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THE IMF'S ROLE IN MOBILIZING PRIVATE CAPITAL FLOWS: ARE THERE GROUNDS FOR CATALYTIC CONVERSION?

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Abstract

Recent theoretical and empirical research suggests that under certain conditions IMF agreements induce additional inflows of finance from other private sources. This paper provides new empirical evidence on this catalytic effect using a treatment effects model to correct for selectivity. It concludes that catalysis remains weak or negative overall, with nuances that support recent theory.

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Introduction.

The IMF has traditionally claimed that its programs exert a catalytic effect on other international financial flows by overcoming liquidity shortages and signalling a government's commitment to economic reform. This "stylized fact" was challenged by early critics because its stated theoretical foundation was ambiguous, and initial empirical investigations typically failed to find a widespread and significantly positive effect. These challenges were themselves criticized, however, especially for their treatment of selection bias. Recent research has made advances in terms of both theory and empirical evidence, implying that the catalytic effect is significant in certain circumstances. To those who have expressed scepticism, are there grounds for catalytic conversion?

Three innovations on previous work are explored to answer this question. We use a treatment effects model to correct for selectivity; we disaggregate across different types of capital flows, and test the sensitivity of catalysis to the initial economic conditions of countries.

The Catalytic Effect: A Critical Review of the Literature.

Early studies showed that the response to IMF programs could be positive or negative depending on a number of subtle behavioral responses and conditions. Does signing an agreement with the IMF signal that a country is committed to economic reform, or is it an indicator of extreme economic distress? The various factors influencing the nature of catalysis are reviewed at length in Cottarelli and Giannini (2002), and Bird and Rowlands (2001).

Recent theoretical analyses of catalysis (Morris and Shin, 2003; Corsetti, Guimaraes and Roubini, 2003; Penalver, 2004) identify circumstances in which a positive catalytic effect may be important. These include situations of debt rollovers, when countries are on the margin of default, and when economic fundamentals are neither relatively strong nor extremely weak. Partial empirical support is provided in Mody and Saravia (2003), who find that IMF lending has a significant favorable effect on bond prices and spreads when the country's economic fundamentals are only moderately weak.

Three questions remain. Is there evidence of positive catalysis for a wider range of capital flows? Is catalysis sensitive to the economic conditions of the country? Does it matter whether and how selection bias is corrected for?

New Evidence on the Catalytic Effect.

Method and data

Recent work on the different effects of IMF programs has used instrumental variables or Heckman correction procedures to deal with selectivity (Mody and Saravia, 2003; Barro and Lee, 2005). In some cases there is evidence of selection bias (Vreeland, 2003) while in others the bias is not important (Edwards, forthcoming). These varied results, the absence of a theoretical "best practice", and only rudimentary agreement on what variables explain the presence of IMF agreements (Bird and Rowlands, 2005) necessitates some circumspection when correcting for selection.

Here we use a treatment effects model as the primary estimation procedure and a general set of political and economic variables in the selection equation. The

treatment effects model first estimates which cases undergo "treatment" and then embeds that within the model estimating the treatment's effects.

Our main dependent variable is aggregate net private flows as a percentage of GDP. Since the composition of capital flows may also be affected by IMF programs, we look at various component parts, including all private non guaranteed (PNG) debt, public and publicly guaranteed (PPG) debt, bond flows (PNG and PPG), foreign direct investment (FDI) and portfolio flows. We then estimate all net private flows for sub-samples of the data to examine the importance of initial levels of indebtedness and reserve adequacy.

The independent variables measuring the economic conditions of the country are listed in the first column of Table 1.[1] Variables indicating robust (weak) economic conditions are expected to have positive (negative) estimated coefficients. Additional variables capture other potential IMF effects: recent use of IMF programs, IMF financial flows, and the presence of past incomplete agreements.

The IMF treatment variable indicates the signing of either a non-concessionary standby (SBA), or an Extended Fund Facility (EFF) agreement. The economic and political variables selected to explain the presence of agreements are commonly used in the literature, although some were eliminated in a step-wise fashion to expand the sample and facilitate convergence without significantly changing the results. These variables were all lagged one year behind the capital flow measures, and hence are contemporaneous with the actual IMF agreement.

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[1] Specific data definitions and sources are available from the authors.

The data used constitute an unbalanced panel of 857 observations covering 68 different countries (for the full estimation), all of them currently classified as middle-income countries by the World Bank. Missing data and lag structures restrict the sample to the period 1979-2000.

Findings

Table 1 presents the main findings for the full sample estimation on aggregate net private capital flows using the treatment effects model. The equation performs reasonably well and the results generally conform to expectations in terms of the sign of the statistically significant estimated coefficients. For brevity, therefore, we focus on the estimated coefficients on the signing of SB and EFF agreements. Table 2 compares the IMF treatment effect for the different types of capital flow.

Three points emerge. First, there is statistically significant evidence of negative catalysis; IMF programs are associated with significant outflows of private capital in the year after the agreement. This conclusion is valid for all of the estimations conducted on the full sample period and for all of the sub-categories of net private flows examined, with the exception of private non-guaranteed bonds and portfolio flows, for which positive catalysis is observed. Therefore, while the evidence presented here points to an overall negative catalytic effect, there may also be important substitution effects between different types of financial flow, with some responding positively and others negatively.

Second, the nature of the catalytic effect does vary with the initial conditions of the country, as seen in Table3. These results are robust to marginal changes in the category ranges; trial and error was used to define ranges that were sensible, reasonably balanced, and for which the estimation converged. Highly indebted middle-income countries experience relatively weak negative catalysis compared to somewhat less indebted countries, for which coefficient suggests a capital inflow decline of over 11 percent of GDP. Countries with lower debt levels did not seem to experience any statistically significant catalysis. These results are consistent with the suggestion that catalysis will be more powerful under conditions of debt rollover.

In contrast, countries with very low reserve adequacy exhibited the largest negative catalysis of any sub-sample. High reserve countries experienced relatively moderate declines in net inflows, while countries with intermediate levels of reserve adequacy experienced positive catalysis. If reserve adequacy is taken as a proxy for overall economic strength, these results support the contention that catalysis is strongest in countries that are neither too weak nor too strong in their fundamentals.

The third and final point is that the method for correcting for selectivity does matter. When the equations were re-estimated using instrumental variables instead of the treatment effects model, there was no statistically significant evidence of either positive or negative catalysis. Furthermore, there was greater sensitivity to the choice of variables in the selection equation. In the absence of more compelling models of selection, the results regarding catalysis need to be viewed with caution.

Concluding Remarks

It is critically important to know how IMF programs affect other capital flows. If IMF adjustment programs assume the presence of positive catalysis that fails to materialize, countries will be forced to endure harsher restructuring trajectories. Earlier studies casting doubt on the reliability of the traditionally assumed positive catalysis were criticized for not taking selection bias formally into account. The results of the treatment effects model used in this paper demonstrate that scepticism about catalysis is warranted even when selection problems are accounted for. Although selection correction remains problematic, the estimations also support the contention that a country's initial conditions modify the extent of the catalytic effect. Consequently our analysis provides few grounds for converting to the belief in a universal and reliable positive catalytic effect.

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Table 1: Treatment Effects Estimation Results on Net flows (different categories)

Variable	All Private Flows
GNP per cap.	-0.000211
	(-0.80)
Lagged Growth	-0.293
	(-1.40)
Lagged Investment	0.286***
	(4.30)
Exports/GDP	2.18
	(1.32)
Real LIBOR	-0.0529
	(-0.44)
Inflation	-0.00114*
	(-2.21)
Lagged depreciation	-0.0098
	(-0.3)
Lagged Reserves	-1.48
	(-1.05)
Debt Service	-5.26***
	(-3.12)
Debt/GDP	2.33*
	(2.00)
Past Arrears	0.00104
	(0.20)
Rescheduling	0.12
	(0.30)
Past IMF	0.125***
	(2.96)
IMF Flows	-97.5**
	(-2.53)
IMF Failure	-0.789
	(-1.60)
IMF treatment	-16.3***
	(-3.77)
Constant	0.817
	(0.44)
No. of obs.	857
$P(\beta) = 0$ (χ^2 test)	0
ρ	0.96
$P(\rho) = 0$ (χ^2 test)	0.0012

Robust normal test statistics appear in parentheses. ***, **, and * indicate statistical significance at the 2%, 5%, and 10% levels for two-tailed tests. The parameter ρ is the covariance between the estimating and selection equation. If $\rho = 0$, then the selectivity correction is not statistically important.

Table 2: IMF treatment effect for different net capital flow categories

Capital Flow category	Estimated IMF treatment coefficient	Z statistic
PNG and short-term debt	-15.9	3.97
PPG private debt	-0.615	-2.30
PNG and PPG Bonds	-0.303	-1.74
PNG bonds	0.437	5.95
FDI	-2.49	-3.53
Portfolio	1.13	3.38

Table 3: The Effects of IMF programs on total net private flows to different middle income country groups

Country Group	Defining range of the group	Number of Observations	Estimated IMF treatment coefficient	Z statistic
Country groups based on previous year's debt-to-GDP ratio				
Low debt	< 0.15	374	7.47	1.36
Medium debt	0.1 to 0.37	242	-11.2	-4.42
High debt	> 0.37	241	-0.593	-2.41
Country Groups based on previous year's international reserves-to-imports ratio				
Low reserves	< 0.29	437	-19.8	-3.40
Medium reserves	0.27 to .4	199	5.96	2.41
High reserves	> 0.4	252	4.14	-2.10