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THE CAUSES AND CONSEQUENCES OF IMF CONDITIONALITY

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ABSTRACT

We develop a public choice model of the International Monetary Fund in which credit and conditionality are simultaneously determined by the demand for, and supply of, IMF credit. A graphical analysis illustrates the comparative statics in response to various shocks. We apply the model to explain the main changes in the rules governing conditionality and in the number of conditions per program. We observe a highly significant positive correlation between the number of conditions per program and the prior use of Fund credit relative to quota in 1959-99. A panel data analysis of 206 letters of intent in 4/1997-2/2003 reveals that the number of conditions depends negatively on international reserves and positively on interest rates in the world capital market, monetary expansion in the borrowing country and the number of World Bank adjustment loans. Finally, the effects of conditionality are analyzed for the first time. Our instrumental-variables estimate shows that the number of conditions does not have a significant effect on any of the five typical instrument and target variables considered. The final section links the analysis of IMF conditionality with the literature on tied transfers in public economics and develops some novel proposals for the reform of IMF conditionality.

1. Introduction

This paper fills five gaps in the literature on IMF conditionality.

First, it develops a formal public choice model of the demand for, and supply of, IMF output and derives the comparative-static implications for conditionality in a graphical analysis (Section 2).

Second, it tries to explain the most striking historical changes of IMF conditionality by inspecting the time series of the main causal variables (Section 3.1).

Third, Dreher's (2003a) annual panel data analysis of the number of IMF conditions in 1987-99 is complemented by an analysis of disaggregated quarterly data for 1997-2003, distinguishing between monetary and public sector conditions and between performance criteria, structural benchmarks and conditions requiring prior action (Section 3.2).

Fourth, the effects of (the number of) IMF conditions on the main macroeconomic instrument and target variables are analyzed for the first time (Section 3.3). This panel data analysis is connected with Section 3.2 by an instrumental variables estimate (Section 3.4).

Finally, we link the discussion of IMF conditionality with the literature on institutional competition and tied transfers in public economics and derive some new proposals for the reform of conditionality (Section 4).

2. A public-choice model of IMF conditionality

Like all international organizations, the International Monetary Fund is a bureaucracy and ought to be analyzed as such. According to the economic theory of bureaucracy, bureaucrats try to maximize their budget, staff, discretion and amenities while they have almost no influence on their income.

The IMF bureaucracy does not determine the size of its administrative budget and its lending capacity. But the econometric evidence reveals that it tries to obtain quota increases by "hurry-up lending" at the time of the regular quota reviews and that its staff grows in line with its quota (Vaubel 1991). It has also been shown that the staff of international organizations expands if the financing share of the largest contributor (usually the United States) declines and the ideological orientation of the U.S. President shifts to the left (Vaubel, Dreher, Soylu 2003).

Discretion in the case of the IMF takes two forms: the power to distribute and the power to regulate. The Fund decides about the distribution of its subsidized loans and about the conditions attached to them.

Thus, the utility function of the IMF bureaucracy can be written as

$$\begin{aligned}(1)\quad U = \; & U(F(Q(L) + R(i_F)), N(Q), L(N(Q)), C(N(Q))) + \\ & \lambda_1(F(Q(L) + R(i_F)) - L(N(Q)) - X) + \\ & \lambda_2(B(Q) - N(Q) * W))\end{aligned}$$

where F is the Fund's capacity to finance lending,
Q is the sum of all quota,
L is IMF lending,
R is the Fund's interest revenue,
i_F is the interest rate charged by the Fund,
N is the number of IMF staff,
C is the stringency of IMF conditionality,
X is unused lending capacity ($X \leq Q$),
B is the administrative budget ($B - N * W \geq O$) and
W is the average wage of an IMF bureaucrat.

While the Fund controls its supply of credit, the demand for its credit is determined by the borrowing member states. Their demand depends on the value of being able to use the loan, the (mostly negative) value of having to comply with IMF conditions and the interest subsidy offered by the Fund. The value of the loan and of conditionality reflects the economic and political needs of the borrowing governments. Their economic needs are a function of their income and, depending on the exchange rate regime, their international reserves or their (nominal or real) exchange rate. Their political needs are determined by their electoral cycle and their popularity. As Dreher and Vaubel (2004) show, net IMF lending tends to be larger before elections. Note that the value of accepting IMF conditionality need not be negative in all circumstances. Notably after an election, the conditions agreed with the Fund may be welcome to the borrowing government because they enable it to use the Fund as a scapegoat for the unpopular corrective policies which are now required (Vaubel 1991).[1] This may explain why both the number and the net amount of IMF loans are significantly larger after elections (Vreeland 1999, Vreeland, Przeworski 2000, Dreher, Vaubel 2004).

To summarize, the borrowers' demand for IMF loans (L_D) can be written as:

(2) $L_D = L_D(V_L(E_L,P_L) + V_C(C, E_C, P_C) + S(i_F, i_M))$

where V_L is the value of being able to use the loan,

E is economic "need",

P is political, i.e., electoral, "need",

V_C is the (negative or positive) value of IMF conditionality to the borrowing government,

S is the value of the interest subsidy offered by the Fund and

i_M is the rate of interest which the borrowing government would have to pay in the market.[2]

The degree of conditionality which is optimal for the Fund can now be derived by substituting the borrowers' demand function into the Fund's utility function, differentiating it with respect to C and setting the derivative equal to zero:

$$\frac{\partial U}{\partial C} = \frac{\partial U}{\partial C} + \frac{\partial U}{\partial L} * \frac{\partial L}{\partial V_c} * \frac{\partial V_c}{\partial C} = 0$$

Thus, the Fund balances the marginal utility of imposing conditions on its borrowers against the marginal disutility of losing demand for its credits in response to its conditionality.

The trade-off between conditionality (C) and lending (L) can be depicted in a two-dimensional diagram, and the equilibrium can be derived. In *Figure 1*, the staff's preferences with respect to conditionality and lending are translated into indifference curves (I) and the borrowers' demand function (D) serves as a transformation curve. The optimum for the Fund and the equilibrium between borrowers' demand and IMF supply is the point of tangency of the best indifference curve and the transformation curve (E_1). Thus, lending is L_1^* and conditionality is C_1^*.[3]

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[1] Dreher (2003b) has shown empirically that the IMF may indeed increase the incumbent's chance of reelection.

[2] The interest rate may be infinite, of course.

[3] See also Vaubel (1991). We refrain from computing these values.

Of course, there is no reason to assume that E_1 is also optimal for the world as a whole. Since IMF lending is subsidized, conditionality C_1^* is likely to be excessive. The interest subsidy enables the Fund to impose more stringent policy conditions than an unsubsidized lender would and could do. The Fund exerts regulatory power at the expense of the taxpayers of the net contributing states who finance the interest subsidy.

IMF lending cannot be larger than its lending capacity F. If the equilibrium amount of lending L_1^* is smaller than, or equal to, F, this constraint is not effective (Figure 1). However, if $L^*>F$ as in Figure 2, the Fund's optimization is constrained ($L^*=F$) and conditionality is at C which is on a lower indifference curve (I_2) than C^*. In this case, a quota increase should not only raise lending but also reduce conditionality.

Since, at the time of a quota review, the Fund uses its lending capacity more fully to obtain a large quota increase, its indifference curves and the point of tangency shift to the right (E_2), i.e., closer to F, in the unconstrained case of Figure 1. In this case, therefore, conditionality should ceteris paribus decrease at the time of a quota review and rise again, thereafter.

Thus, if the quota review leads to a quota increase, the effect on conditionality depends entirely on whether the capital constraint had been effective or not. If lending had been constrained, conditionality diminishes. If lending had not been constrained, conditionality rises.

There may not only be a capital constraint but also a labor constraint. We expect that the production of policy conditions is considerably more labor-intensive than the lending itself so that, in practice, the labor constraint may only be binding on conditionality. As *Figure 3* shows, a labor constraint (N) reduces conditionality and raises lending. Conversely, in this case, an increase in staff raises conditionality and lowers lending.

The Fund's principals may not only impose a capital constraint and/or a labor constraint, they can also affect the rate of substitution between lending and conditionality in the Fund's utility function. For example, the Fund's policy conditions were severely criticized as misguided and excessive after the Asian debt crisis of 1997/98. U.S. Congress threatened to refuse ratification of the 1999 quota increase if the Fund did not reduce the number and stringency of its policy conditions. Like a quota review, this pressure should have shifted the indifference curve system and the point of tangency to the right as in *Figure 1*. Thus, ceteris paribus, the softening of conditionality should have been accompanied by an increase in lending.

In our graphical analysis, we now turn from the supply side to the demand for IMF credit. The demand function of equation (2) implies that the demand curve in our figure shifts outward when the borrowing countries

- move into recession,
- experience a decline in the demand for their products or in the supply of their imported goods (e.g., oil),
- adopt fixed exchange rates (especially if the currency is overvalued),
- accelerate monetary expansion or increase the budget deficit because of an election,
- face rising interest rates on the world capital market, in the extreme case an international debt crisis.

When the demand for IMF credit grows, the Fund increases both lending[4] and conditionality[5] (Figure 4). If the demand increase is due to a recession, a negative terms of trade shock or a debt crisis, the hardening of conditionality is clearly procyclical[6] but this is what the Fund's bureaucratic interest implies.

So far we have treated the interest rate charged by the Fund as exogenous and constant. This is no longer correct. Since 1990, the rates of charge have even been linked to short-term market interest rates in the main industrial countries so that the subsidy is fairly constant for short-term loans. Ceteris paribus, an increase in the Fund's rate of charge reduces its conditionality (equation 2), and a rise in market rates increases both IMF lending and conditionality. If both rates rise in parallel, IMF lending and conditionality decline.

Thus, the Fund has three rather than two policy instruments at its disposal: lending, conditionality and interest rate policy. We expect that it gives more weight to the disadvantage that high rates of charge choke off demand for its lending than to the advantage that they increase its supply of loanable funds. Thus, in principle, the IMF bureaucracy prefers low rates of charge. But its rates of charge cannot be zero by the Articles of Agreement. If we view interest rate policy as a matter of negotiation between the Fund and its principals, we would expect that the Fund does not resist an interest rate hike demanded by its principals, if both the capital and the labor constraint are binding and that, by implication, rates of charge are likely to be higher, the more the Fund's quota and manpower potential have been exhausted.

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[4] Dreher and Vaubel (2004) show that recessions, reserve losses and monetary acceleration significantly raise net IMF lending.

[5] Dreher's panel data analysis (2003a) for the years 1987-99 reveals that a falling current account balance, which may be due to a negative terms of trade shock, does indeed raise the number of IMF conditions. But economic growth and monetary expansion do not have a significant effect on conditionality.

In the longer term, as per capita income grows in the borrowing countries, the demand curve will not only shift in parallel (e.g., from D_1 to D_2) but also turn more elastic (like D_3) because the borrowing governments enjoy easier access to the world capital market and become more sensitive to interference from the Fund. Moreover, with education improving, the Fund's conditions may be increasingly resented by the citizens of these countries. If democracy is gaining ground, the governments of such emerging countries will also have to pay more attention to the unpopularity of IMF conditions. As the demand curve flattens, the Fund will lower conditionality and raise lending, if possible (E_3 in *Figure 4*).

3. Empirical analysis

3.1. Explaining the most striking changes of IMF conditionality

When the International Monetary Fund was founded in 1944, its statutes (The Articles of Agreement) did not provide for conditionality. In the negotiations, the British delegation, led by J.M. Keynes, was opposed to conditionality because Britain was likely to be a borrower.

But in March 1948, under U.S. pressure, the Board of Executive Directors decided that the Fund could attach strings to its loans, and in 1951, it defined some criteria. In 1956, the "phasing" of credit instalments was introduced to strengthen the incentive for complying with the conditions. However, the Compensatory Financing Facility, introduced in 1963, lightened the burden of conditionality. In 1968, a review of conditionality, supported by the U.S., tried to limit the scope of the Fund's performance clauses. In 1974, conditionality was extended from policy targets to policy instruments (Gould 2001: 9). In 1979, mounting criticism of IMF conditions led to another review of conditionality. As Gould (2003) documents in considerable detail, the driving force behind the

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[6] Cooper (1983) has criticized the Fund for varying its conditionality procyclically.

expansion of conditionality had been the IMF staff, and the two reviews of conditionality were (rather unsuccessful) attempts of the Executive Board to limit conditionality.

In the 1980s, supply side conditions, notably sector-specific conditions, were added. In 1982, the Compensatory and Contingency Facility was redesigned making it a high-conditionality facility. The Structural Adjustment Facility (1986) and especially the Enhanced Structural Adjustment Facility (1987), which successively took its place, introduced far-reaching "structural benchmark" conditions. The Systemic Transformation Facility (1993-95) was associated with light conditionality. In 2000, under strong public pressure, the Fund embarked on another review of conditionality and, in September 2002, the Executive Board approved new guidelines which demanded more uniform rules and restraint of conditionality.

As it is impossible to measure and compare the stringency of particular conditions in an objective way, we first focus on these events and the time series of the number of conditions per program. We try to explain them in the framework of our model.

The arrows in column 1 of Table 1 indicate the main changes in the rules governing conditionality. Column 2 reports the number of performance criteria per program from three different sources (1952-94: Gould 2001; 1995-99: Goldstein 2000; 2000-02: our computations).[7] The other columns contain most of the key explanatory variables of the model.

The decision in 1951 to define conditionality criteria is not easily explained by the demand for, or potential supply of, IMF credit. The use of Fund credit was low (even considering that very few of the members' currencies were convertible). Probably, the criteria of 1951 were simply a consequence of the U.S. initiative of 1948.

The case of 1956 is more interesting. Economic growth was rapidly decelerating (column 8) and the use of Fund credit quadrupled both absolutely and relative to quota (though at a low level). The quota review of 1955 (column 6) had failed to provide more resources for the Fund. With the demand for credit rising and the supply of credit constrained, the Fund's interest in conditionality increased.

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[7] Other studies confirm the trend increase in the number of conditions per program but do not report annual data. According to Polak (1991: 14), the average number of performance criteria per arrangement was under six from 1968 to 1977, about seven in 1974 to 1984 and 9.5 from 1984 to 1987. Schadler et al. (1995) count 15 in 1988-92. See also Beveridge, Kelly (1980), Killick (1992) and Dreher (2002).

Column 2 reports a monotonic increase in the number of actual policy conditions from 1958 to 1969. This is consistent with the strong positive trend in the use of Fund credit which rose from 3 percent of quota in 1960/61 to 19 percent in 1969.[8] The demand for IMF credit grew rapidly because more and more developing countries joined the IMF and because market interest rates (nominal and real) soared (column 10) while the Fund's basic rates of charge stayed at very low levels (column 9). IMF staff more than doubled in this period so that there should have been no labor constraint. The introduction of the Compensatory Financing Facility in 1963, which offered low conditionality, occurred at a time when the use of Fund Credit relative to quota had temporarily declined.

From 1969 to 1973 the number of conditions dropped to a lower level and the use of Fund credit declined. To some extent, this may have been a response to the 1968 review of conditionality. An alternative explanation is that the quota increase of 1970 removed the supply constraint and reduced the Fund's interest in conditionality relative to lending. Moreover, the collapse of the adjustable peg system reduced the demand for IMF credit.[9]

The extension of conditionality from 1974 onward is accompanied by a strong increase in IMF lending both absolutely and relative to quota because the oil price shock of 1973 triggered a world recession in 1974/75 and raised the demand for IMF credit. It is interesting to note that the Fund reacted not only by strengthening its conditionality but also by suddenly raising its rates of charge in 1974. To some extent, this may also have been motivated by the rise of market interest rates in 1973/74. The decision in 1974 to extend the scope of conditionality was followed by a monotonic increase in the number of conditions up to 1987. The Fund made use of its larger conditionality powers because its quota were increasingly exhausted, especially in 1976-77 at the time of the seventh quota review.[10] Staff size increased almost monotonically so that there was probably no binding labor constraint.

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[8] The temporary decline from 1957/58 to 1959/60 is due to the quota increase of 1959 and follows the hurry-up lending preceding it.

[9] World Bank conditionality was also weak for this reason (Kapur et al. 1997: 463).

[10] The Board of Governors adopted their resolution in 1978.

Contrary to expectations, the review of conditionality initiated in 1979 did neither produce more restrictive guidelines nor stop the increase in the number of conditions because demand for IMF credit remained strong thanks to the second oil price shock (1979), high and rising market interest rates (1979-81), the world recession of 1981/82 and the ensuing Latin American debt crisis of 1982/83.

The reform of the Compensatory and Contingency Facility in 1982, making it a high-conditionality facility, occurred at a time of high and rising use of Fund Credit, both absolutely and relative to quota, due to the debt crisis.

The introduction of structural benchmark conditions in 1986 occurred at a time of still very high use of, and demand for, Fund credit. But market interest rates were falling rapidly. The new Structural and Enhanced Structural Adjustment Loans, carrying very low interest, enabled the Fund to maintain the demand for its credit and add a new type of condition.[11]

The number of conditions was slightly lower and fairly constant from 1989 to 1995. This is consistent with the generally declining ratio of the use of Fund credit to quota. The Systemic Transformation Facility (1993-95), with its weak conditionality, was introduced after the huge quota increase of 1992, which reduced the ratio of Fund Credit to quota, and it was terminated at a time of strongly rising Fund credit relative to quota.

The Asian debt crisis of 1997 temporarily raised the demand for IMF credit, and both the use of Fund credit and the number of conditions temporarily increased.

The review of conditionality beginning in 2000 was acceptable to the Fund because quota had been drastically increased in 1999, and the use of Fund credit was falling. As in 1970-73, the low number of conditions in 2000-02 may, therefore, not be due to the review of conditionality but the low use of Fund credit relative to quota that followed the quota increase.

In sum, our inspection of the data generally confirms the prediction of our model that conditionality increases when the demand for IMF credit grows relative to quota and that conditionality decreases or stagnates when the demand for IMF credit is weak or IMF quota have been raised. If the number of conditions in 1959-99 is simply regressed on the use of Fund credit relative to quota in the previous year, a correlation coefficient of .71 results. This is, of course, significantly different from zero at the one percent level.

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[11] The Fund also feared that some countries would default on their loans from the IMF if they could not borrow on more concessional terms (Dreher 2003a).

We now turn to a rigorous econometric analysis of more recent panel data.

3.2. An econometric analysis of the determinants of conditionality

In our econometric analysis, we focus on the number of conditions included in 206 IMF letters of intent with 38 countries between October 1997 and March 2003.[12] Thus, our panel data are dominated by the cross-sectional dimension. Table 2 summarizes the number of conditions by type and sector. As can be seen, the programs analyzed include more than 22 conditions on average. We also show the summary statistics for transition countries only. The average program with countries in transition contains slightly more conditions – this is true for performance criteria and, especially, for prior actions.

We estimate pooled time-series cross-section regressions to identify the determinants of conditionality. Since our data are strongly skewed to the right, OLS regressions would be clearly inappropriate. We estimate our model using Poisson regressions even though our data are displaying signs of overdispersion. The relevant tests reveal that not all of our dependent variables follow the Poisson distribution, so in some cases negative binomial regression might be preferable. The results, however, are almost identical. We therefore report only the Poisson regressions.

Since some of the (quarterly) data are not available for all countries or periods, the panel data are unbalanced and the number of observations depends on the choice of explanatory variables. To account for time-invariant unobservable heterogeneity potentially correlated with the regressors, we use country dummies. We also include a dummy for each quarter of the year ("fixed time effects"). All additional variables, their data sources and summary statistics are listed in the appendix.

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[12] The letters have been randomly selected from the Fund's webpage: www.imf.org. 23 of the countries covered by this study received loans under the Fund's Standby Arrangement or Extended Fund Facility, 18 countries received PRGF loans.

Table 3 contains estimates of the complete model for the total number of conditions. Most explanatory variables have already been used in Dreher (2003a).[13]

Column 1 starts by testing the hypotheses derived from public choice theory. As has been shown by Dreher (2003a) one important possibility to explain changes in conditionality over time and across countries is the changing relationship between the IMF and the World Bank. With the inception of the Fund's Extended Facility in 1974 and the Bank's Structural Adjustment Loans in 1980, the demarcation line between Bank and Fund became blurred. In the eighties, Fund and Bank were rivals in adjustment lending. In some cases, the Bank supported countries in spite of negative Fund evaluations.[14] The Fund therefore faced the risk of losing its clients if the Bank marketed its macroeconomic programs with softer conditionality. To avoid this kind of competition and contradictory advice the IMF tried to press for more cooperation (Polak, 1994: 39). IMF and World Bank started to send members of their staff to each other's mission teams. This raised the bargaining power of those teams and the scope for conditionality. If the relation between Fund and Bank is collusive rather than competitive, we expect the number of IMF conditions to be higher, the higher the World Bank's contemporaneous involvement in the country.[15] That is why we include the number of new contemporaneous World Bank structural, technical and all other arrangements, respectively.

We also allow for the country's real GDP. If IMF staff is interested in enforcing as many conditions as possible, they negotiate a more stringent program if the country is in a weak bargaining position. The more a government needs a loan, the smaller is its power to enforce its own agenda in negotiations with the IMF. Moreover, the country's bargaining power is influenced by other countries' willingness to support the potential borrower (Bird and Rowlands, 2003). Both the applicant's own (direct) influence in the Fund and the support from other countries rise with its GDP. A country which has a large GDP possesses a large quota, which means higher voting rights, and it is more important for the world economy. Thus, a country with a large GDP must probably accept fewer conditions.

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[13] The exceptions are real GDP growth, LIBOR, the government's budget deficit and changes in international reserves. Dreher (2003a) additionally uses principal arrears, US military grants and loans, public and publicly guaranteed bilateral and commercial debt, an index measuring democracy and an index measuring economic freedom. We cannot employ those variables here since they are not available on a quarterly basis.

[14] In 1988 this was the case for Argentina and Turkey (Polak, 1994: 37).

We employ the following additional variables (with their lagged values):

- The country's real GDP growth, since higher growth increases the probability that the IMF program will be successful. IMF staff may be more interested to negotiate arrangements with growing countries – this makes the IMF look more successful as well. Staff should thus be willing to demand fewer conditions.
- Real GDP growth in the OECD countries, because the Fund has more power to enforce conditions in recessions (section 2).
- The LIBOR on three months credits to US banks, since the interest rate subsidy provided by the Fund is higher with higher world interest rates – and demand for Fund credits should therefore rise (section 2).

In Table 3, only four variables have a significant influence: IMF programs include more conditions when fewer technical loans have been granted by the World Bank, real GDP is low and real per capita GDP growth has been high in the borrowing countries and in the OECD countries. Bargaining power of the recipient government thus seems to be important in negotiations with the Fund. The results also show that, with respect to per capita GDP growth in OECD countries, the counter-cyclical effect dominates. The positive coefficient of real GDP growth and the negative coefficient of technical loans are surprising. However, both coefficients become insignificant when we include variables from normative theory. Since, e.g., high rates of monetary expansion and huge budget deficits often coincide with low growth rates, the coefficient of real GDP growth probably reflects the joint effect of those variables. The coefficient of technical loans is due to an outlier with only one technical project and a number of conditions more than twice the average. If this outlier – South Korea – is excluded from the sample, the coefficient becomes completely insignificant.

We also introduced a dummy for transition countries (and omitted the fixed country effects) to test whether the high demand of those countries for IMF loans allowed Fund staff to ask for more conditions. The dummy is, however, completely insignificant. We do therefore not report it in the table.

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[15] For a more detailed discussion see Dreher (2002, 2003a).

The second column includes variables from normative rather than public choice theory (all lagged by one quarter). From a normative perspective, the IMF should be more demanding, the worse the borrowing country's policies. Traditionally, the IMF focuses on government consumption, the government's budget deficit, the country's current account balance and its rate of monetary growth. Regardless of economic policy, the Fund should ask for more conditions, the greater the volume of loans provided relative to the country's quota. This is official Fund procedure since 1955. We also include the percentage change in international reserves. Inflows of reserves are expected to reduce the number of conditions because fewer reforms are needed to surmount the crisis.[16]

The results show that a high rate of monetary expansion leads to significantly more conditions while government consumption, the government's budget deficit, the country's current account balance (all in percent of GDP), the percentage change in international reserves and new IMF credit (in percent of the country's quota) are insignificant.

The third column includes all normative and public choice variables. As can be seen, real GDP, real per capita GDP growth in OECD countries and monetary expansion still influence the number of conditions significantly. The World Bank's technical loans no longer influence conditionality while its Structural Adjustment Loans now significantly increase the number of conditions. The influence of LIBOR is now significant at the ten percent level, with the expected sign.

Table 4 replicates the analysis for different types of conditions. However, we only report regressions including variables from both normative and public choice theory. We do not include prior actions in the table, since our number of observations is too small for meaningful regressions. As can be seen, the results regarding economic policy are rather mixed, with no clear patterns emerging. The exception is monetary expansion which is significant at the five percent level in three regressions. Actually, monetary growth is most important in IMF programs (Dreher 2002, 2003c). Confirming the results of Table 3, real GDP growth in the OECD countries does not lead to fewer but more conditions. Greater power of the recipient country, as measured by its real GDP, reduces the number of conditions in the monetary sector as well as the structural benchmarks (total and monetary).

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[16] This variable also has a public choice interpretation: Since inflows of reserves give the borrowing country greater independence from the Fund's resources, they increase the recipient government's power in the negotiations and should thus reduce the number of conditions.

3.3. The effects of conditionality on target and instrument variables

As a next step and for the first time, we analyze the effect of IMF conditionality on a number of policy target or instrument variables which are typically included as performance criteria in IMF programs: monetary growth, the government's budget deficit, the current account balance, the change in international reserves and government spending.[17] As explanatory variables we employ similar covariates as in our earlier analysis of fiscal and monetary policy (Dreher and Vaubel 2004). Table 5 reports the results. It omits the coefficients of new net credit provided by the IMF, the exhaustion of a country's quota with the Fund at the beginning of the period, the rate of inflation, real GDP growth and the lagged endogenous variable which were also included. Conditionality is again measured by the number of conditions included in IMF letters of intent. We run five regressions for each dependent variable. Once more, we start by using the sum of all conditions. We then separate the total number into monetary and public-sector conditions. We distinguish performance criteria, structural benchmarks and prior actions.

As Table 5 shows, IMF conditionality seems to be rather ineffective. Budget deficits and international reserves are not correlated with IMF conditionality at all. Monetary performance criteria increase the rate of monetary expansion. This positive correlation could be due to reverse causation though we did not find a significant correlation in the regressions reported in Table 4. We will deal with this in the next section.

According to the estimates, conditionality is most effective in increasing the current account balance. The total number of conditions as well as several sub-aggregates are significantly correlated with higher current account balances. The disaggregated analysis shows that structural benchmarks are mainly responsible for this relationship.

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[17] To the best of our knowledge, the number of conditions has never been used as an explanatory variable in studies investigating the effects of the Fund. Usually, Fund influence is proxied either by the number of programs concluded or the amount of loans drawn. Boockmann and Dreher (2003) used both variables to analyze the effect of the IMF on economic freedom. In employing the number of programs in addition to new loans, they try to distinguish the effects of conditionality from the increased leeway due to IMF money. A summary of studies investigating the effect of the IMF on the current account balance, the rate of inflation, and real GDP growth is provided by Dreher (2003c: Table V.1).

Of course, if conditionality depends on targets and the target variables depend on conditionality, taking the number of conditions and, respectively, the economic variables as exogenous regressors is flawed and the results would be biased. The next section deals with possible endogeneity of some of the right hand side regressors.

3.4. An instrumental-variables approach

In this section we replicate the analysis presented in Tables 4 and 5 using instruments and thus controlling for potential endogeneity of our variables. Again we start by explaining the number of IMF conditions. This time we instrument government consumption, the government's budget deficit, monetary expansion, the change in international reserves and the current account balance with all variables determining them in the regressions reported in Table 5 (specification I). Once more, we report results from a regression with all variables included. Again we do not report results for prior actions since our number of observations is too small for a meaningful regression. Nor do we report results for performance criteria because we did not obtain significant coefficients.

As Table 6 shows, most results confirm the previous analysis. The analyzed letters of intent include significantly more conditions when the World Bank negotiated more adjustment loans. This is true for the total number of conditions as well as for conditions in the monetary sector. As explained, this is probably because Fund and Bank staff use existing Bank material when they jointly prepare IMF programs. In 1997-2003, the Fund-Bank relationship has been collusive rather than competitive. IMF staff include part of the Bank's conditions into their IMF programs. The influence is, however, quantitatively small. An additional adjustment program raises, all else equal, the number of conditions by about one half.

As expected, LIBOR has a significantly positive effect on the number of conditions. At the five percent level of significance, more international reserves lead to fewer conditions. Monetary expansion now significantly increases the number of conditions in four regressions but our results for the other policy and target variables are usually not in line with our a priori hypotheses. Surprisingly, government consumption significantly reduces the number of conditions in all but one of the regressions. Large government consumption usually comes along with larger and more powerful bureaucracies. Possibly, they become so strong that they can influence negotiations with the Fund and prevent conditions which harm their interests (Dreher 2003d).

In Table 7 we instrument conditionality with the variables explaining IMF conditions in Table 3 (column 3). At the five or one percent level, IMF conditions never have a significant effect on the targets and instruments of the recipient governments.[18] The number of conditions simply does not matter for economic policy outcomes.

This raises the obvious question why the Fund is so interested in imposing policy conditions. Does it have illusions about their effectiveness?[19] Does it use conditionality merely as a pretext to justify a large staff? Or is the number of policy conditions a poor indicator of the stringency of conditionality?

4. Reforming conditionality

The controversy about IMF (and World Bank) conditionality is analogous to the long-standing debate about tied transfers in public economics. Should transfers to the poor be subject to restrictions on their use? In the case of the Fund, the transfer or aid is the subsidy implied by the difference between the IMF rate of charge and the interest rate which the borrowing government would have to pay on the capital market.

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[18] This is in line with previous research. Using Fund Programs as a proxy, Boockmann and Dreher (2003) find that conditionality does not influence economic freedom. Evrensel (2003) comes to the conclusion that IMF programs do not improve monetary or fiscal policies either.

[19] Bird (2003) argues that the Fund may be tricked by the borrowing governments who take the money and then renege on their commitments, knowing that the Fund is not interested to stop lending to them. Thus, the Fund faces a time inconsistency problem which, given its bureaucratic incentives, it cannot solve. To be effective, conditionality would have to be enforced by an external actor (Vaubel 1991: 233).

Bird (2003: 97-100) also considers the following explanation of the ineffectiveness of IMF agreements. The Fund is only interested in a large budget and, as a means to this, in much lending. It does not wish conditionality to be effective because effective conditionality would reduce IMF lending by deterring potential borrowers or by improving their policies. The Fund negotiates policy conditions merely to please its main principals, the net contributors, who do not realize that conditionality is ineffective. This story is implausible because the three reviews of conditionality have been initiated by the main principals asking a reluctant staff (agent) to reduce conditionality (Gould 2003). Bird also rejects this explanation but for different reasons.

Tied transfers have been criticized by most economists because they prevent the recipients from maximizing their utility, are of uncertain value within any framework of redistribution and cause large administrative cost.

However, tied transfers have also been defended on the following grounds:

1. Utility maximization must also allow for the donors' preferences (e.g., Buchanan 1968, Garfinkel 1973).
2. The recipients, too, may prefer tied transfers because they do not want to be treated simply as poor. They prefer transfers justified by some higher purpose.
3. If the transfers are paid to households, notably families with children, the donors ought to make sure that the father or the parents do not abuse the money. There may be principal-agent problems within the family.
4. The restrictions prevent the recipient from abusing the money so as to remain dependent on further transfers (Bruce, Waldman 1991, Vaubel 1991). In other words, conditionality addresses the problem of ex-post moral hazard.
5. If the transfers are tied in an appropriate way, they will be demanded only by the truly needy (Nichols, Zeckhauser 1982). Thus, the restrictions may serve to solve the donors' selection problem in conditions of asymmetrically imperfect information.

Unlike the World Bank, the Fund was never meant to provide development aid. Its purpose was to supply temporary balance of payments credits in the absence of an integrated world capital market. If the liberalization of international capital movements and the collapse of the adjustable peg system of Bretton Woods has removed the rationale for IMF lending (as many believe), any arguments about conditionality are, of course, redundant or at best "second best". But let us take them seriously and relate them to the literature on tied transfers.

The first argument is easily disposed of: truly benevolent donors would respect the recipients' preferences.

In the case of the Fund, the "higher purpose" assumed by the second argument would be "development" or "the stability of the international monetary and financial system". But development should better be left to the World Bank, and very few of the IMF's credits actually serve the purpose of maintaining the stability of the world monetary or financial system.

The principal-agent problem emphasized by the third argument applies mainly in the case of non-democratic countries. It implies that the Fund ought to waive conditionality when the recipient country is a democracy. Whether a country is a democracy or not must not be decided by the IMF staff because it has a vested interest in conditionality and lending. The decision ought to be delegated to an institution containing a majority of democratic countries.

If moral hazard is the problem (argument 4), the current practice of IMF conditionality is clearly inadequate. To facilitate public scrutiny, the conditions ought to be few and simple, and they ought to be published without exception (Vaubel 1991). The Fund should also be obliged to inform the public whether the conditions have been implemented and, if not, why additional installments of the credit have been paid out. To keep the recipients fully responsible, the conditions ought to be confined to instruments which they control and exclude target variables which are largely beyond their control.[20] But transparency and self-restraint are not in the bureaucratic interest of the IMF staff.

Moreover, moral hazard arises not only ex post, i.e., after the damage has occurred – it may also be a cause of the crisis. Ex-ante moral hazard requires ex ante conditionality (Vaubel 1991, IFIAC 2000). Ex ante monitoring also solves the selection problem stressed by the fifth argument.

The Fund's new Contingent Credit Line (CCL) established in 1999 and expired in 2003 provided for ex ante conditionality. But it had been designed in such a way that it could not function. To be eligible, the potential borrowers had to sign up in advance, thereby signaling that they anticipate a crisis and a need for credit. To be effective, ex ante conditionality has to be mandatory and universal. But the IMF staff is not interested in effective ex ante conditionality because it would reduce the demand for its lending much more than the present system of ex post conditionality does. (In our figure, the transition from ex post conditionality to effective ex ante conditionality would cause the demand function to flatten and shift to the left. The new point of tangency would be on a lower IMF indifference curve.) U.S. Congress imposed the Contingent Credit Line on the Fund, and the Fund found a way to render it impracticable.

If the Fund continues to formulate policy conditions, they should not be coordinated with the World Bank. The economic theory of bureaucracy and the literature on institutional competition demonstrate that competition among public agencies reduces bureaucratic waste (e.g., Niskanen 1970), improves respect for regional differences in preferences (Tiebout 1961), serves as a discovery procedure (Hayek 1968), strengthens democratic control ("voice") and protects minorities by facilitating "exit" (Hirschman 1970). If the Fund and the Bank had to abandon their collusion, each recipient country could chose the institution and conditions most appropriate for it. The diversity of conditions and the comparison among policy experiments and their outcomes would set a learning process in motion. And regulatory competition would induce the Fund and the Bank to abandon the excessive degree of conditionality which the subsidization of credit and their bureaucratic incentives have brought about.[21]

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[20] This has also been demanded by Vaubel (1991), IFIAC (2000) and the Board of Executive Directors in September 2002.

[21] A comprehensive statement of the case against policy coordination is Vaubel (1983, 1985, 1988). The case against coordination between Fund and Bank conditionality is developed in Dreher (2002).

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Table 1

Variables affecting IMF conditionality

	conditionality		use of Fund credit	quota	use of Fund credit/quota	quota review	staff number	economic growth	basic rate of charge	US Treasury Bill Rate
	Δ	No.								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1950		-	0.2	8.0	.02	x	444	n.a.	0.5	1.2
51	↑	-	0.2	8.1	.02		457	8	0.5	1.6
52		-	0.2	8.7	.02		447	2	1.0	1.8
53		-	0.2	8.7	.02		417	7	1.0	1.9
54		0	0.1	8.7	.01		405	2	2.0	1.0
55		-	0.1	8.8	.01	(x)	412	7	2.0	1.7
56	↑	0	0.4	8.9	.04		410	4	2.0	2.7
57		0	1.0	9.0	.11		400	4	2.0	3.3
58		0	1.1	9.2	.12		400	0	2.0	1.8
59		2	0.4	14.0	.03	x	409	6	2.0	3.4
1960		2.2	0.4	14.7	.03		427	5	2.0	2.9
61		2.5	1.4	15.0	.09		445	4.3	2.0	2.4
62		3	1.0	15.2	.07		475	5.3	2.0	2.8
63	↓	3.8	1.1	15.6	.07		500	5.0	2.0	3.2
64		4	1.4	15.8	.09	x	553	6.1	2.0	3.6
65		4	3.0	16.0	.19		643	5.6	2.0	4.0
66		4.5	3.0	20.6	.15		705	5.3	2.0	4.9
67		5	2.5	21.0	.12		804	3.7	2.0	4.3
68		5.5	3.7	21.2	.18		896	5.4	2.0	5.4
69		6	4.0	21.3	.19	x	952	5.5	2.0	6.7
1970		5.5	3.2	28.4	.11		1,038	3.4	2.0	6.4
71		5	1.3	28.8	.04		1,133	4.0	2.0	4.3
72		5	1.1	29.2	.04		1,187	5.5	2.0	4.1
73		5	1.0	29.2	.03		1,230	6.2	2.0	7.0
74	↑	5.3	3.7	29.2	.13	x	1,302	1.6	2-4	7.9
75		5.7	7.4	29.2	.25	x	1,353	1.0	4.0	5.8
76		6	12.6	29.2	.43	x	1,379	4.9	4.0	5.0
77		7	13.2	29.2	.45	x	1,397	4.4	4.4	5.3
78		7.3	11.1	39.0	.28	x	1,394	4.5	4.4	7.2
79	↑	7.7	9.3	39.0	.24		1,405	3.3	4.4	10.0
1980		8	11.1	59.6	.19		1,424	2.0	4.4	11.6
81		8	16.4	60.7	.27	x	1,461	1.6	6.2	14.1
82	↑	8.5	22.3	61.1	.36	x	1,520	0.5	6.6	10.7

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
83		10	32.8	88.5	.37		1,554	2.6	6.6	8.6
84		10.3	37.7	89.3	.42		1,607	4.5	7.0	9.4
85		10.7	37.7	89.3	.42		1,646	3.5	7.0	7.5
86	↑	11	35.3	90.0	.39		1,685	3.6	6.4	6.0
87	↑	11.7	30.6	90.0	.34	x	1,667	3.9	6.0	5.8
88		11.7	26.5	90.0	.29	x	1,652	4.7	6.6	6.7
89		11.2	24.6	90.0	.27	x	1,691	3.4	7.4	8.1
1990		11.1	23.3	91.1	.26	x	1,731	2.4	8.4	7.5
91		11.2	26.7	91.2	.29		1,763	1.3	7.1	5.4
92		11.5	27.8	141.4	.20	x	1,861	2.0	6.0	3.5
93	↓	11.2	29.2	144.8	.20	x	2,021	2.5	4.9	3.0
94		11	30.2	144.9	.21	x	2,368	3.7	4.9	4.3
95	↑	(11)	41.6	145.3	.29	x	2,588	3.5	4.9	5.5
96		(13)	42.1	145.3	.29	x	2,927	4.6	4.2	5.0
97		(16)	52.6	145.3	.36	x	2,904	4.2	4.3	5.1
98		(11)	66.8	145.3	.46		2,941	2.5	4.4	4.8
99		(10)	57.5	210.2	.27		3,006	3.5	3.9	4.7
2000	↓	(8.8)	49.4	210.7	.23		3,082	4.3	5.0	5.8
01		(8.5)	59.9	212.4	.28		3,190		3.9	3.4
02		(9.1)	70.5	212.7	.33	x				

Definitions and sources of Table 1:

(1) see text

(2) 1952-94: number of binding conditions (performance criteria) per program started in that year (Gould 2001, Graph 1):
1995-2002: average number of performance criteria per program (1995-99: Goldstein 2000, Table 4; 2000-02: our data base of Sections 3.2-4)

(3) use of Fund credit and use of Fund administrative resources, in billions of SDRs (IMF 2003)

(4) quota, end of year, in billions of SDRs (IMF 2003)

(5) The parentheses for 1955 indicate that the quota review did not lead to a quota increase.

(6) Annual Reports of Board of Executive Directors (IMF)

(7) end of fiscal year, Annual Reports of Board of Executive Directors (IMF)

(8) 1951-95: real GNP (1951-60 GATT, 1961-95 IMF),
1996-2000: GDP volume index (IMF-IFS)

(9) 1950-74: IMF, Policy Development and Review and Treasurer's Departments, Review of Fund Facilities, Further Considerations: Supplementary Information on Rates of Charge (2000): one year credits in the first credit tranche,
1975-89: Annual Reports of the Board of Executive Directors, IMF, Fiscal Years,
1990-2001: Annual Reports, Calendar Years

(10) International Financial Statistics (IMF)

Table 2: IMF conditionality, Summary Statistics (4/1997-2/2003)

	all countries				transition countries			
	mean	median	min	max	mean	median	min	max
all conditions	22.19	18.5	5	102	23.33	20	6	58
performance criteria	8.96	8	3	21	9.63	9	5	18
structural benchmarks	10.70	7	0	94	8.85	8	0	30
prior actions	2.56	0	0	39	4.85	3	0	39
monetary sector, total	7.32	5	0	79	5.65	5	0	18
public sector, total	5.62	5	0	23	6.83	6	1	23
monetary sector, performance criteria	2.78	3	0	7	2.85	3	0	5
public sector, performance criteria	2.15	2	0	10	2.24	2	0	8
monetary sector, structural benchmarks	4.11	1	0	75	2.02	1	0	6
public sector, structural benchmarks	2.46	2	0	20	2.67	2	0	8
monetary sector, prior actions	0.39	0	0	9	0.78	0	0	9
public sector, prior actions	1.02	0	0	15	1.91	1	0	15
number of countries	38				13			
letters of intent	206				50			

Table 3: Total number of IMF Conditions (panel data, 1997-2003, poisson, fixed effects)

	(1)	(2)	(3)
world bank adjustment loans	-0.05		0.14
	(0.12)		(2.12**)
world bank other loans	0.004		-0.03
	(0.14)		(0.89)
world bank technical loans	-0.36		-0.08
	(3.65*)		(0.55)
real GDP	-0.02		-0.03
	(3.48*)		(4.27*)
real GDP growth (t-1)	0.01		0.001
	(2.97*)		(0.09)
real per capita GDP growth in OECD countries (t-1)	0.57		0.59
	(6.06*)		(5.11*)
LIBOR (t-1)	0.07		0.11
	(1.56)		(1.85^{o})
government consumption (in percent of GDP, t-1)		0.04	-0.01
		(1.46)	(0.35)
government budget deficit (in percent of GDP, t-1)		0.01	0.004
		(1.44)	(0.06)
monetary expansion (percent, t-1)		0.01	0.01
		(4.96*)	(4.58*)
change in international reserves (t-1)		-0.001	-0.002
		(0.56)	(0.97)
current account balance (in percent of GDP, t-1)		0.003	-0.01
		(0.43)	(0.90)
new net IMF credit (in percent of quota, t-1)		0.0004	-0.0004
		(1.42)	(0.74)
log likelihood	-401.09	-268.60	-250.76
number of countries	29	20	19
number of observations	140	94	92

Notes:
z-statistics in parentheses
Levels of significance: 1 percent (*), 5 percent (**), 10 percent (^{o})

Table 4: Number of IMF Conditions (panel data, 1997-2003, poisson, fixed effects)

	all conditions		performance criteria			structural benchmarks		
	monetary	public	total	monetary	public	total	monetary	public
world bank adjustment loans	0.03	0.20	0.05	-0.02	0.07	0.11	-0.11	0.15
world bank other loans	-0.01	0.03	-0.03	-0.14	0.09	-0.02	-0.004	-0.06
world bank technical loans	-0.30	0.06	-0.04	-0.07	0.25	-0.28	-0.93**	0.14
real GDP	-0.02**	-0.01	0.001	0.02	0.02	-0.08*	-0.06**	-0.04
real GDP growth (t-1)	0.003	0.01	0.01	-0.02	0.003	0.01	0.01	0.06*
real per capita GDP growth in OECD countries (t-1)	0.80*	0.36	-0.04	0.20	-0.31	1.36*	1.45*	0.52
LIBOR (t-1)	0.16	-0.20^{o}	-0.03	-0.23	-0.21	0.09	0.27	-0.16
government consumption (in percent of GDP, t-1)	-0.06	0.08	0.07	0.05	0.12	0.20*	-0.38*	-0.19
government budget deficit (in percent of GDP, t-1)	0.12	-0.003	-0.01	-0.01	0.01	-0.02^{o}	0.04**	-0.01
monetary expansion (percent, t-1)	0.002	0.02*	0.003	-0.01	0.002	0.02*	-0.01	0.03*
change in international reserves (t-1)	0.01**	-0.003	0.005	0.02*	0.02^{o}	-0.01**	0.00	-0.02**
current account balance (in percent of GDP, t-1)	-0.03	0.002	0.003	-0.04^{o}	0.01	-0.003	-0.01	-0.01
new net IMF credit (in percent of quota, t-1)	-0.001^{o}	0.004**	0.00	0.001	-0.001	0.001	-0.003^{o}	0.01
log likelihood	-148.52	-145.38	-137.42	-93.46	-75.68	-224.86	-99.42	-117.29
number of countries	19	19	19	19	18	19	17	18
number of observations	92	92	91	92	85	92	83	90

Notes:
z-statistics in parentheses
Levels of significance: 1 percent (*), 5 percent (**), 10 percent (^{o})

Table 5: Targets and Instruments (panel data, 1997-2003, 141 observations, OLS)

dependent variables independent variables	monetary growth	Budget Deficit	Current Account Balance	Change in Reserves	Government Spending
I. all conditions (t-1)	-0.04	-0.001	0.07*	0.11	-0.002
R-squared	0.73	0.29	0.65	0.14	0.93
II. monetary conditions, total (t-1)	0.01	-0.01	0.10**	0.07	-0.02^{o}
R-squared	0.72	0.29	0.64	0.12	0.94
III. public sector conditions, total (t-1)	-0.11	0.09	0.25*	0.44	-0.02
R-squared	0.72	0.29	0.65	0.14	0.94
IV. performance criteria, total (t-1)	0.20	-0.10	-0.06	0.67	0.04
structural benchmarks, total (t-1)	-0.05	0.006	0.08*	0.07	-0.004
prior actions, total (t-1)	-0.13	0.07	-0.25^{o}	0.16	0.05
R-squared	0.72	0.29	0.70	0.15	0.94
V. performance criteria, monetary (t-1)	0.95^{o}	0.39	-0.63	-0.71	0.01
performance criteria, public (t-1)	0.34	0.12	0.15	1.37	-0.02
structural benchmarks, monetary (t-1)	-0.01	-0.03	0.09**	0.11	-0.02**
structural benchmarks, public (t-1)	-0.25	0.08	0.32**	0.09	0.01
prior actions, monetary (t-1)	0.56	0.03	-0.10	1.37	0.39
prior actions, public (t-1)	-0.58	-0.02	0.13	0.44	-0.15
R-squared	0.73	0.30	0.67	0.15	0.95

Notes: New net IMF credit, exhaustion of IMF quota (t-1), inflation (t-1), real GDP growth (t-1) and the lagged endogenous variable are included in all regressions.

Panel corrected standard errors used.

Table 6: Number of IMF Conditions (panel data, 1997-2003, poisson, instrumented, fixed effects)

	all conditions			structural benchmarks		
	total	monetary	public	total	monetary	public
world bank adjustment loans	0.47*	0.47**	-0.29	0.63*	0.43	-1.30^{o}
world bank other loans	-0.05	-0.06	0.13	-0.10^{o}	-0.19^{o}	0.03
world bank technical loans	0.06	-0.05	0.21	0.30	-0.43	1.07^{o}
real GDP	-0.02**	-0.02	-0.03	-0.07*	-0.05*	-0.08^{o}
real GDP growth (t-1)	-0.01	-0.01	0.02	0.01	0.03	0.08**
real per capita GDP growth in OECD countries (t-1)	0.43*	0.61**	0.08	0.94*	0.97^{o}	-0.40
LIBOR (t-1)	0.16**	0.20	-0.04	0.10	0.22	0.10
government consumption (in percent of GDP, instrumented)	-0.16*	-0.19*	-0.05	-0.36*	-0.53*	-0.51*
government budget deficit (in percent of GDP, instrumented)	-0.10**	-0.10	0.25	-0.02	0.06	0.86**
monetary expansion (percent, instrumented)	0.02*	0.01^{o}	0.03*	0.002	-0.01	0.03**
change in international reserves (instrumented)	-0.02*	-0.01	0.02	-0.02*	-0.01	0.06^{o}
current account balance (in percent of GDP, instrumented)	0.03^{o}	0.01	0.004	0.05^{o}	0.06	0.02
new net IMF credit (in percent of quota, t-1)	0.00	-0.00	0.004	0.001	-0.00	0.004
log likelihood	-228.04	-139.36	-138.40	-190.35	-95.28	-98.56
number of countries	19	19	19	19	17	17
number of observations	92	90	90	90	82	86

Notes:
z-statistics in parentheses
Levels of significance: 1 percent (*), 5 percent (**), 10 percent (^{o})

Table 7: Targets and Instruments (panel data, 1997-2003, 141 observations, 2SLS, fixed effects)

	dependent variables independent variables	monetary growth	Budget Deficit	Current Account Balance	Change in Reserves	Government Spending
I.	all conditions (t-1)	0.19	-0.01	-0.05	-0.47	-0.004
R-squared		0.51	0.10	0.04	0.24	0.28
II.	monetary conditions, total (t-1)	0.13	0.11	-0.06	-0.96^{o}	-0.02
R-squared		0.50	0.07	0.05	0.25	0.29
III.	public sector conditions, total (t-1)	-0.12	-0.38	-0.06	-1.08	0.03
R-squared		0.48	0.01	0.05	0.27	0.27
IV.	performance criteria, total (t-1)	0.09	-0.70	0.01	3.26	0.14
	structural benchmarks, total (t-1)	0.20	0.07	-0.07	-0.64^{o}	-0.01
	prior actions, total (t-1)	1.03^{o}	0.26	-0.002	0.93	-0.02
R-squared		0.45	0.01	0.05	0.18	0.27
V.	performance criteria, monetary (t-1)	-2.99	0.53	0.30	-3.62	-0.25
	performance criteria, public (t-1)	-0.80	-0.14	0.004	0.83	0.08
	structural benchmarks, monetary (t-1)	0.40^{o}	0.13	-0.03	-0.62	-0.02
	structural benchmarks, public (t-1)	-0.42	-0.36	-0.21	-2.32	0.01
	prior actions, monetary (t-1)	-1.83	0.43	3.50	-12.56	-0.48
	prior actions, public (t-1)	2.27	-1.01	-0.88	0.31	0.04
R-squared		0.40	0.01	0.02	0.15	0.29

Notes: New net IMF credit, exhaustion of IMF quota (t-1), inflation (t-1), real GDP growth (t-1) and the lagged endogenous variable are included in all regressions.

Appendix: Descriptive Statistics and Data Sources

Variable	Data Source	Mean	Std. Dev.
World Bank adjustment loans	www.worldbank.org	0.15	14.95
World Bank other loans	www.worldbank.org	0.57	0.96
World Bank technical loans	www.worldbank.org	0.05	0.22
GDP (billion US$, real)	IMF (2003)	18.74	53.83
GDP growth rate	IMF (2003)	1.65	12.00
real per capita GDP growth in OECD countries	OECD (2003)	0.61	0.38
LIBOR	IMF (2003)	4.53	1.84
Government consumption (in percent of GDP)	IMF (2003)	15.18	5.60
Government budget deficit (in percent of GDP)	IMF (2003)	11.72	148.84
Monetary expansion (percent)	IMF (2003)	19.81	27.54
Change in international reserves (percent)	IMF (2003)	3.85	20.76
Current account balance (in percent of GDP)	IMF (2003)	-45.37	599.82
Change in IMF liabilities (percent of Quota)	IMF (2003)	0.39	55.51

Figure 1
Unconstrained Optimization

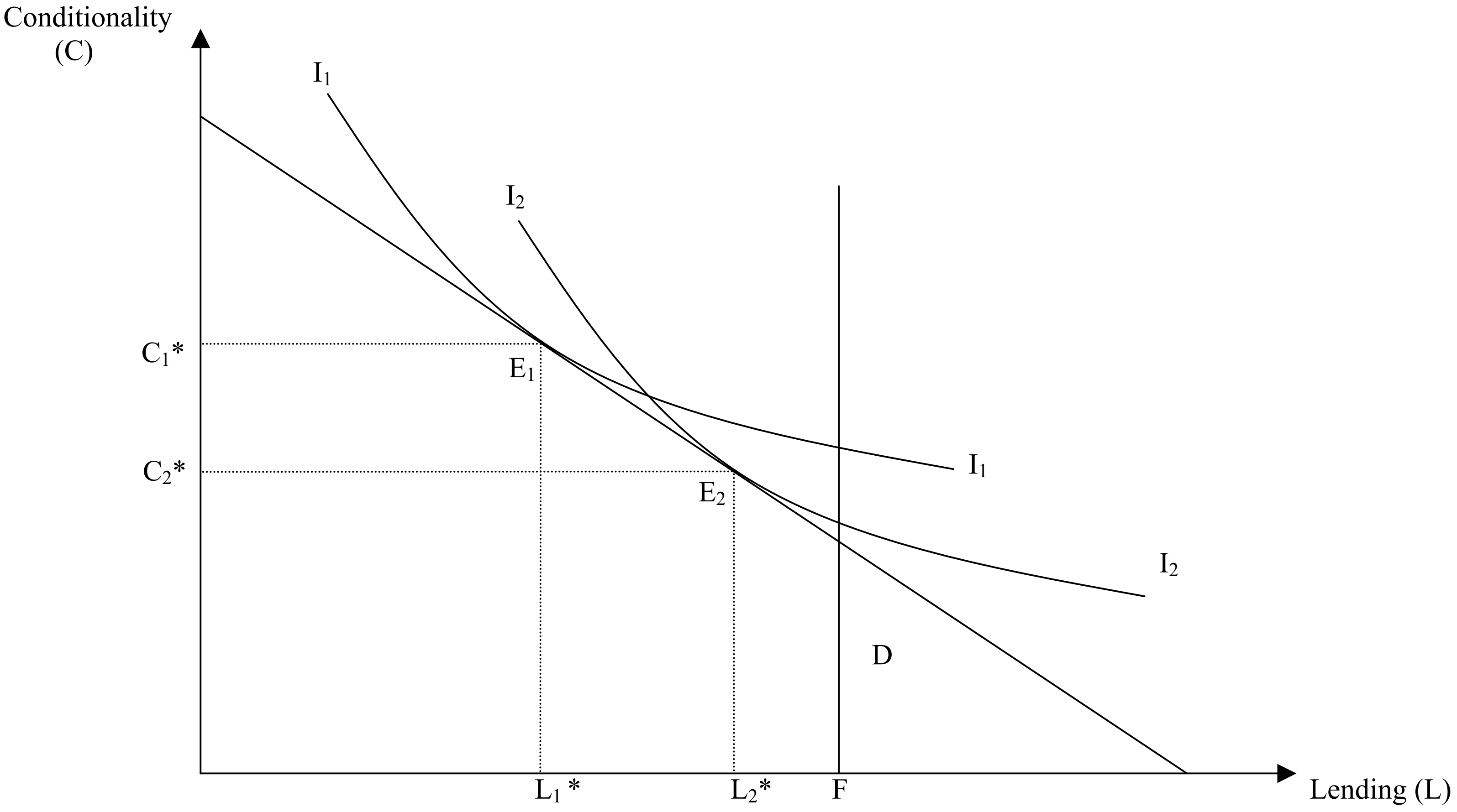


Figure 2
Optimization with a capital constraint

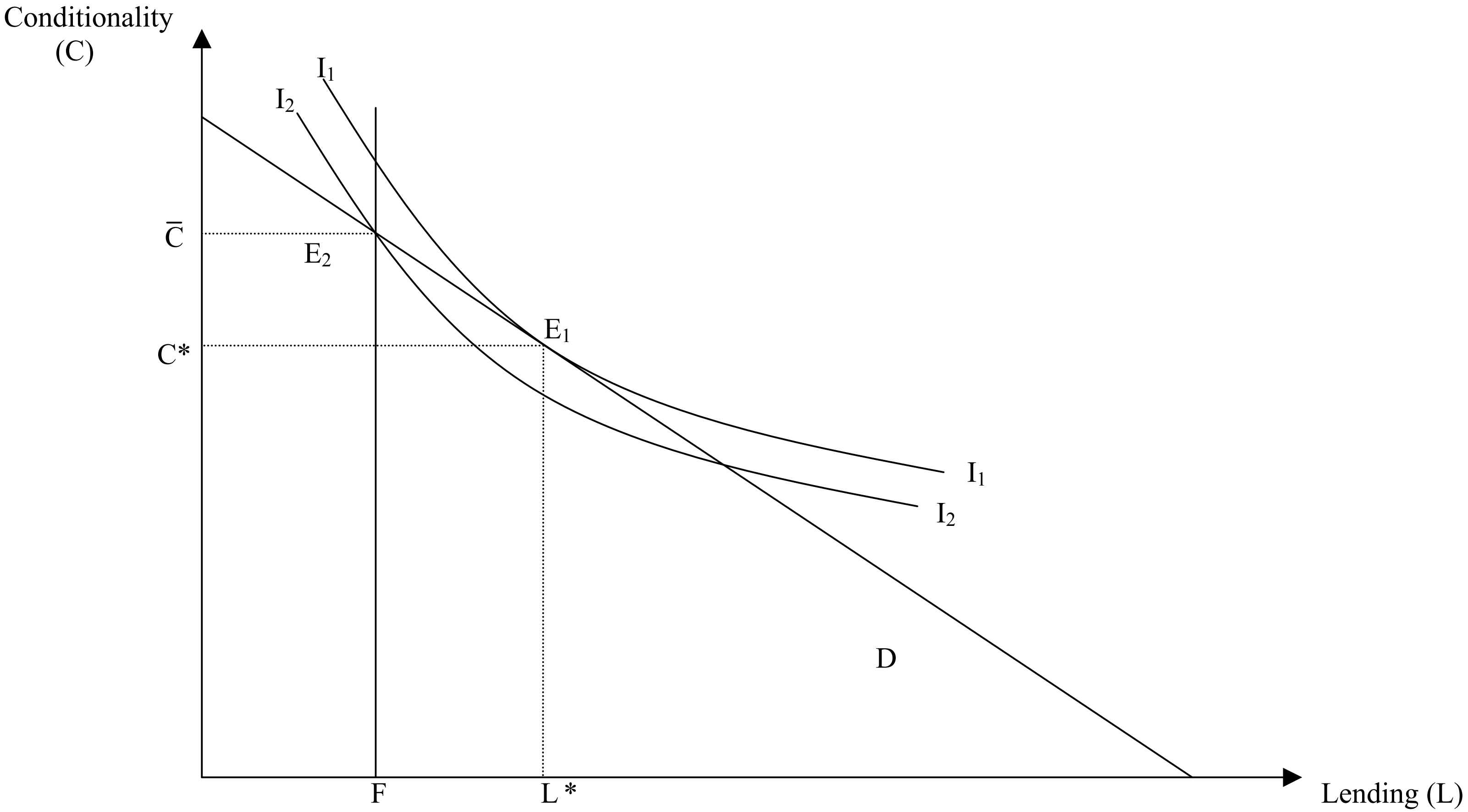

Conditionality (C)
I₁
I₂
C̄
E₂
E₁
C*
I₁
I₂
D
F
L *
Lending (L)

Figure 3
Optimization with a labor constraint

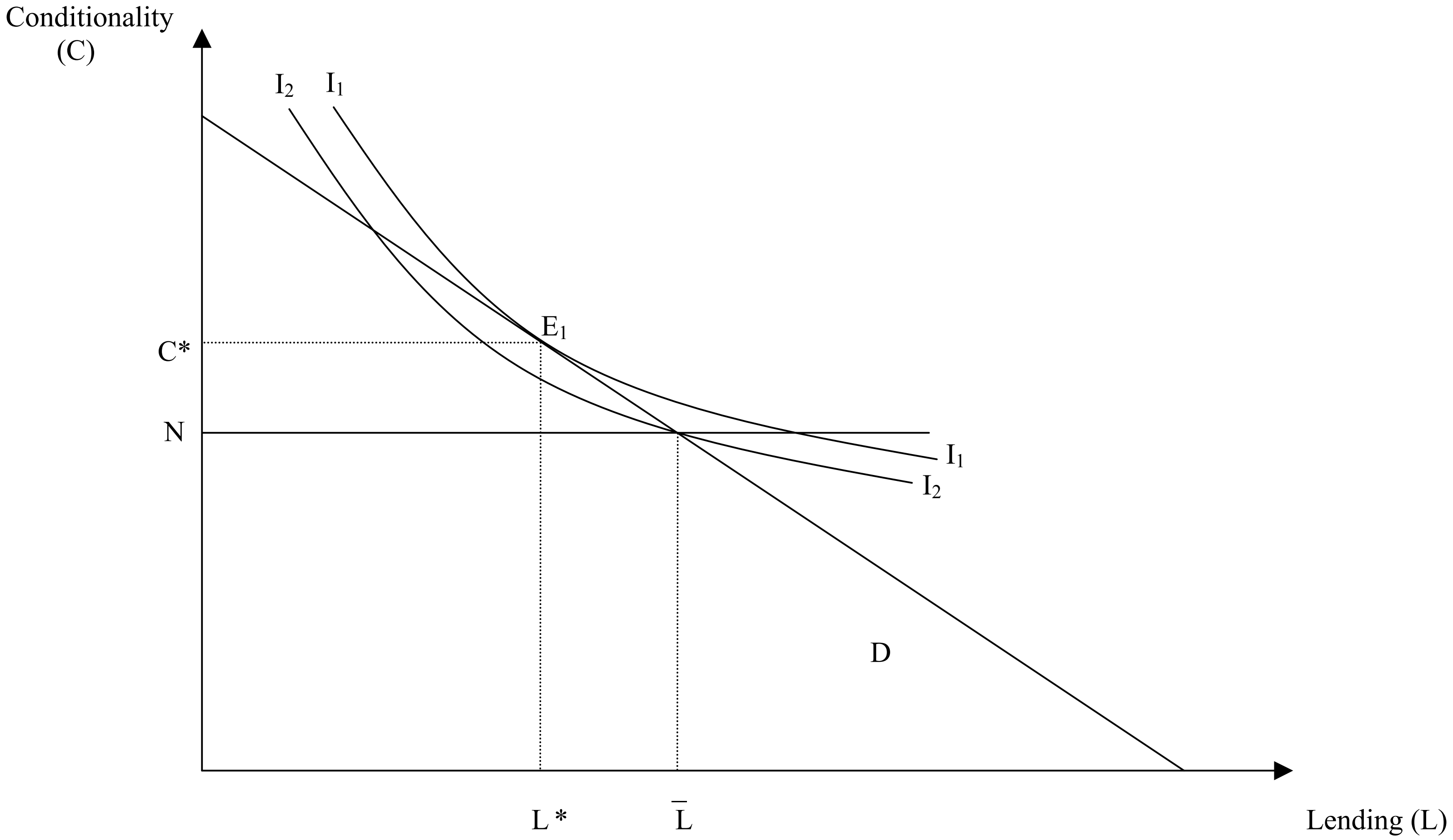
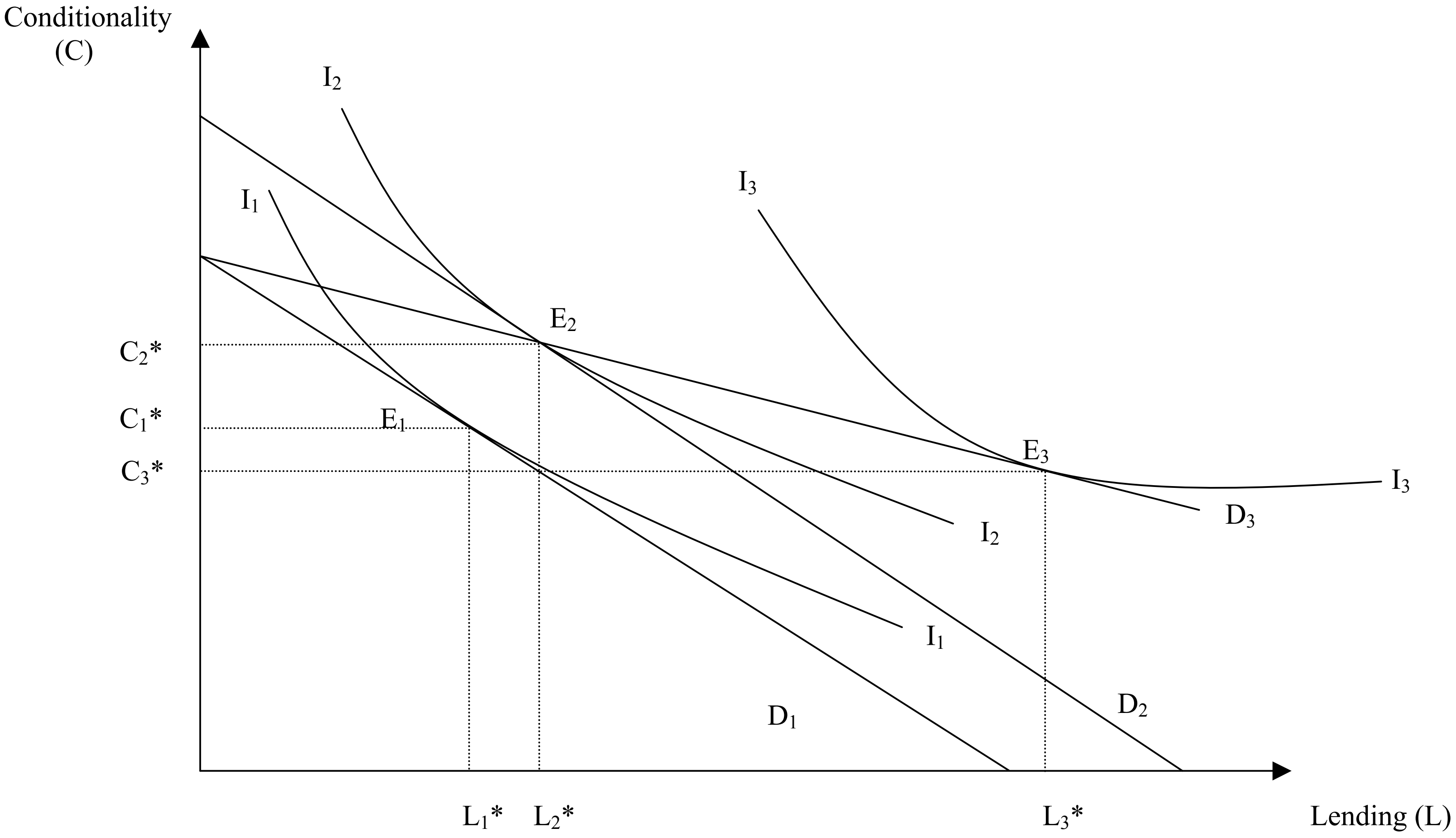

Conditionality
(C)
I2
I1
E1
C*
N
I1
I2
D
L *
L̄
Lending (L)

Figure 4
Optimization with demand shifts


Conditionality
(C)
I2
I3
I1
E2
C2*
C1*
E1
C3*
E3
I3
D3
I2
I1
D2
D1
L1*
L2*
L3*
Lending (L)