	-0.0088	-0.0077	-0.0049
	(0.0039)	(0.0039)	(0.0063)	(0.0058)
Lagged IMF program participation	--	-0.0018	--	-0.0060
		(0.0038)		(0.0065)

Notes to Table 5

The system has 4 equations, which is applied to the periods 1975-80, 1980-1985, 1985-90, 1990-1995, and 1995-2000. Dependent variables are the growth rates of per capita GDP. Data through 1992 are from Summers and Heston. Figures were updated through 1999 from the World Bank, *World Development Indicators*, and the Economist Intelligence Unit, *Country Data*. Individual constants (not shown) are included for each period. The log of per capita GDP and the average years of male secondary and higher schooling are measured at the beginning of each period. The log of life expectancy at birth is an average for the previous five years. The ratios of government consumption (exclusive of spending on education and defense) and investment (private plus public) to GDP, the inflation rate, the total fertility rate, and the growth rate of the terms of trade (export over import prices) are period averages. The rule-of-law index is the earliest value available (for 1982 or 1985) in the first equation and the period average for the other equations. The openness measure is the ratio of exports plus imports to GDP, filtered for the estimated effects on this measure of the logs of population and area.

Estimation is by three-stage least squares. Instruments are the actual values of the schooling, life-expectancy, openness, terms-of-trade variable, dummy variables for currency and banking crises, dummy variables for prior colonial status (which have substantial explanatory power for inflation), and lagged values of initial GDP, government consumption, investment ratio, and rule of law. For the contemporaneous or lagged IMF program participation, the actual value of the program participation is used as an instrument in columns 1 and 2. Columns 3 and 4 use as instruments the contemporaneous and lagged values of the log of the IMF staff share, the log of the IMF quota share, and the log of the fraction of U.N. votes along with the United States. Standard errors are reported in parentheses.

Figure 1. The Increase in the Probability of IMF Program Approval by