

Long-Term Fiscal Developments and IMF Conditionality: Is There a Link?

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The paper investigates fiscal developments in 112 countries during the 1990s. It finds that although the overall fiscal balance improved in most of them, the composition of this improvement differed. In countries without IMF-supported programs, revenues increased modestly and expenditure declined sharply, while in program countries both postprogram revenue and expenditure declined. In countries with programs that included fiscal structural conditions, however, the adjustment was effected primarily through sharp expenditure compression. No evidence of a statistically significant impact of IMF conditionality was found. Moreover, fiscal developments were influenced by cyclical factors and by the general stance of macroeconomic policies.

Introduction

What determines the composition of fiscal adjustment, and does it differ between countries with IMF-supported programs and those without such arrangements? Moreover, how relevant is IMF structural conditionality for postprogram fiscal developments? This paper attempts to answer these questions by investigating the fiscal developments in 112 countries during the 1990s, some with and some without IMF-supported programs.

A central objective of IMF-supported programs has been to reduce external imbalances. This often requires bringing the budget under control: first, fiscal profligacy often causes current account deficits, and, second, even if the initial budgetary position is sustainable, additional fiscal tightening may be needed if the domestic currency comes under pressure. This adjustment has been part of broader medium-term macroeconomic programs that also encompass supply-side structural reforms relevant for external stability.

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This paper examines postprogram fiscal developments in countries with and without an IMF-supported program. It finds significant differences in the composition of adjustment between program and nonprogram countries as well as large differences among program countries. In nonprogram countries, revenue increased modestly and expenditure declined sharply, while in program countries both revenue and expenditure declined during the postprogram period. Moreover, in IMF-supported programs that included structural conditions, the adjustment was effected primarily through expenditure compression in order to offset revenue declines. We did not find any evidence that fiscal structural conditions improved revenue performance after the end of the program. Fiscal developments were affected by the business cycle and general stance of macroeconomic policies.

The paper is organized as follows. First, we review the stylized facts and define the sample. Second, we describe the techniques used in our estimations. Third, we present and discuss our results. The final section offers concluding remarks.

IMF Programs and Fiscal Developments

How to Measure the Impact of IMF-Supported Programs

What is the impact of IMF-supported programs on fiscal adjustment? In the literature, three influences have been construed. One view is that those programs provide external resources beyond the financing provided by the IMF itself to the extent that they have a catalytic effect—thus adjustments take place at lower costs than in the absence of such an arrangement. Hence, IMF-supported programs can be associated with either smaller or larger fiscal deficits, depending on the nature of the shock and the design of the program (Bird and Rowlands, 2002). A second view is that those programs prescribe fast adjustment by uniformly requiring excessive monetary and fiscal tightening, hurting both the poor and businesses in the process. A third view is that IMF-supported programs delay fundamental reforms by merely treating the symptoms of

financing needs by repeated lending to crisis-prone and structurally unstable countries (Bird, 1996).

In assessing the impact of IMF-supported programs, we ask two questions. First, what are the factors that lead to IMF-supported programs? Economic variables, such as the current account balance, inflation, international reserves, debt service, GDP per capita, and so on, together with participation in previous programs, explain reasonably well the approval of an IMF-supported arrangement (Conway, 1994; and Knight and Santaella, 1997). Policy commitments made by recipient governments matter as well—if the authorities promise stronger adjustment, the IMF is more likely to approve a bigger loan. Barro and Lee (2002) found that “better connected” countries are likely to get more money with fewer strings attached. In contrast, the literature found no relationship between political economy variables (political institutions, quality of bureaucracy, and so on) and participation in an IMF-supported program.

Second—and this is the question we are primarily interested in—what are the macroeconomic effects of IMF-supported programs? This strand of the literature has a few well-established stylized facts as well. IMF-supported programs were found to be associated with an improved postprogram current account balance. Inflation slowed down and real growth recovered, however, typically by less than what was projected under the program (Conway, 1994; Schadler and others, 1995; and Ghosh and others, 2002). In contrast, Barro and Lee (2002) reported opposite results—participation in an IMF-supported program was found to lower growth and investment.

Macroeconomic effects of IMF-supported programs depended, on the one hand, on borrowing countries’ domestic political economy (Ivanova and others, 2003; Khan and Sharma, 2001), and on the other hand, on the technical design of the program (conditionality) or the amount of money borrowed (Schadler and others, 1995). Regarding the former, strong special interests, political instability, inefficient bureaucracies, lack of political cohesion, and ethno-linguistic divisions weakened program implementation. Adjustment programs were more successful in countries where they augmented home-grown reforms than in countries where the donors tried to impose them on unwilling authorities. Regarding the latter, the impact of conditionality seems governed by a “Laffer-curve” relationship, whereby a few, well-targeted conditions had a positive impact on economic performance, but too many or too intrusive conditions hindered such performance (Collier and others, 1997; Goldstein, 2000; and Bird, 2001).

To this end, we will use the IMF’s Monitoring of IMF Arrangements (MONA) database, which collects information on conditionality under IMF-supported programs and which was first utilized in IMF (2001). Surprisingly, assessments of structural conditionality have been rare, and this paper is one

of a few empirical exercises to address this conditionality’s role in macroeconomic adjustment.

What Is IMF Conditionality?

Conditionality is an explicit link between the approval (or continuation) of IMF financing and the implementation of certain aspects of the authorities’ policy program (Gutián, 1981). The conditions may be either quantitative (say, a limit on reserve money growth) or structural (say, the introduction of a value-added tax). In general, conditionality is designed to encompass policy measures that are critical to program objectives or key internal data targets that sound warning bells if policies veer off track. Whereas in the mid-1980s structural conditionality in IMF-supported arrangements was rare, by the mid-1990s about half of all programs included structural conditions. The average number of structural conditions in a program year increased from 2 in 1987 to more than 16 in 1997 (IMF, 2001).

These developments were the result of several forces. First, the IMF gradually placed more emphasis on supply-side reforms compared with demand management. Second, the IMF’s involvement in low-income and transition countries was focused on the alleviation of structural imbalances and rigidities prevalent in these economies. Finally, the experience with monetary and fiscal policies indicated that their success depends critically on structural conditions. Indeed, most structural conditions were in the core area of IMF expertise.

In this paper, we focus on three main types of structural conditions tabulated in the MONA database: *prior actions*, which are stipulated as preconditions to the approval of an IMF-supported program; *structural performance criteria*, fulfillment of which is a formal precondition for program continuation; and *structural benchmarks*, which are agreed with the authorities and monitored by IMF staff, but are not a formal precondition for program continuation. The majority of conditions were structural benchmarks, while structural performance criteria were the least numerous conditions. The extent of structural conditionality was in part determined endogenously—countries with a large reform agenda or history of poor reform performance tended to get more conditions, although no clear-cut answers as to why some countries have many more conditions than others are available (IMF, 2001). If anything, distribution of structural conditions was positively correlated with the length of the programs.

All but two IMF-supported programs with structural conditionality in our sample contained at least one fiscal condition.² Indeed, fiscal structural conditionality was the most common area of structural

² Throughout the paper, we used a sample of 112 countries, of which 48 countries did not have a program during the sample period, and 31 and 33 countries had programs without and with structural conditions, respectively.

Table 1
Frequency of Fiscal Structural Conditionality

	Total Number of Conditions ¹	Implementation Ratio ²
All conditions	15.4	77.4
Revenue conditions ³	4.7	78.5
Expenditure conditions ³	1.8	81.3
Neutral conditions ⁴	8.7	71.4

Sources: IMF, Monitoring of IMF Arrangements (MONA) database; and authors' calculations.

¹ Sample average, per program, not adjusted for program length.

² Sample average, implemented conditions/total conditions, in percent.

³ Conditions with identified impact on the overall balance.

⁴ Revenue and expenditure conditions without a clear impact on the overall balance.

Table 2
Change in Fiscal Outcomes Three Years After End of IMF-Supported Programs¹
(in percent of GDP)

	Overall Balance		Revenue and Grants		Expenditure and Net Lending	
	Change	Initial balance	Change	Initial revenues	Change	Initial expenditures
All countries						
Average	1.8	-4.4	-0.3	25.2	-2.0	29.2
Median	1.5	-3.7	0.0	24.2	-2.0	28.9
<i>Of which:</i>						
Nonprogram countries²						
Average	3.2	-4.5	0.4	27.0	-2.8	31.5
Median	2.4	-3.7	0.3	27.2	-2.6	31.5
Program countries						
Average	0.4	-4.2	-1.0	23.4	-1.2	27.0
Median	0.5	-3.7	-0.5	20.6	-0.8	24.7
<i>Of which:</i>						
Without structural conditions						
Average	-1.9	-2.9	-0.3	24.0	1.6	26.9
Median	-0.8	-2.7	0.2	22.2	1.0	24.2
With structural conditions						
Average	3.7	-6.3	-2.1	22.6	-5.2	27.1
Median	2.6	-5.9	-1.5	19.3	-4.7	25.4

Sources: IMF, World Economic Outlook database; authors' calculations.

¹ Three years after the end of the IMF-supported program *minus* the preprogram observation.

² 1999 for nonprogram countries. The median initial observation is 1993 and the median end-period observation is 1999.

conditionality, comprising about 50 percent of all conditions. While most fiscal conditions were designed as neutral with regard to the overall fiscal balance, some conditions were geared toward either higher revenue or lower expenditure. We classify all of those measures according to their expected revenue or expenditure impact (Table 1). Based on IMF country team assessments, close to ⅓ of all fiscal conditions were met.

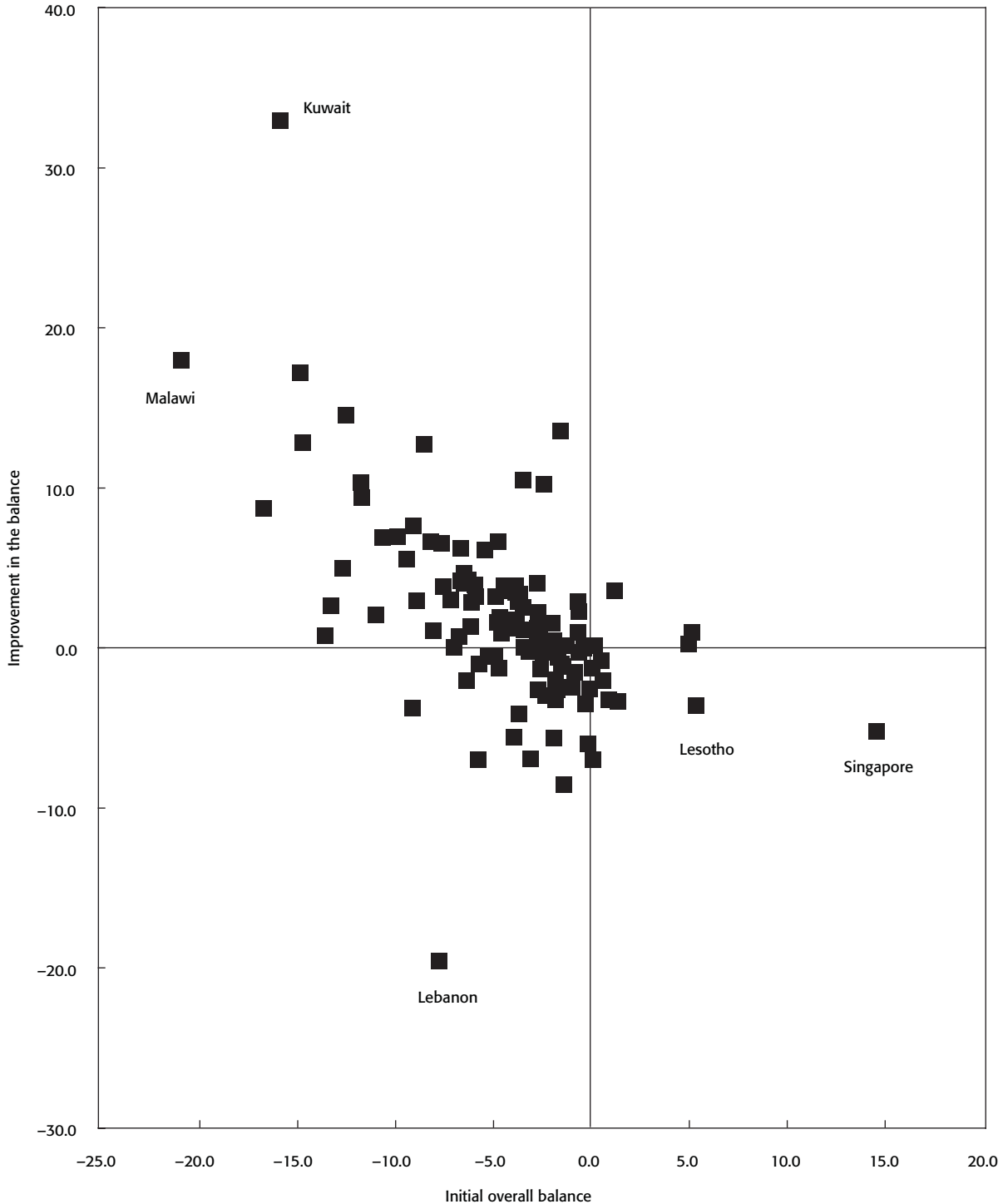
Some Stylized Facts About Fiscal Developments in 1990s

Fiscal developments—besides the immediate, short-term impact of IMF-supported programs—are affected by the business cycle, political economy, and

debt-sustainability factors. First, the impact of cyclical conditions was strong in our sample—while real GDP grew on average by 1.5 percent during 1993–94, the rate more than doubled to almost 4 percent during 1997–99. Second, the components of the overall fiscal balance were public choice variables, and voters decided how much tax they wanted to contribute and how they wanted the proceeds to be spent (Drazen, 2000). Third, debt sustainability constrained the fiscal stance: the deficits preferred by the electorate may not be sustainable (Hansson and Stuart, 2003).

The fiscal balance improved in ⅔ of all countries by an average of 2 percentage points of GDP between the preprogram and postprogram periods or between 1993 and 1999 for the nonprogram countries (Figure 1 and Table 2). The magnitude of the

Figure 1
 Change in Overall Fiscal Balance
 (in percent of GDP, 112 countries)



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Sources: IMF, World Economic Outlook database; authors' calculations.

Note: The figure shows the change three years after the end of the IMF-supported program(s) or 1999 for nonprogram countries, compared with the initial observation. The median initial observation is 1993, and the median end-period observation is 1999.

Table 3
Selected Characteristics of Program and Nonprogram Countries

	Preprogram Developments					Program Stoppage ⁵	Postprogram Real GDP ^{4,6}
	GDP per capita ^{1,2}	Current account ^{1,3}	Real GDP ^{1,4}	Terms of trade	Inflation ^{1,4}		
All countries							
Average	6,882	-4.4	1.5	0.8	229.0	n.a.	3.9
Median	1,954	-2.8	2.7	0.4	11.2	n.a.	3.5
<i>Of which:</i>							
Nonprogram countries							
Average	12,751	-2.3	3.9	0.9	6.1	n.a.	3.6
Median	12,772	-1.2	3.3	0.1	2.9	n.a.	3.1
Program countries							
Average	1,134	-6.6	-0.7	0.6	447.3	57.1	4.1
Median	774	-3.6	1.5	0.5	23.9	n.a.	3.7
<i>Of which:</i>							
Without structural conditions							
Average	1,511	-7.6	-1.5	2.0	610.2	48.3	3.5
Median	1,239	-3.2	1.2	0.5	28.1	n.a.	4.1
With structural conditions							
Average	587	-5.2	0.4	-1.5	211.1	70.0	5.0
Median	367	-3.9	2.8	1.0	19.9	n.a.	3.5

Sources: IMF, World Economic Outlook and Monitoring of IMF Arrangements (MONA) databases; authors' calculations.

Note: The abbreviation n.a. denotes not applicable.

¹ Average for 1993–94.

² In 1995 U.S. dollars.

³ In percent of GDP.

⁴ Percentage change.

⁵ Program stoppage occurs if either (a) the scheduled program review was not completed, or (b) all scheduled reviews were completed but the subsequent annual arrangement was not approved. If a country had more than one program during this period, one stoppage overrides one or more successes.

⁶ Average for 1997–99 for nonprogram countries.

postprogram fiscal improvement was not uniform, however, and nonprogram countries improved their fiscal balances more than program countries—by 3 percentage points versus ½ of a percentage point of cyclically nonadjusted GDP. Differences prevailed among program countries: while nonstructural program countries worsened their balances by some 2 percentage points of GDP, those with structural conditionality improved it by more than 3 percentage points of GDP. These findings are robust to the choice of the end-period observation: our results change little whether we assess them one, two, or three years after the end of the IMF-supported program.

How was the fiscal adjustment achieved? First, revenue adjustment was much weaker than expenditure adjustment. Revenue and grants declined in program countries and increased somewhat in nonprogram countries. The difference could not be accounted for by either the lowering of trade taxes or lower aid receipts. Regarding the former, we did not find any quantitative link between trade taxes and revenues. Regarding the latter, the contribution of grants is too small to account for the fall in the aggregate variable (Bulíř and Hamann, 2003). Second, the expenditure compression was strong in nonprogram and structural program countries (by

3 percentage points and 5 percentage points of GDP, respectively), while in nonstructural program countries postprogram expenditures expanded by 1½ percentage point of GDP.

The variability of program country results suggests that we control for exogenous and program-specific factors. First, the initial fiscal deficits in nonstructural program countries were smaller than those in structural program countries and did not pose such a threat to macroeconomic stability (Table 2). Second, the nature of the initial disequilibrium differed across countries: in nonstructural program countries, GDP declined more sharply prior to the program, and the countries' rates of inflation and GDP per capita were higher (Table 3). Third, structural conditionality programs had a higher incidence of program interruptions.³ Finally, programs that did not include structural conditions were mostly short-term in nature, typically Stand-By Arrangements. In contrast, structural conditions were mostly applied in the context of the Enhanced Structural

³ More conditions obviously increase the risk of missing some of them. However, missing one of the conditions does not stop a program—provided that the macroeconomic program has remained on track, the missed condition is typically waived.

Adjustment Facility (ESAF), which was succeeded by the Poverty Reduction and Growth Facility (PRGF), or the Extended Fund Facility (EFF).

Specification of Model

Fiscal developments are affected by various exogenous and country-specific effects and, therefore, we reexamine them in multivariate panel and cross-country regressions. The econometric investigation of the role of IMF-supported programs has traditionally been motivated by the following question: “Did the involvement of the IMF significantly improve the macroeconomic outcomes relative to what they would have been in the absence of an IMF-supported program?”⁴ Macroeconomic outcomes, such as inflation or external balance, were described as a function of (a) policies that would have been observed in the absence of an IMF-supported program; (b) exogenous variables, such as terms-of-trade shocks or wars, and political economy variables, such as the stability of the government; and (c) the presence of an IMF-supported program.⁵

The simple model we have described has two drawbacks. First, “macroeconomic policies in the absence of an IMF-supported program” is an unobservable variable that has to be constructed in an ad hoc fashion. Second, the impact of IMF programs is ambiguous: an identical macroeconomic outcome can be achieved because of the confidence effect of a program, a cumulative impact of policies and IMF financing (the catalytic effect), or structural reforms.

The key empirical issue is the formulation of policies adopted in the absence of IMF involvement. These policies can be observed only for nonprogram countries and a counterfactual has to be estimated for program periods. Goldstein and Montiel (1986) suggested constructing a policy reaction function linking the changes in macroeconomic policies to the deviations of observed lagged outcomes from their preannounced target values, and lagged exogenous variables.

Our modification of the model is twofold. We attempted to separate the impact of the country’s performance under the program, and structural conditionality. First, we checked compliance with program conditions. Successful programs were defined as those that either disbursed all committed resources without interruptions or those that were designed and executed as precautionary arrangements (see Ivanova and others, 2003). A statistically significant parameter would indicate that the

IMF’s emphasis on program implementation has some bearing on postprogram performance.

Second, we separated out the role of fiscal structural conditionality. We tested whether the presence and implementation of IMF fiscal structural conditionality led to fiscal outcomes that were statistically different from those without such conditionality. There was no need to establish counterfactual structural policies: similar fiscal structural reforms were introduced irrespective of the presence of an IMF-supported program.

Sample Selection and Estimation

We estimated the model in three steps. First, using data for nonprogram countries only, we estimated the policy reaction function for the relevant macroeconomic variables. Second, using the estimated parameters, we simulated macroeconomic policies in program countries to reflect what those policies would have been in the absence of an IMF-supported program. Hence, the vector of policies comprised actual observed policies in nonprogram countries and counterfactual policies in program countries. Third, we estimated the model for both program and nonprogram countries, capturing the impact of IMF-supported programs and structural conditionality residually.

We selected the 1993–96 period because of three considerations. First, this four-year period followed the IMF membership of transition economies in 1991–92, but preceded the “Asian” crisis of 1997–98. Second, during this period the IMF was deeply involved in structural reforms in developing economies. Third, we needed three years of after-program data for the General Evaluation Estimator (GEE) estimation, which made 1996 the latest permissible cutoff point in our sample.

Policy Reaction Function

The policy reaction function determined the stance of monetary, external, and incomes policies, respectively, as a function of the preannounced fiscal adjustment. The fiscal targets were derived from one-year-ahead World Economic Outlook (WEO) projections based on the annual policy discussions between the authorities and IMF staff, which reflect the authorities’ policy stance for the period ahead.⁶

⁴ Such a question can be answered using the General Evaluation Estimator (GEE), owing to Goldstein and Montiel (1988), who construct counterfactual economic policies first and then test the importance of IMF-supported programs. This approach was applied by, among others, Khan (1990); Conway (1994); and Dicks-Mireaux, Mecagni, and Schadler (2000).

⁵ For a description of the model, see Bulir and Moon (2004).

⁶ The estimation was for the period 1992–97 with data for 48 countries that did not have an IMF-supported program during the 1991–97 period, or two years prior to 1991: Australia, Austria, The Bahamas, Bahrain, Belgium, Belize, Botswana, Canada, China, Colombia, Cyprus, Denmark, Fiji, Finland, France, Germany, Greece, Grenada, Hong Kong SAR, Ireland, Israel, Italy, Japan, Kuwait, Lebanon, Maldives, Malta, Mauritius, Myanmar, the Netherlands, New Zealand, Norway, Oman, Paraguay, Portugal, Qatar, Samoa, Singapore, the Solomon Islands, South Africa, Spain, St. Lucia, Swaziland, Sweden, Switzerland, the United Kingdom, the United States, and Vanuatu.

Table 4
Definitions of Variables

Variable	Description	Source ¹
Overall balance Revenue and grants Expenditure and net lending	Change from the preprogram year; in percentage of GDP	WEO
Real GDP growth	Gross domestic product at constant prices; year-on-year change, in percent	WEO
GDP per capita	Gross domestic product, in constant U.S. dollars	WEO
Aid-to-GDP ratio	External aid; change from the preprogram period	WDI
Inflation rate	Consumer price index (CPI); year-on-year change, in percent	WEO
Terms of trade	Terms of trade of goods and services; year-on-year change, in percent	WEO
Index of political cohesion	This variable measures the extent to which one party controls both the legislative and executive branches of the government.	DPI
Program stoppage	Program stoppage occurs if either (a) the scheduled program review was not completed; or (b) all scheduled reviews were completed but the subsequent annual arrangement was not approved.	IMMA
Current account balance	Estimated from the policy reaction function for program countries, actual data for nonprogram countries; in percentage of GDP	WEO
Nominal effective exchange rate	Estimated from the policy reaction function for program countries, actual data for nonprogram countries; change from the preprogram period, in percent	WEO
Real interest rate	Ex post real money market interest rate; deflated by the CPI; estimated from the policy reaction function for program countries, actual data for nonprogram countries; in percent	IFS
IMF program dummy	1 if the country had an IMF-supported program during 1993–96, 0 otherwise	MONA
Measures (count)	Number of fiscal measures (narrowly or broadly defined) adjusted for program duration	MONA
Measures (implementation)	Number of implemented fiscal measures (narrowly or broadly defined) adjusted for program duration	MONA

¹ The abbreviations stand for the following data sources: IMF, World Economic Outlook (WEO); World Bank, World Development Indicators (WDI); World Bank, 2001, Database of Political Institutions (DPI), Version 3.0; Ivanova and others (2003) (IMMA); IMF, International Financial Statistics (IFS) and Monitoring of IMF Arrangements (MONA) databases.

The difference between this projection and the current fiscal outcome then measured the fiscal disequilibrium to which the authorities reacted with changes in policy instruments in the coming year. Three policy variables were used: (a) the ex post real interest rate (the representative nominal interest rate *minus* the consumer price index, CPI); (b) the nominal effective exchange rate (NEER); and (c) the current account balance as a percentage of GDP (Table 4).

The set of potential endogenous policy variables was—using the general-to-specific approach—narrowed to five variables: (a) the change in the overall fiscal balance in percentage of GDP; (b) the terms-of-trade index; (c) the oil price (the international

crude oil price in U.S. dollars); (d) the political cohesion index (a measure of political stability); and (e) an Organization for Economic Cooperation and Development (OECD) intercept dummy (Table 5). The estimated coefficients were statistically significant and corresponded to basic intuition: higher fiscal deficits were associated with higher current account deficits; improvements in the terms of trade were associated with narrower current account deficits; looser fiscal policy was associated with tighter monetary policy; developed countries tended to lower real interest rates; and so on. Only one political economy variable was significant: if one party controlled the government, the current account balance was more likely to improve and vice versa.

Table 5
Estimates of Policy Reaction Function
(heteroskedasticity-consistent, feasible GLS regression estimates, t-statistics in parentheses)

Dependent Variable	Current Account Balance	Nominal Effective Exchange Rate	Real Interest Rate
Overall fiscal balance ($y_t^* - y_{t-1}$)	0.21346*** (6.10)	4.56403*** (2.59)	-3.59938** (2.50)
Terms of trade	-0.00005** (2.05)	-0.11601*** (3.50)	-0.01507* (1.64)
International oil prices		0.66082*** (3.56)	0.11747** (2.31)
Political cohesion	0.00170** (2.30)		
Dummy for OECD membership			-1.12769*** (5.34)
Wald test of joint parameter significance (χ^2)	43.08***	13.35**	61.96***
Log-likelihood	667.0774	-1,012.315	-630.634
Number of observations	288	288	288

Source: Authors' estimates.

Notes: All variables, except the Organization for Economic Cooperation and Development (OECD) dummy, are in first differences. The superscripts ***, **, and * denote the rejection of the null hypothesis that the estimated coefficient is zero at the 1 percent, 5 percent, and 10 percent significance levels, respectively. GLS denotes generalized least squares.

Generalized Evaluation Estimator

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We consider three target variables measuring fiscal developments: (a) the overall central government balance; (b) central government revenue and grants; and (c) central government expenditure and net lending, all expressed as percentages of GDP, in 64 countries that operated under IMF-supported programs⁷ and 48 nonprogram countries during 1993–96. While the first target variable is intuitively preferable to the other variables as a measure of the fiscal stance, revenue and expenditure regressions are useful checks of government policies. The endogenous policy variables stemmed from the policy reaction function and the exogenous variables

⁷ The following 31 countries' IMF-supported program did not contain any structural conditions: Azerbaijan, Belarus, the Republic of Congo, Costa Rica, Croatia, the Czech Republic, the Dominican Republic, Egypt, El Salvador, Estonia, Georgia, Haiti, Hungary, Jordan, Kazakhstan, Latvia, Lesotho, the former Yugoslav Republic of Macedonia, Mexico, Moldova, Nicaragua, Panama, Peru, the Philippines, Poland, Romania, Sierra Leone, the Slovak Republic, Turkey, Uganda, and Uzbekistan. Thirty-three countries with structural conditions were as follows (numbers of fiscal conditions are in parentheses): Albania (10), Algeria (3), Benin (8), Bolivia (8), Bulgaria (0), Burkina Faso (14), Cambodia (16), Cameroon (5), the Central African Republic (7), Chad (10), Côte d'Ivoire (8), Ecuador (1), Equatorial Guinea (4), Gabon (1), Ghana (8), Guinea-Bissau (11), Guyana (3), Kenya (4), the Kyrgyz Republic (9), the Lao People's Democratic Republic (10), Lithuania (0), Malawi (8), Mauritania (13), Mongolia (3), Niger (1), Pakistan (4), Papua New Guinea (5), the Russian Federation (2), Senegal (8), Togo (6), Ukraine (1), Vietnam (3), and Zambia (4).

were two-year averages, lagged one period: the terms of trade, GDP per capita in constant U.S. dollars, foreign aid in percentage of GDP, the rate of inflation, and real GDP growth. Given the inclusion of the preprogram fiscal observation, the model in levels can be rewritten into one with the dependent variables in first differences.

This paper is primarily interested in the long-term effects of IMF-supported programs, knowing that in the short run, fiscal developments could be affected by temporary budgetary adjustment in the context of an IMF-supported arrangement.⁸ We want to measure the impact of IMF-supported programs beyond the initial, short-term impact; and, hence, we considered fiscal variables one, two, and three years after the initial program ended, with 112, 109, and 97 observations, respectively. For example, if a country had a three-year program from January 1993 to December 1995, our fiscal variables in the one-, two-, and three-year GEE estimation were dated 1997, 1998, and 1999, respectively, with a preprogram observation of 1992. Thus, we compared program periods of different lengths: the time span between the

⁸ Gupta and others (2002) reported that the probability of a reversal in fiscal adjustment was as high as 70 percent at the end of the second postprogram year. Three possible explanations are available for this finding. First, poor fiscal discipline or a lack of ownership caused the reversal. Second, the initial fiscal tightening was excessively tight, necessitating a subsequent fiscal stimulus. Finally, the initial adjustment was a mirage: the fiscal authority ran arrears vis-à-vis its suppliers, improving the cash balance and worsening the accrual balance.

preprogram and first postprogram observations was as short as two years and as long as four years. For nonprogram countries, we used 1997–99 data and a two-year average for the “preprogram” period in 1991–92.

Results in Full Sample

In general, we find that cyclical variables drove the fiscal developments and that the impact of macroeconomic policy variables was comparatively small (Tables 6–8). In all cases, the robust estimators were the autoregressive terms, real GDP growth, and the real rate of interest, the stance of monetary policy being a good measure of the general tightness of macroeconomic policies. In some cases, we also found inflation and certain conditionality variables to be significant. The dummy measuring program participation was statistically insignificant, implying that past IMF-supported programs did not make the medium-term fiscal adjustment softer or stronger—on average, program countries adjusted as much as nonprogram countries. Countries in programs without interruptions adjusted somewhat more, but these results were statistically insignificant.

The lack of in-sample variability in the structural conditionality variables and their overall substitutability suggest that these variables operated more like a dummy variable. Unlike Ivanova and others (2003), who looked at performance during IMF-supported programs, we did not find any statistically significant postprogram impact of the political stability variables. Neither did we find any systematic impact of the type of IMF-supported program, its length, or the repeated use of IMF credit. The only statistically significant regional dummy was the sub-Saharan Africa dummy.

Overall Balance

The change in the postprogram overall balance was predicted reasonably well by the preprogram overall balance (a bigger initial deficit was associated with a bigger improvement), lagged GDP growth (faster growth improved the balance), and the level of development (countries with higher GDP per capita improved their overall balance more than did countries with low GDP per capita)—see Table 6. These variables accounted for almost all of the explained variance of the dependent variable (50–60 percent).

Several other variables were either marginally significant or significant only in some regressions. One of them was the aid-to-GDP ratio, indicating some stabilizing impact of foreign aid inflows.⁹ Moderate inflation was associated with improvements in the overall balance, while countries with average annual inflation of more than 50 percent worsened

⁹ The improvement in the overall balance was partly tautological, because total revenues included grants, a part of foreign aid.

their fiscal position. Countries with tighter monetary policies had a stronger improvement in their overall balances, presumably as a result of generally tighter macroeconomic policies. The IMF program performance variables were statistically insignificant for the postprogram period, although the signs of their parameters were intuitive. Countries with program stoppages did worse than the average, while those without interruptions did better. The conditionality variables were all statistically insignificant.

Revenue and Grants

Revenue regressions explained much less of the variance of the dependent variable (20–30 percent), even though the results were also dominated by the preprogram revenue levels and cyclical effects (Table 7). The revenue-to-GDP ratio worsened in countries with larger-than-average initial revenue and it was inversely related to real GDP growth. Both results were intuitive: on the one hand, the tax burden peaked in many countries in the late 1980s, and on the other hand, fast-growing economies did not need to increase their tax-to-GDP ratios.

The aid-to-GDP ratio was positive, but statistically insignificant in all but the one-year-after-the-program estimates. Inflation worsened revenue in most regressions—presumably through the Tanzi-Oliveira collection lag—and no nonlinearity in the inflationary impact was found. The real interest rate was significant and negative, indicating that tight macroeconomic conditions were not conducive to revenue collection.

We did not find any statistically significant impact of IMF-supported programs, although the parameter signs were consistently negative. Good performance under the program was linked to improved revenue collection by some 2 percent of GDP, but this marginally significant effect disappeared in the third year after the program. All but one of the variables describing the quantity of structural measures were statistically insignificant, although they all came with a negative sign. The latter results suggest that revenue-enhancing measures, and perhaps also technical assistance provided to program countries, failed to provide a sustainable increase in the revenue-to-GDP ratio.

Expenditure and Net Lending

The variance of the expenditure-to-GDP ratio was mostly explained by preprogram expenditure levels, the real rate of growth, and monetary policy (20–30 percent) (Table 8). Unlike in previous regressions, we found strong nonlinearity compared with past expenditure-to-GDP ratios: the expenditure-to-GDP ratio declined in countries with lower-than-average preprogram expenditure ratios, but increased in countries with higher-than-average levels thereof. The former group comprised mostly poorer

Table 6
The Overall Balance After the End of the Program: Estimates of GEE
(heteroskedasticity-consistent OLS, t-statistics in parentheses)

	One Year After End of Program				Two Years After End of Program				Three Years After End of Program			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Control variables												
Constant	-0.0274 (2.09)	-0.0264 (2.47)	-0.0203 (1.95)	-0.0372 (3.99)	-0.0296 (1.86)	-0.0332 (2.48)	-0.0308 (2.23)	-0.0297 (4.52)	-0.0356 (2.92)	-0.0433 (4.41)	-0.0429 (4.04)	-0.0487 (6.78)
Initial value of the dependent variable	-0.7276 (8.67)	-0.7541 (7.47)	-0.7219 (9.21)	-0.7337 (8.20)	-0.9019 (9.84)	-0.9076 (9.21)	-0.8734 (9.45)	-0.9011 (8.91)	-1.0536 (7.45)	-1.0553 (6.99)	-1.0379 (7.18)	-1.0394 (7.33)
Lagged real GDP growth	0.0039 (3.09)	0.0040 (3.12)	0.0039 (3.31)	0.0047 (4.47)	0.0016 (1.46)	0.0017 (1.65)	0.0019 (1.66)	0.0020 (2.36)	0.0025 (4.02)	0.0025 (3.96)	0.0025 (3.91)	0.0024 (3.88)
GDP per capita	6.73E-7 (1.68)	5.87E-7 (1.67)	4.32E-7 (1.07)	9.79E-7 (3.52)	6.05E-7 (1.02)	7.13E-7 (1.32)	6.70E-7 (1.18)		9.47E-7 (1.46)	1.27E-6 (2.15)	1.27E-6 (2.04)	1.54E-6 (4.61)
Aid-to-GDP ratio	0.0011 (1.09)	0.0011 (1.11)	0.0009 (0.95)		0.0010 (1.64)	0.0011 (1.81)	0.0011 (1.71)	0.0009 (2.60)	0.0006 (0.667)	0.0006 (0.63)	0.0007 (0.70)	
Lagged inflation rate	0.0002 (1.09)	0.0001 (2.14)	0.0001 (2.14)	0.0002 (3.08)	-5.62E-5 (0.12)	9.22E-5 (0.00)	-1.74E-5 (0.04)		0.0001 (2.39)	0.0001 (4.18)	0.0001 (3.77)	0.0001 (3.98)
High-inflation dummy ¹	-0.0474 (2.71)	-0.0366 (2.43)	-0.0386 (2.56)	-0.0441 (3.77)	-0.0015 (0.04)	-0.0024 (0.06)	-0.0027 (0.07)		-0.0043 (0.17)	-0.0097 (0.44)	-0.0111 (0.50)	
Lagged terms of trade	-0.0007 (1.26)	-0.0007 (1.16)	-0.0008 (1.44)		-0.0001 (0.42)	-0.0001 (0.50)	-0.0002 (0.68)		0.0002 (2.81)	0.0002 (2.42)	0.0001 (0.95)	0.0002 (3.41)
Policy variables												
Real interest rate	1.68E-6 (1.18)	1.41E-6 (1.13)	1.48E-6 (1.19)		3.10E-6 (3.24)	2.24E-6 (2.92)	2.20E-6 (2.92)	3.09E-6 (4.03)	3.73E-6 (2.88)	3.15E-6 (4.12)	3.04E-6 (3.58)	2.92E-6 (5.26)
Nominal exchange rate	2.20E-5 (0.33)	5.11E-6 (0.09)	2.13E-5 (0.37)		-6.75E-5 (0.98)	-7.25E-5 (0.93)	-6.23E-5 (0.83)		0.0002 (3.88)	0.0002 (3.78)	0.0002 (3.43)	0.0002 (3.91)
Current account balance	0.1227 (1.18)	0.1234 (1.20)	0.1062 (1.13)		0.0636 (0.92)	0.0636 (0.90)	0.0506 (0.78)		0.0505 (0.60)	0.0456 (0.53)	0.0419 (0.53)	
IMF program performance												
IMF program dummy	0.0157 (0.89)				0.0132 (0.82)				0.0023 (0.14)			
Program stoppage	-0.0114 (0.85)				-0.0179 (1.62)				-0.0177 (1.07)			
"Successful IMF program" dummy ²		0.0155 (1.01)				0.0145 (1.35)				0.0049 (0.42)		
Conditionality variables												
Fiscal measures (count) ³			-0.0218 (0.55)				-0.0315 (0.86)				0.0301 (0.57)	
R ²	0.515	0.515	0.509	0.453	0.583	0.579	0.573	0.529	0.630	0.621	0.622	0.614
Log-likelihood	195.5	195.6	194.8	188.8	205.01	204.5	203.7	198.4	173.6	172.5	172.6	171.7
Number of observations	112	112	112	112	109	109	109	109	97	97	97	97
Normality test [$\chi^2(2,2)$]	64.25	64.72	75.90	131.68	9.73	12.57	11.98	26.66	32.55	32.94	34.24	48.06
Heteroskedasticity test (F)	1.70	1.89	2.10	0.81	0.95	0.97	0.69	0.66	0.50	0.46	0.54	0.67

Source: Authors' estimates.

Notes: GEE denotes Generalized Evaluation Estimator. OLS denotes ordinary least squares. Very small numbers are denoted as E-k, where E indicates the base of 10 and k indicates the position of the decimal point.

¹ The dummy takes the value of 1 if the lagged, two-year average inflation was higher than 50 percent a year; and 0 otherwise.

² The dummy is equal to 1 if either all committed resources were disbursed or if the program was precautionary; and 0 otherwise.

³ Includes all structural measures with fiscal implications.

Table 7

Revenue and Grants After End of Program: Estimates of GEE
(heteroskedasticity-consistent OLS, t-statistics in parentheses)

	One Year After End of Program				Two Years After End of Program				Three Years After End of Program			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Control variables												
Constant	0.0452 (2.95)	0.0395 (2.98)	0.0438 (3.16)	0.0321 (2.74)	0.0483 (4.31)	0.0462 (3.85)	0.0471 (3.96)	0.0425 (3.99)	0.0582 (4.14)	0.0420 (3.65)	0.0420 (3.71)	0.0514 (4.35)
Initial value of the dependent variable	-0.1203 (2.24)	-0.1278 (2.40)	-0.1180 (2.20)	-0.1115 (1.98)	-0.1390 (3.16)	-0.1390 (3.12)	-0.1390 (3.11)	-0.1317 (2.92)	-0.1403 (2.89)	-0.1310 (2.60)	-0.1355 (2.72)	-0.1434 (2.90)
Lagged real GDP growth	-0.0016 (0.85)	-0.0014 (0.75)	-0.0017 (0.88)		-0.0015 (1.43)	-0.0015 (1.44)	-0.0015 (1.43)	-0.0019 (1.63)	-0.0019 (2.42)	-0.0019 (2.27)	-0.0017 (1.91)	-0.0022 (3.01)
GDP per capita	4.28E-8 (0.09)	2.97E-7 (0.70)	7.16E-8 (0.18)		3.38E-8 (0.07)	4.71E-8 (0.09)	6.36E-10 (0.00)		-3.85E-8 (0.75)	1.64E-7 (0.34)	1.77E-7 (0.40)	
Aid-to-GDP ratio	0.0018 (3.21)	0.0019 (3.60)	0.0016 (2.90)	0.0017 (3.71)	0.0006 (0.91)	0.0007 (0.99)	0.0006 (0.80)		0.0008 (1.41)	0.0007 (1.09)	0.0007 (1.04)	
Lagged inflation rate	-0.0002 (1.53)	-0.0002 (1.43)	-0.0002 (1.58)	-0.0002 (2.06)	-0.0006 (2.15)	-0.0006 (2.35)	-0.0006 (2.37)	-0.0006 (2.74)	-2.07E-5 (0.52)	-4.28E-5 (0.93)	-3.63E-5 (0.82)	
Lagged terms of trade	0.0002 (0.34)	0.0003 (0.61)	0.0001 (0.14)		-0.0003 (1.95)	-0.0003 (2.10)	-0.0002 (1.53)		3.51E-5 (0.33)	6.29E-6 (0.05)	8.17E-5 (0.55)	
Policy variables												
Real interest rate	-5.13E-6 (2.36)	-4.96E-6 (2.36)	-4.50E-6 (2.34)	-4.53E-6 (2.52)	-4.95E-6 (4.20)	-4.91E-6 (3.86)	-4.75E-6 (3.87)	-4.82E-6 (3.61)	-3.69E-6 (3.54)	-3.06E-6 (3.69)	-2.89E-6 (3.72)	-4.16E-6 (3.87)
Nominal exchange rate	-4.14E-5 (0.81)	-6.31E-5 (1.06)	-4.76E-5 (0.89)		-7.75E-5 (1.55)	-7.89E-5 (1.53)	-8.14E-5 (1.62)		5.46E-5 (0.77)	7.40E-5 (1.01)	7.24E-5 (0.97)	
Current account balance	0.0303 (0.67)	0.0532 (1.19)	0.0246 (0.52)		0.0212 (0.44)	0.0253 (0.53)	0.0201 (0.41)		0.0328 (0.93)	0.0346 (0.93)	0.0391 (1.05)	
IMF program performance												
IMF program dummy	-0.0051 (0.46)				-0.0027 (0.23)				-0.0216 (1.99)			-0.0210 (2.34)
“Successful IMF program” dummy ¹		0.0170 (1.31)				0.0020 (1.17)			-0.0053 (0.48)			
Conditionality variables												
Revenue measures (count) ²			-0.0261 (1.46)				-0.0091 (0.73)				-0.0188 (0.81)	
R ²	0.214	0.228	0.239	0.189	0.235	0.234	0.238	0.195	0.266	0.239	0.242	0.240
Log-likelihood	191.8	192.8	193.6	190.0	197.9	197.9	198.1	195.2	175.1	173.3	173.5	173.4
Number of observations	112	112	112	112	109	109	109	109	97	97	97	97
Normality test [$\chi^2(2,2)$]	32.55	29.71	29.21	44.14	20.62	19.71	20.66	22.14	18.34	16.13	15.77	19.40
Heteroskedasticity test (F)	0.99	0.92	0.74	2.48	0.30	0.30	0.25	1.34	0.18	0.18	2.75	0.77

Source: Authors' estimates.

Notes: GEE denotes Generalized Evaluation Estimator; OLS denotes ordinary least squares. Very small numbers are denoted as E-k, where E indicates the base of 10 and k indicates the position of the decimal point.

¹ The dummy is equal to 1 if either all committed resources were disbursed or if the program was precautionary; and 0 otherwise.² Includes all structural measures with revenue-improving implications.

Table 8
Expenditure and Net Lending After End of Program: Estimates of GEE
(heteroskedasticity-consistent OLS, t-statistics in parentheses)

	One Year After End of Program				Two Years After End of Program				Three Years After End of Program			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Control variables												
Constant	-0.3782 (3.66)	-0.3864 (3.88)	-0.4089 (4.06)	-0.4362 (4.09)	-0.1969 (1.67)	-0.1958 (1.72)	-0.2240 (1.80)	-0.2897 (2.45)	-0.2080 (1.81)	-0.2133 (1.90)	-0.2382 (2.07)	-0.2695 (2.69)
Initial value of dependent variable	-1.9127 (4.26)	-1.8570 (4.60)	-2.0240 (4.82)	-2.1711 (4.84)	-1.2162 (2.90)	-1.1908 (2.86)	-1.3675 (3.07)	-1.5827 (3.71)	-1.3773 (3.32)	-1.3504 (3.34)	-1.5737 (3.90)	-1.6354 (4.79)
Initial value of dependent variable, squared	1.7620 (3.98)	1.7113 (4.27)	1.8882 (4.49)	2.0133 (4.48)	1.0374 (2.35)	1.0112 (2.32)	1.1944 (2.52)	1.4028 (3.07)	1.1697 (3.98)	1.1443 (2.66)	1.3550 (3.13)	1.4177 (3.77)
Lagged real GDP growth	-0.0035 (2.05)	-0.0032 (2.03)	-0.0036 (2.20)	-0.0024 (1.80)	-0.0016 (0.97)	-0.0018 (1.02)	-0.0017 (1.15)	-0.0017 (1.15)	-0.0045 (4.14)	-0.0045 (4.15)	-0.0038 (4.27)	-0.0036 (5.94)
GDP per capita	-9.88E-9 (0.02)	6.69E-7 (1.33)	-1.76E-7 (0.37)		-3.58E-7 (0.52)	-1.42E-7 (0.25)	-8.53E-7 (1.40)		-8.42E-7 (1.43)	-4.08E-7 (0.85)	-1.41E-7 (2.95)	
Lagged inflation rate	-0.0001 (1.31)	-0.0001 (1.33)	-0.0001 (1.70)		-0.0005 (1.31)	-0.0005 (1.30)	-0.0005 (1.51)		-0.0001 (1.58)	-0.0001 (1.73)	-1.16E-5 (0.22)	
Policy variables												
Real interest rate	-5.26E-6 (2.78)	-4.97E-6 (2.90)	-3.48E-6 (2.74)	-1.73E-6 (1.70)	-4.03E-6 (2.65)	-4.13E-6 (2.57)	-2.72E-6 (2.50)	-1.80E-6 (1.72)	-3.65E-6 (2.59)	-3.54E-6 (2.65)	-1.47E-6 (1.65)	-2.57E-6 (2.47)
Nominal exchange rate	-1.58E-5 (0.21)	-2.94E-5 (0.38)	-1.97E-5 (0.36)		3.63E-5 (0.90)	2.95E-5 (0.69)	1.95E-5 (0.58)		-4.34E-5 (0.44)	-3.96E-5 (0.38)	-2.53E-5 (0.29)	
Current account balance	-0.1054 (1.66)	-0.0887 (1.24)	-0.0953 (1.71)		-0.0361 (0.75)	-0.0246 (0.51)	-0.0282 (0.64)		-0.0131 (0.22)	0.0098 (0.18)	-0.0165 (0.40)	
IMF program performance												
IMF program dummy	-0.0191 (1.00)				-0.0043 (0.25)				-0.0108 (0.54)			
"Successful IMF program" dummy ¹		0.0138 (0.88)				0.0107 (0.67)				0.0180 (0.85)		
Conditionality variables												
Structural conditionality (dummy) ²			-0.0407 (3.10)	-0.0389 (3.19)			-0.0368 (3.20)	-0.0324 (4.01)			-0.0620 (4.49)	-0.0497 (4.12)
R ²	0.454	0.449	0.505	0.470	0.319	0.322	0.371	0.337	0.448	0.452	0.534	0.503
Log-likelihood	176.8	176.3	182.3	178.4	166.7	166.9	171.1	168.2	144.1	144.6	152.5	149.3
Number of observations	112	112	112	112	109	109	109	109	97	97	97	97
Normality test [$\chi^2(2,2)$]	16.41	24.12	9.26	22.82	26.83	25.54	23.63	23.22	21.23	16.34	18.94	26.62
Heteroskedasticity test (F)	1.36	1.05	1.02	1.55	0.52	0.77	0.64	0.96	0.72	1.48	0.92	0.39

Source: Authors' estimates.

Notes: GEE denotes Generalized Evaluation Estimator; OLS denotes ordinary least squares. Very small numbers are denoted as E-k, where E indicates the base of 10 and k indicates the position of the decimal point.

¹ The dummy is equal to 1 if either all committed resources were disbursed or if the program was precautionary; and 0 otherwise.

² The dummy takes the value of 1 if the IMF-supported program included any structural conditions; and 0 otherwise.

Table 9

Fiscal Developments in Structural Conditionality Countries Relative to Nonstructural Conditionality Countries
(heteroskedasticity-consistent OLS regression estimates of structural conditionality and sub-Saharan Africa dummies, t-statistics in parentheses)

		Overall Balance	Revenue and Grants	Expenditure and Net Lending
One-year-after-program sample	SC dummy	-0.0018 (0.17)	-0.0106 (0.72)	-0.0192 (1.15)
	Africa dummy	0.0327** (2.33)	0.0258* (1.92)	-0.0116 (0.79)
Two-years-after-program sample	SC dummy	0.0163 (1.28)	-0.0224* (1.73)	-0.0564*** (2.94)
	Africa dummy	-0.0035 (0.26)	0.0203 (1.32)	0.0229 (1.02)
Three-years-after-program sample	SC dummy	0.0325** (2.46)	-0.0286*** (3.30)	-0.0810*** (4.42)
	Africa dummy	-0.0126 (0.54)	0.0565*** (4.27)	0.0714*** (3.33)

Source: Authors' estimates.

Notes: The superscripts ***, **, and * denote the rejection of the null hypothesis that the estimated coefficient is zero at the 1 percent, 5 percent, and 10 percent significance levels, respectively. OLS denotes ordinary least squares. SC denotes structural conditionality.

countries with structural conditionality programs, while the latter group comprised richer countries with nonstructural conditionality. Countries that grew faster and those with tight monetary policies also lowered their expenditure-to-GDP ratios.

We did not find any statistically significant impact of IMF-supported programs on expenditure developments. The structural conditionality variables were negative and significant, suggesting relative expenditure compression in countries with structural conditionality of 2 percentage points of GDP or more. It is problematic to distinguish whether expenditures that were cut were wasteful or whether the compression was excessive. We can only conjecture that the gradually increasing value of the structural conditionality parameter points to the former explanation, as expenditure compression accelerated after the end of the IMF arrangement. This observation is also consistent with a body of evidence that social and capital spending were protected during the program's existence (Abed and others, 1998).

Are Countries with Programs Containing Structural Conditionality "Different"?

The finding that conditionality variables were insignificant for all but the expenditure regressions is puzzling. We do not see a unique explanation for these findings, as they can be justified by alternative relationships. First, these results may imply that IMF-supported programs mechanically compensated

with additional conditionality for historically poor performance, owing to deep-rooted structural weaknesses, or persistent shocks, or a lack of a reform drive, or a combination of all of those. Without addressing the causes of the past performance, additional conditions would not affect the fiscal performance. Second, IMF conditionality and donor technical assistance in the fiscal area may have failed to bring about sustained fiscal improvements, especially if the reforms were not supported by the public.

To understand better the developments in structural conditionality countries, we reestimated our regressions for the program countries only (Table 9).¹⁰ While the size and signs of the individual coefficients were broadly unchanged compared to Tables 6–8, their statistical significance declined predictably with the loss of degrees of freedom. We found that the overall balance improvement was larger in countries with structural conditionality than in other program countries by about ½ and 3 percentage points of GDP. At the same time, revenue and grants declined by 2 additional percentage points of GDP in structural conditionality countries. Finally, the expenditure and net lending compression increased in structural conditionality countries over time—from about 2 percentage points of GDP one year after the program to 8 percentage points of

¹⁰ The sample sizes for one-, two-, and three-year-after-the-program regressions were 64, 61, and 49 observations, respectively. The full set of results is available on request from the authors.

GDP three years after the program—and these results were statistically significant.

We also checked for the presence of fiscal reversals in low-income countries and found this effect to be at work only for the sub-Saharan Africa region. While African countries started with a better-than-average postprogram overall balance of more than 3 percent of GDP, this result disappeared in the second year after the end of the program period. On the expenditure side, the sub-Saharan average was statistically indistinguishable from the rest initially, but by the third year expenditures were higher than the average by 7 percentage points of GDP. Revenue performance in sub-Saharan Africa was better than average, although not sufficient to offset the expenditure increase.

These results seem to suggest that countries with structural conditionality were indeed different from the other program countries. First, they were subject to more pronounced shocks than were other program countries; for example, their terms of trade were twice as volatile. Second, the effort to address revenue weaknesses in those countries through structural conditionality failed, most likely because conditionality was a poor substitute for homegrown reform. Finally, postprogram fiscal performance in those countries was driven by accelerating expenditure compression, which may not be a bad thing, provided, for example, that the preprogram level of spending was wasteful or that a statist budget was replaced with a less intrusive one.

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Concluding Remarks

This paper presents empirical tests of the relevance of IMF structural conditionality for postprogram fiscal performance in a large sample of countries during the 1990s. Although the overall balance improved in most countries, the impact of IMF-supported programs was not statistically significant, owing to the large variance in the sample of program countries. In structural conditionality countries, revenue declined slightly and expenditure declined significantly. In contrast, in countries that had nonstructural conditionality programs, revenue remained stable and expenditure increased somewhat. The postprogram statistical insignificance of IMF-supported programs indicates that program participation did not make the fiscal adjustment automatically softer—on average, program countries adjusted as much as nonprogram countries and fiscal adjustment continued in most countries even after the completion of the IMF-supported arrangement. The business cycle strongly influenced all fiscal variables, and an impact of the general macroeconomic stance was detectable as well.

Our results highlight the difficulty in identifying the impact of structural conditionality. Several effects seem to be in play. First, we found some evi-

dence that programs with too many structural conditions had worse postprogram results than those with fewer program conditions. Second, we found no quantitative evidence that structural conditionality aimed at raising revenue was successful. Third, postprogram expenditure compression clearly was much stronger in countries with structural conditionality, but the risk of reversal was higher too, especially in sub-Saharan Africa.

The findings in this paper are not definitive and the possibilities for further research are extensive. First, more work is needed to examine the role of initial shocks, structural weaknesses, political economy, and regime-specific effects, such as the choice of the exchange rate regime. Second, the policy reaction function can be specified differently, reflecting, for example, policies that would stabilize the debt-to-GDP ratio or that would be based on “fiscal rules.” Finally, some of the issues, such as the appropriateness of the initial revenue and expenditure levels, cannot be addressed adequately in a cross-country model and need to be investigated in case studies.

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