IMF Staff Papers
Vol. 52, Number 2

IMF Programs and Growth: Is Optimism Defensible?

REZA BAQIR, RODNEY RAMCHARAN, and RATNA SAHAY*

IMF-supported programs focus on key objectives *(such as growth, inflation, and the external current account) and on* intermediate policy targets *(such as monetary and fiscal policies) needed to achieve these objectives. In this paper, we use a new, large data set, with information on 94 programs between 1989 and 2002, to compare programmed objectives and policy targets to actual outcomes. We report two broad sets of results. First, we find that outcomes typically fell short of expectations in growth and inflation but were broadly in line with the programmed external current account objectives. Similarly, programmed intermediate policy targets were generally more ambitious than the intermediate policy outcomes. Second, focusing on growth, we examine the relationship between objectives and policy targets, and find differences in the way ambitious monetary and fiscal targets affected the achievement of the growth objective. On the one hand, more ambitious fiscal targets, even when they were missed, led to better growth performance. On the other hand, more ambitious monetary targets tended to be associated with lower growth performance.* [JEL F33, F35]

IMF-supported programs are often described by those on the left as creating hardships on the population because they are said to be "too tight" (Stiglitz, 2003). Those on the right frequently disparage the objectives that were set in the programs but were not achieved. These criticisms refer to the intermediate

*Reza Baqir is an economist in the Asia and Pacific Department, Rodney Ramcharan is an economist in the Research Department, and Ratna Sahay is an assistant director in the Western Hemisphere Department of the International Monetary Fund. The authors are grateful to the discussant, Michael Clemens, for his comments; Russell Kincaid, Alessandro Rebucci, and Carlos Végh for helpful discussions; Manzoor Gill for excellent research assistance; and Maansi Sahay Seth for her editorial suggestions.

targets set in IMF-supported programs in the areas of monetary and fiscal policy, as well as to the macroeconomic outcomes—such as inflation, employment, and growth. Are both groups right? Is there any validity to these criticisms? Or, are the benchmarks by which IMF programs are judged simply misplaced?

Defenders of IMF-supported programs would argue that the programmed objectives and targets should not be viewed as forecasts. The objectives are set high so that countries can aspire to achieve them. Similarly, targets are set tight to ensure that policy slippages are kept to a minimum. If targets are missed either because of negative exogenous shocks or because the programs were set too tight, mechanisms in IMF policies and procedures exist to provide waivers for missing these targets. As a matter of fact, ample evidence exists on the waivers given in IMF-supported programs to ensure that IMF loan disbursements are not interrupted as a result of factors outside of the authorities' control. This raises the question of whether tight policy targets and ambitious objectives are deliberate. And, if they are deliberate, do they help countries achieve better outcomes than they could otherwise?

Most of the literature on IMF-supported programs focuses on the *effects* of these programs on macroeconomic outcomes. However, because the decision to enter into an IMF program is not random but driven by country-specific characteristics that can be difficult to identify, this literature has faced serious methodological difficulties. Results that do exist have inherent problems in evaluating outcomes against counterfactuals, or they depend on instruments that are not entirely convincing.[1]

In this paper, we evaluate the outcomes in a IMF-supported program on the basis of the benchmarks that are set in the program itself. By taking this approach, we hope to shed light on how program design can be improved. Moreover, this approach explicitly avoids the issue of nonrandom selection and the counterfactual. For example, instead of focusing on what economic growth might have been without an IMF-supported adjustment program, we compare growth with the outcome envisaged in the adjustment program itself. In addition, we ask whether under- or overperformance in the intermediate policy targets mattered for achieving the goals of the program. The latter has particular significance because it can be expected to shed light on whether IMF programs target the right policies and at the appropriate levels for the objectives they are intended to achieve. Note that in answering these questions, the political economy questions of whether some countries got more or less loans for political reasons are unimportant—this is because IMF programs, when they are designed (or modified in light of new information), should take these constraints into account in setting policies and objectives. These policies and objectives should, in turn, be mutually consistent.

[1]The literature on IMF program evaluation is substantial, and recent references include Knight and Santaella (1997); Przeworski and Vreeland (2000); Dicks-Mireaux, Mecagni, and Schadler (2000); and Barro and Lee (2002). Haque and Khan (1998) survey much of the earlier research in this area and provide a succinct overview of the methodological problems involved.

In an earlier paper based on a much smaller sample size (Baqir, Ramcharan, and Sahay, 2005), we found that programmed objectives on inflation and growth in IMF-supported programs were often not fully achieved. Given the small sample of 29 countries in that paper, however, we were unable to report conclusive results and, in particular, to explore the link between objectives and policy targets.

In this paper, we expand the data set to 94 countries and confirm our previous preliminary findings on the optimism on growth projections in IMF-supported programs. We then compare the programmed and actual values of other program objectives (inflation and current account balance) and uncover systematic patterns. We conduct a similar exercise for intermediate policy targets, namely fiscal and monetary targets. We then explore the relationship between the growth objective and intermediate policy targets. Our focus on the growth objective is motivated by previous findings in reviews of IMF-supported programs: the relatively poor performance on meeting the growth objective.

Our main results are as follows. First, IMF-supported programs achieve the objectives set for external current account balance more frequently than those set for inflation and growth. All three objectives are met simultaneously in only about 10 percent of the programs. Likewise, the programmed values on intermediate policy targets on the fiscal and monetary variables were generally more ambitious than those actually achieved in the programs. Second, better fiscal performance is associated with the achievement of higher growth. Finally, systematic biases in inflation and growth projections exist even after controlling for shocks and policy implementation.

I. Framework for Program Objectives and Targets

To assess how IMF-supported programs perform relative to their internally set benchmarks we first need to describe how IMF staff set these benchmarks. Analytical frameworks used to set quantitative objectives and intermediate policy targets vary depending on the country and the nature of the economic problems to be addressed. The basic framework in IMF-supported programs is the financial programming framework, which is supplemented to varying degrees by the balance sheet approach, debt sustainability analysis, and vulnerability assessments. As such, there is no one framework to be tested in the data.[2] Nevertheless, a comparison of what programs endeavored to achieve with the realized outcomes sheds useful light on program-design issues.

In comparing actual outcomes with the corresponding programmed values, we explore several questions. If there is a systematic difference between outcomes and programmed values, it would suggest that the average program is biased in a particular direction. Furthermore, if this difference persists even after controlling for the extent of policy implementation, it would indicate that systematic shortfalls in achieving objectives are not simply due to policy slippages. Instead, it would show

[2]IMF (2004) reviews program design.

that even when countries implemented fiscal and monetary polices as envisioned under the IMF-supported program, they would not, on average, have achieved the objectives envisioned in the programs. That is, the intermediate policies were not consistent with the objectives.[3]

The financial programming framework is based on the monetary approach to the balance of payments and uses a series of macroeconomic accounting identities to link economic growth, inflation, the money supply, the external current account, the budget deficit, and other macroeconomic variables (Mussa and Savastano, 1999).[4]

The intermediate policy targets derived within the financial programming framework, such as domestic credit and the fiscal balance, are designed to be consistent with the set of macroeconomic objectives—such as growth, current account adjustment, and inflation—and are chosen to help resolve the country's economic difficulties.[5] In other words, countries that meet the intermediate policy targets should conditionally expect to achieve the macroeconomic outcomes that underlie these targets.

A typical financial programming exercise starts by setting targets for inflation and growth. An estimate is made for money demand, often using an assumption for income velocity of money, which then implies a ceiling on money creation consistent with the program objectives. Money creation in excess of this amount would be inflationary. In practice, velocity is often chosen either by examining its historical pattern and making some assumption about how it is likely to be affected by particular factors in the near future and by the credibility of having a IMF-supported program itself, or more formally by estimating money-demand functions.

With money supply programmed, and given an external target on the net foreign assets of the country, the banking system's balance sheet yields the maximum tolerable level of net domestic assets consistent with program objectives. By definition, government (public sector) deficits financed from the banking system and private sector credit are the components of the banking system's domestic assets. A higher government deficit financed by the banking system would crowd out credit to the private sector. And to the extent that private sector credit facilitates investment, such crowding out would affect real output.[6] In light of these considerations, a ceiling is set on government deficit. We use these relationships to examine, in the empirical section that follows, how assumptions on income velocity of money and programmed fiscal adjustments affect growth outcomes.

[3]Of course, these inferences can be drawn only after taking into account exogenous shocks that could not have been anticipated when the program was designed and the targets and objectives were set. We assume that shocks are randomly distributed across the programs.

[4]Underlying these identities are several behavioral relationships. Depending on data availability, IMF country desk economists estimate relationships—the typical ones include money-demand functions, export and import functions, and investment and saving functions.

[5]Additional performance criteria are often set on structural reforms. These are not derived directly from the financial programming framework but are meant to be consistent with, and support, the policy targets.

[6]The trade-off with private sector credit would be correspondingly less if the deficit were financed from nonbank or external financing.

II. Data

The data for this paper have been assembled from an internal IMF database on IMF-supported programs. In the sampling methodology, a unit of observation is defined as a program country-year: a calendar year in which disbursements were made to a particular country. Before disbursements are made, a document known as a staff report is issued and discussed at a meeting of the Executive Board, the body that decides IMF policy and approves IMF-supported programs. As their name suggests, staff reports contain the IMF staff's assessment of a country's economic situation and policies. They include the program's intermediate policy targets and their macroeconomic counterparts that are meant to correct the particular problem(s) that prompted the country to seek IMF assistance. After each such Executive Board meeting, the data in the staff report on the key macroeconomic indicators are recorded in the database.

Typically, there are several Board meetings on a country's program in a given year. The staff report issued for each successive meeting contains an updated set of historical and programmed/projected data on key macroeconomic indicators. As such, there are several vintages of the programmed values for any variable of interest. We make use of the information in the evolving forecasts/programs by recording the programmed values for a variable x_t in years t, $t-1$, $t-2$, and $t-3$ from the most recent staff report in that particular year.

Data on outcomes are generally not released until after the end of the year. We therefore define the within-year horizon as the forecast made for x_t in year t. Similarly, a one-year horizon is defined as the value programmed for x_t in year $t-1$. For most empirical work, we focus on up to two-year horizons, since the number of observations declines sharply as the horizon length increases. We measure the actual as the most recent historical observation available on a particular variable for the entire set of staff reports for a country. For example, we record the actual fiscal balance for 1995 as that contained in a staff report dated 1998, if that particular report is the most recent available in the database for that country.

Conceivably, we could expand our data on actual outcomes by combining these data with other popular databases, such as the IMF's *Government Finance Statistics (GFS)* or *International Financial Statistics.* However, aside from growth and inflation, which are generally measured in the same way across databases, nearly all other variables of interest in the areas of monetary, fiscal, and external policies can potentially be measured in different ways across databases. This is particularly true for fiscal policy targets—indeed, staff report data on fiscal measures are often somewhat different from those reported in *GFS.* Hence, to avoid contaminating our data, we focus only on actual outcomes as recorded in the staff reports.

To facilitate our analysis by type of program, we divide all programs into three groups—the Stand-By Arrangements (SBAs), a subset of SBAs that we call "high-profile" SBAs, and arrangements under the Poverty Reduction and Growth Facility (PRGFs). The SBAs are considered more appropriate for emerging market countries, while the PRGFs apply to the low income countries. Borrowings under the SBAs are typically for shorter periods and carry higher rates of charge than those under the PRGF. The high-profile SBAs are distinguished from other SBAs by

the greater amounts of access they provide to the IMF's resources—they are also typically covered prominently by the media. We define large access as all programs in the database with access exceeding two billion Special Drawing Rights (SDRs).[7] The list of large-access countries in our sample consists of Argentina, Brazil, Indonesia, the Republic of Korea, Mexico, the Russian Federation, Thailand, Turkey, and Uruguay.

The universe of our data consists of 94 countries for the years 1989–2002. The number of observations varies by country for each variable. Table 1 shows the distribution of available observations on actuals for key variables we use in the empirical

Table 1. Country List and Number of Observations for Key Variables

	Number of Observations for Actuals on				
Country Name	Real GDP growth	Inflation	Current account balance	Fiscal balance	Broad money
Albania	10	9	10	10	10
Algeria	7	7	7	7	7
Argentina	12	12	5	12	8
Armenia	11	11	6	10	6
Azerbaijan	10	10	9	10	10
Belarus	3	3	3	3	3
Benin	13	13	9	13	13
Bolivia	9	9	9	9	0
Bosnia and Herzegovina	6	1	0	5	5
Brazil	6	6	1	6	2
Bulgaria	12	12	7	11	10
Burkina Faso	12	12	10	12	11
Cameroon	12	11	12	12	11
Cape Verde	5	3	4	3	3
Central African Republic	9	9	9	9	9
Chad	11	11	11	10	10
Cambodia	11	11	9	10	8
Colombia	6	6	3	6	2
Congo, Republic of	8	8	5	8	8
Costa Rica	6	6	5	5	5
Côte d'Ivoire	7	5	6	6	5
Croatia	10	10	4	9	7
Czech Republic	4	4	4	2	3

(*continued*)

[7]The SDR is an international reserve asset created by the IMF in 1969 to supplement the existing official reserves of member countries. SDRs are allocated to member countries in proportion to their IMF quotas. The SDR also serves as the unit of account of the IMF and some other international organizations. Its value is based on a basket of key international currencies. The SDR equaled roughly US$1.55 in December 2004.

Table 1. *(continued)*

Country Name	Number of Observations for Actuals on				
	Real GDP growth	Inflation	Current account balance	Fiscal balance	Broad money
Djibouti	7	7	6	3	7
Dominican Republic	3	3	3	3	3
Ecuador	7	7	5	7	0
Egypt	7	7	7	7	7
El Salvador	8	8	8	8	8
Equatorial Guinea	3	3	3	3	3
Estonia	10	10	8	9	9
Ethiopia	11	9	11	11	11
Gabon	9	9	9	9	8
Gambia, The	4	4	3	2	4
Georgia	10	7	5	10	9
Ghana	10	10	10	10	10
Guinea-Bissau	5	5	5	5	5
Guinea	8	8	5	8	8
Guyana	11	11	11	11	11
Haiti	4	4	4	4	4
Honduras	11	11	11	11	11
Hungary	7	7	7	7	7
Indonesia	7	7	4	7	2
Jamaica	7	7	7	7	7
Jordan	11	11	11	11	11
Kazakhstan	8	8	4	8	7
Kenya	9	9	9	9	9
Korea, Rep. of	6	6	6	6	4
Kyrgyz Republic	13	12	8	12	7
Lao People's Democratic Rep.	11	11	10	11	8
Latvia	11	11	10	11	11
Lesotho	9	7	7	9	8
Lithuania	12	12	3	11	9
Macedonia, FYR of	8	8	8	8	8
Madagascar	10	10	10	10	10
Mali	14	11	13	13	13
Mauritania	13	11	9	11	11
Mexico	8	8	8	8	8
Malawi	9	9	9	9	9
Moldova	10	10	7	10	8
Mongolia	11	10	11	11	11
Mozambique	9	9	9	8	8
Nepal	4	4	4	4	4
Nigeria	3	3	3	3	3
Nicaragua	8	8	6	7	7

(*continued*)

Table 1. *(concluded)*

Country Name	Number of Observations for Actuals on				
	Real GDP growth	Inflation	Current account balance	Fiscal balance	Broad money
Niger	12	12	11	10	11
Pakistan	13	10	11	12	12
Panama	8	8	8	8	8
Papua New Guinea	8	8	8	8	8
Peru	10	10	6	10	9
Philippines	9	9	9	9	9
Poland	5	5	5	5	5
Romania	10	10	8	10	8
Russian Federation	7	7	7	7	7
Rwanda	6	6	5	6	4
São Tomé and Príncipe	3	3	3	3	3
Senegal	11	11	11	11	11
Sierra Leone	6	6	6	6	6
Slovak Republic	5	5	4	4	4
Sri Lanka	4	4	4	4	4
Tajikistan	6	6	6	6	4
Tanzania	8	8	6	7	5
Thailand	6	6	6	3	5
Togo	6	6	6	6	6
Turkey	11	11	9	8	7
Uganda	9	9	9	9	9
Ukraine	9	9	7	8	7
Uruguay	10	10	9	10	7
Uzbekistan	3	3	3	3	3
Venezuela	3	3	3	3	3
Vietnam	10	10	7	10	9
Yemen	8	8	8	7	7
Yugoslavia	4	4	4	2	3
Zambia	10	10	5	10	9
Zimbabwe	10	10	10	10	8
Total	776	748	649	735	665
Average number of observations per country	8.3	8.0	6.9	7.8	7.1

work. On average, we have about 7–8 observations per country, which allows us to capture significant variation both across countries and within countries over time. We exploit both dimensions of this variation in the empirical work discussed later in this paper. The corresponding number of observations available for forecasts is considerably smaller. For example, a one-year growth forecast is available for 495 country-years, compared with 776 country-years for actuals.

III. Objectives and Targets: Programmed Versus Actual

Table 2 and Figures 1–3 summarize the programmed and actual outcomes for the main economic objectives in IMF-supported programs—the IMF's Articles of Agreement suggest that the most important quantitative goals for a IMF-supported program are inflation, growth, and external current account balance (see Baqir, Ramcharan, and Sahay, 2005, for a detailed discussion). The table compares the programmed outcomes with the actual ones. For each of the three objectives, the rows indicate values for all programs: PRGFs, SBAs, and high-profile SBAs.

Objectives

Table 2 indicates that for all types and subsets of programs, programmed real GDP growth was consistently higher than actual outcomes. Moreover, the longer the horizon of the forecasting period (Figure 1), the higher the programmed growth. When we compare the forecast errors in absolute terms, we see that the errors were higher in SBAs than in PRGF programs. It is notable, however, that the errors in

Table 2. Objectives in IMF Programs: Program Versus Actual

	Program Horizon				Difference (*program minus actual*)		
	Two years	One year	Within-year	Actual	Two years	One year	Within-year
Real GDP growth (*in percent*)							
All program years	5.2	4.6	3.5	1.8	3.4	2.8	1.7
PRGFs	5.7	5.3	4.7	3.3	2.4	2.0	1.4
SBAs	4.5	3.8	2.0	0.3	4.2	3.5	1.7
High-profile SBAs	4.1	2.9	1.3	1.1	3.0	1.8	0.2
CPI inflation (*percent, end of period*)							
All program years	5.0	6.0	8.0	10.3	−5.3	−4.3	−2.3
PRGFs	4.3	5.0	7.0	8.4	−4.1	−3.4	−1.4
SBAs	6.0	7.0	9.1	13.2	−7.2	−6.2	−4.1
High-profile SBAs	6.0	6.3	6.6	8.9	−2.9	−2.6	−2.3
Current account balance (*percentage of GDP*)							
All program years	−8.6	−9.1	−9.4	−9.4	0.8	0.3	0.0
PRGFs	−11.4	−12.4	−13.2	−13.9	2.5	1.5	0.7
SBAs	−4.1	−4.7	−4.6	−4.5	0.4	−0.2	−0.1
High-profile SBAs	−2.1	−1.3	−1.3	−1.0	−1.1	−0.3	−0.3

Sources: IMF; authors' calculations.

Notes: Table reports means by group except for inflation, for which medians due to outliers are reported. All observations are used for each sample. The same general pattern is preserved if sample size is kept constant across columns. The last three columns report the difference between the program columns and the actual columns. PRGFs denote arrangements under the Poverty Reduction and Growth Facility. SBAs denote Stand-By Arrangements.

Figure 1. Projection Errors, by Program Horizon: Growth
(*Error-projected minus actual, mean and 95 percent confidence interval*)

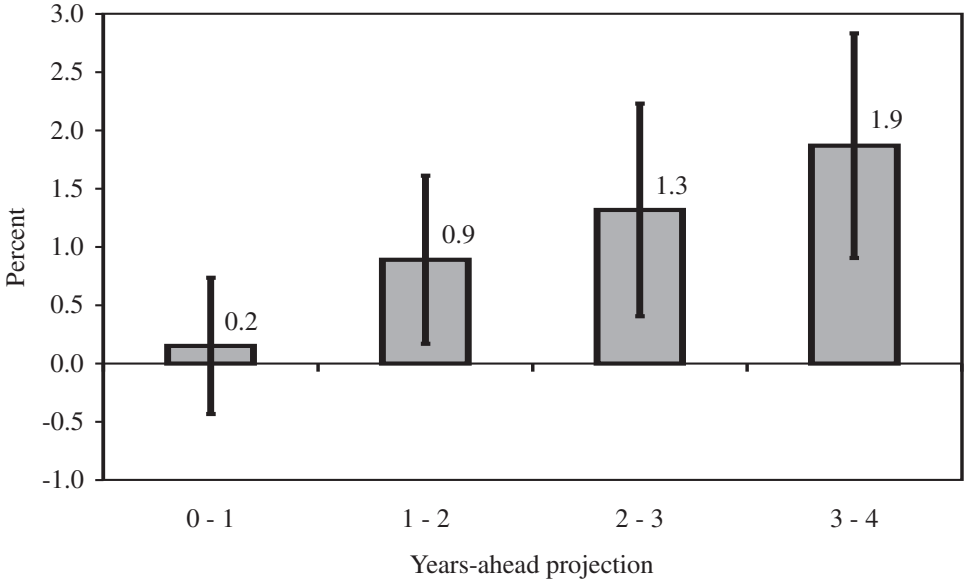


Figure 2. Projection Errors, by Program Horizon: Inflation
(*Mean and 95 percent confidence interval*)

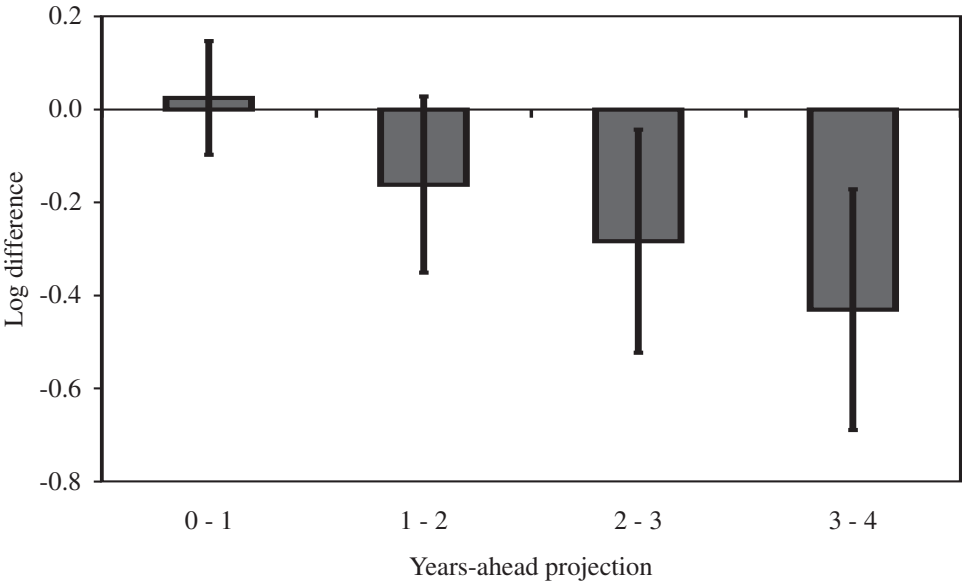
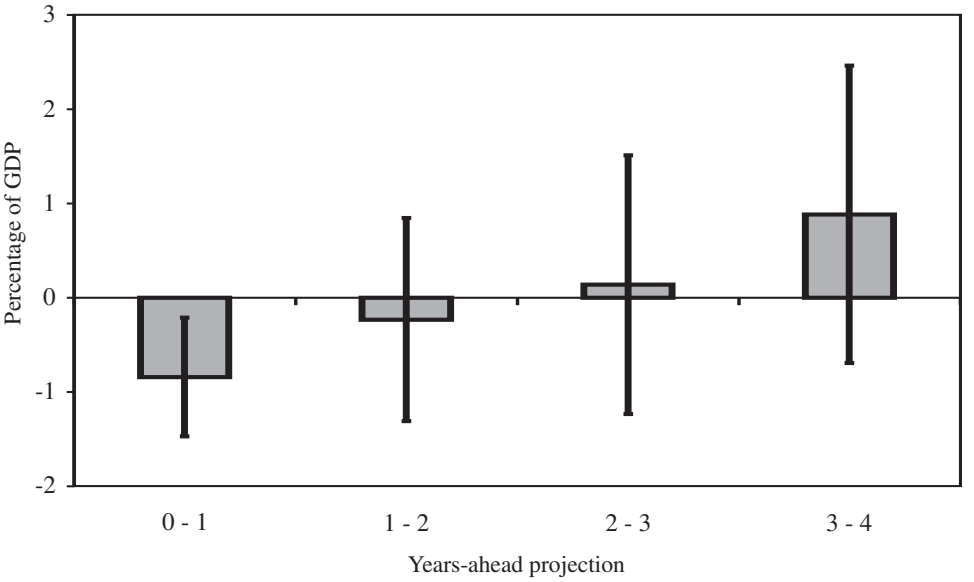


Figure 3. Projection Errors, by Program Horizon: Current Account
(*Mean and 95 percent confidence interval, percentage of GDP*)



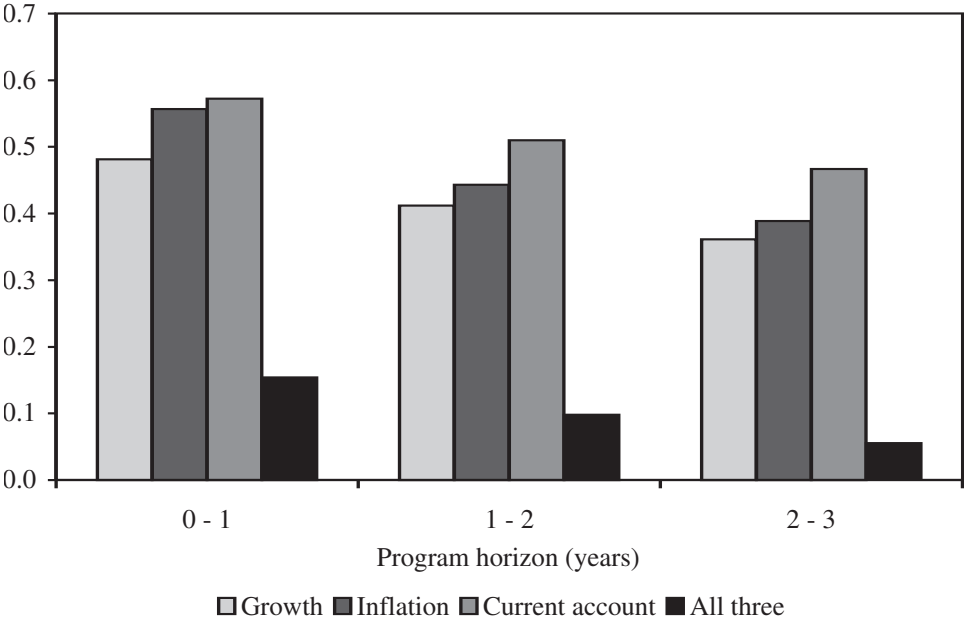
the high-profile SBAs were lower than in the SBAs and even lower than those in the PRGF programs. This suggests that growth projections are more optimistic in SBAs than in PRGF programs, with one caveat: the projections in the high-profile SBAs were more realistic than in other SBAs and PRGFs, although the direction of the bias was the same in all types of program.

In the second set of rows in Table 2, the programmed and actual inflation rates are compared. Similar to the results on real GDP growth, programmed inflation is lower than the actual outcomes in all types of program, and the forecast errors decrease as the horizon of the forecasting period becomes smaller (Figure 2). Comparing across programs, the inflation objectives are more optimistic in the SBAs than in the PRGFs. Within SBAs, the high-profile ones had more realistic programmed inflation, although differences between actuals and program objectives were less for the PRGFs. Again, the direction of the bias was the same across programs, which points to optimism toward achieving inflation objectives.

The results on the current account objectives are qualitatively different from those obtained on the growth and inflation objectives. Although the forecasting error falls with the length of the forecasting horizon, as in the previous cases, there is no bias, on average, in all programs. There are some differences across the types of program. In PRGF programs, the programmed current account balance is somewhat optimistic relative to the realized values; however, in SBAs, the realized values were higher than the programmed ones. The high-profile SBAs performed best, since this group had the smallest bias compared with other SBAs and PRGFs.

We also explored the unconditional probability of meeting all three objectives at the same time (Figure 4). The figure shows that when all programs are considered, the probability of achieving all three objectives at the same time is only about 10 per-

Figure 4. Unconditional Probability of Meeting Program Objectives



cent. As is to be expected, this probability rises as the horizon of the forecast shortens, but only marginally. Figure 4 also indicates that the probability of meeting the current account objective is the highest, followed by the inflation and growth objectives, respectively. This should not be surprising, since the core function of IMF-supported programs is stabilization and restoration of balance of payments viability.

In summary, all three objectives—growth, inflation, and the current account—are unlikely to be met at the same time. Second, the inflation and growth objectives consistently reflect optimism in the formulation of IMF-supported programs, while the current account balance is realistic and met more frequently. Optimism about inflation and growth is highest in SBAs, followed by PRGFs and high-profile SBAs, respectively. Third, the extent to which the targets for the current account balance are exceeded is greatest in high-profile SBAs, followed by other SBAs and PRGFs, respectively. These results indicate that when they are judged by the values of the programmed objectives, the high-profile SBAs appear to have performed best, since either the bias is smaller than for other programs or the targets are exceeded.[8]

Fiscal Policy Targets

Table 3 compares the fiscal policy targets set in programs with those realized. From top to bottom, the first two sets of rows relate to measures of fiscal balance, the next two to revenues, and the last two to expenditures.

[8] IMF (2004), using a different sample of programs—those approved between 1995 and end-2000—also documents similar biases, although some results differ on account of the difference in the sample period.

Table 3. Fiscal Policy Targets in IMF Programs: Program Versus Actual (*Percentage of GDP*)

	Program Horizon				Difference (*program minus actual*)		
	Two years	One year	Within-year	Actual	Two years	One year	Within-year
Fiscal balance, broadest coverage							
All program years	–2.5	–3.0	–3.5	–4.7	2.2	1.7	1.2
PRGFs	–3.1	–3.7	–4.3	–5.6	2.5	1.9	1.3
SBAs	–1.3	–2.0	–2.5	–3.8	2.5	1.8	1.3
High-profile SBAs	–1.9	–3.0	–3.8	–3.3	1.4	0.3	–0.5
Primary balance (*excluding grants*)							
All program years	–2.1	–2.5	–2.9	–3.8	1.7	1.3	0.9
PRGFs	–3.5	–4.2	–5.2	–6.1	2.6	1.9	0.9
SBAs	1.8	1.0	0.8	–0.7	2.5	1.7	1.5
High-profile SBAs	0.7	–0.4	0.0	–0.5	1.2	0.1	0.5
Revenues (*excluding grants*)							
All program years	20.1	20.6	21.0	21.4	–1.3	–0.8	–0.4
PRGFs	17.7	17.8	17.6	17.8	–0.1	0.0	–0.2
SBAs	26.7	26.7	27.1	27.3	–0.6	–0.6	–0.2
High-profile SBAs	22.6	21.5	20.4	21.7	0.9	–0.2	–1.3
Revenues (*including grants*)							
All program years	22.8	23.5	23.9	24.2	–1.4	–0.7	–0.3
PRGFs	20.7	21.2	21.3	21.3	–0.6	–0.1	0.0
SBAs	27.0	27.3	27.6	27.9	–0.9	–0.6	–0.3
High-profile SBAs	21.6	21.5	21.1	21.1	0.5	0.4	0.0
Total expenditures							
All program years	25.2	26.3	27.0	28.2	–3.0	–1.9	–1.2
PRGFs	23.8	24.4	24.7	25.9	–2.1	–1.5	–1.2
SBAs	28.2	29.3	30.1	31.3	–3.1	–2.0	–1.2
High-profile SBAs	23.2	24.3	24.1	23.4	–0.2	0.9	0.7
Primary expenditures							
All program years	22.8	23.5	23.9	25.3	–2.5	–1.8	–1.4
PRGFs	21.8	22.0	22.2	23.1	–1.3	–1.1	–0.9
SBAs	25.1	25.8	26.4	28.0	–2.9	–2.2	–1.6
High-profile SBAs	21.7	20.8	19.9	20.9	0.8	–0.1	–1.0

Sources: IMF; authors' calculations.

The table indicates that both the fiscal-balance and primary-balance targets (shown in the first two sets of rows) are missed consistently in all types of program, and, as expected, the forecast errors generally shrink as the forecast horizon declines. Three results are noteworthy. First, the targets in SBAs were missed by smaller margins than in PRGFs. Second, the targets in the high-profile SBAs were missed by smaller margins than in all SBAs and PRGFs. Third, the bias in the overall fis-

cal balance is in the opposite direction in high-profile SBAs, compared with PRGFs and other SBAs, for the within-year forecast horizon. That is to say, the actual outcomes on overall fiscal balance in high-profile SBAs were better than the ones programmed the previous year.

Regarding revenue targets and performance, the pattern is unexpected and striking. The actual revenue outcomes—whether measured with or without grants—are consistently better than the programmed targets for all programs and across almost all time horizons. This pattern is unexpected because we have seen that the growth outcomes were far worse than programmed, which should lead us to believe that the revenue performance would be worse than programmed. The second notable feature is that contrary to our expectations, errors in forecasting do not necessarily fall over time when revenues are measured without grants. It almost seems as if programs were made tighter over time when the targets came close to being reached early in their implementation.

The pattern of expenditure (programmed and actual values) is similar to that of the fiscal balance. Actual expenditures were higher than the programmed ones across all types of program. Also, as expected, forecast errors generally became smaller with the shortening of the forecast horizon. The only puzzling result is for high-profile SBAs: the programmed total expenditures were higher than the actuals, though this result did not hold when primary expenditures were considered. It appears that the interest costs were overestimated for the high-profile SBAs—the interest rate spreads turned out to be smaller than expected, perhaps owing to better performance, as we saw earlier, or to the credibility of the IMF program itself, which IMF staff members did not fully take into account when the programs were designed.

In summary, the fiscal targets appear to have been met more often in the high-profile SBA programs, although, in general, more fiscal targets were achieved in PRGFs than in SBAs. Although it is generally true that the forecasting errors improved as the horizon shortened, this result did not necessarily hold for revenue projections, which did not change very much with the forecast horizon.

Monetary Policy Targets

Table 4 compares the programmed monetary policy targets with the actual outcomes under IMF-supported programs. To analyze adjustments under programs and to facilitate comparisons across countries, we look at the first differences (rather than the actual levels) of broad money, net domestic assets, and net foreign assets. In addition, the absolute values of velocity are compared across program types to see whether the demand for money was accurately predicted.

Several broad patterns emerge in comparing the programmed and actual values of the monetary policy targets. First, targets for broad money and domestic asset growth were generally missed in all types of program. Second, targets for foreign assets were met with greater precision, which is consistent with our earlier finding that external current account objectives are generally met in IMF-supported programs. Third, the errors in forecasting monetary targets were similar across PRGFs and SBAs but higher for high-profile SBAs.

Table 4. Monetary Policy Targets in IMF Programs: Program Versus Actual
(Percentage of GDP)

	Program Horizon				Difference (*program minus actual*)		
	Two years	One year	Within-year	Actual	Two years	One year	Within-year
Broad money							
All program years	22.7	23.4	23.5	25.9	−3.2	−2.5	−2.4
PRGFs	20.1	20.2	19.6	21.9	−1.8	−1.7	−2.3
SBAs	38.4	37.4	32.1	34.3	4.1	3.1	−2.2
High-profile SBAs	41.0	54.5	40.3	36.1	4.9	18.4	4.2
Increase in broad money							
All program years	3.3	3.7	3.6	5.9	−2.6	−2.2	−2.3
PRGFs	2.8	2.7	2.6	4.0	−1.2	−1.3	−1.4
SBAs	6.1	7.2	6.7	8.2	−2.1	−1.0	−1.5
High-profile SBAs	6.3	7.3	6.8	9.9	−3.6	−2.6	−3.1
Increase in net domestic assets							
All program years	1.9	2.1	2.1	2.9	−1.0	−0.8	−0.8
PRGFs	1.4	1.4	1.3	1.6	−0.2	−0.2	−0.3
SBAs	3.3	4.2	3.7	4.8	−1.5	−0.6	−1.1
High-profile SBAs	3.8	5.8	5.4	7.7	−3.9	−1.9	−2.3
Increase in net foreign assets							
All program years	1.4	1.7	1.8	1.9	−0.5	−0.2	−0.1
PRGFs	1.3	1.4	1.6	1.9	−0.6	−0.5	−0.3
SBAs	1.7	2.2	2.0	1.9	−0.2	0.3	0.1
High-profile SBAs	1.2	1.3	0.9	0.5	0.7	0.8	0.4
Velocity							
All program years	4.4	4.3	4.3	3.9	0.5	0.4	0.4
PRGFs	5.0	5.0	5.1	4.6	0.4	0.4	0.5
SBAs	2.6	2.7	3.1	2.9	−0.3	−0.2	0.2
High-profile SBAs	2.8	1.8	2.5	2.8	0.0	−1.0	−0.3

Sources: IMF; authors' calculations.

Notes: Table reports medians by group. The median is a better indicator of the central tendency for monetary variables owing to several outliers in the monetary series. All observations are used for each sample. The same general pattern is preserved if sample size is kept constant across columns. The last three columns report the difference between the program columns and the actual columns. PRGFs denote arrangements under the Poverty Reduction and Growth Facility. SBAs denote Stand-By Arrangements.

Interpreting the results on the income velocity of money requires care. We find that programmed velocity, relative to the realized values, is highest for PRGFs, followed by all SBAs and high-profile SBAs, respectively. One can interpret this to mean that staff estimated or believed that the demand for money is generally lower in the low-income countries (which typically have PRGFs) than in the middle-income emerging market countries (where SBAs are relevant). Within SBAs, the larger countries with the high-profile SBAs were programmed to have a higher

demand for money than other SBAs. In comparing the programmed velocity with the actual, we find that, for the high-profile SBAs, the forecasting error (programmed *minus* actual value) was negative, while for the average SBA and PRGF, the error was positive. One interpretation of this result is that IMF-supported programs underestimated the pickup in the demand for money in PRGFs and the average SBA but overestimated the increase in the demand for money in the high-profile SBAs. Another interpretation is that the monetary programs were looser for the high-profile SBAs, compared with the other two types of program.

Were Objectives Less Optimistic and Fiscal Targets Less Tight for High-Profile SBAs?

One stylized fact that emerges from the previous subsections is that fiscal outcomes were closer to targets in high-profile SBAs than in other types of program. This could indicate either that program targets were not as ambitious as in other programs—so that it was less difficult to attain them—or that programs were designed better, so that outcomes were close to expectations. In this subsection, we examine evidence for the first of these two possible interpretations. Table 5 shows programmed fiscal adjustment by type of program and by type of fiscal measure. Here, instead of comparing actuals with program values, as we did before, we summarize programmed fiscal *effort* (measured as the fiscal measure programmed for next year *minus* this year's actual outcome). The results are striking and systematic: first, the adjustment planned in all SBAs is always more than in high-profile SBAs. The adjustments programmed for high-profile SBAs, however, are not only always less than for other SBAs but also less than for the PRGFs. In fact, virtually all fiscal targets are relaxed in the within-year horizon in the high-profile SBAs.

Table 5. Programmed Fiscal Adjustments, by Program Type
(Percentage of GDP)

	Programmed Change in Fiscal Measure			
			SBAs	
	All	PRGFs	All	High-profile
Fiscal balance, broadest coverage	0.54	0.55	0.53	–0.84
Primary fiscal balance excluding grants, broadest coverage	0.55	0.41	0.80	0.46
Revenue	0.53	0.67	0.33	0.02
Revenue excluding grants	0.36	0.36	0.36	–0.95
Expenditure	0.10	0.29	–0.19	–0.18
Primary expenditure	0.07	0.27	–0.21	–1.06

Notes: Table entries report the fiscal measure programmed for one year ahead *less* this year's actual. PRGFs denote arrangements under the Poverty Reduction and Growth Facility. SBAs denote Stand-By Arrangements.

IV. Relationship Between Program Objectives and Intermediate Policies

IMF-supported programs are designed to set policies that are consistent with achieving certain objectives. As part of this exercise, the IMF's staff produces a "program scenario," which quantifies the objectives (growth, inflation, and others) and the intermediate policies (mainly fiscal balance and monetary expansion) consistent with these objectives. Our approach to examining the link between intermediate policy targets and objectives is to ask whether achieving the intermediate policy targets helps to achieve program objectives. To address this question, we focus on the deviation of the outcomes from the programmed values, which we will refer to as "projection errors".[9] For example, the question posed is the following: "Does growth fall further short of its programmed value when the growth-consistent policy falls short of its programmed value?" If there is no such relationship, or the relationship is in the opposite direction, it would cast serious doubt on the validity of the framework underlying program design. Conversely, the empirical relationship may turn out to be in the expected direction, yet growth outcomes may still fall systematically short of programmed values even after controlling for the extent to which policy targets are achieved. That would suggest that there are other elements missing in the programming framework and/or that the optimism in setting growth targets is greater than could be justified by policy shortfalls.[10] We examine the relationship between the growth objective and two types of macroeconomic policies: fiscal and monetary.

Fiscal Policy

We start our investigation by recapitulating the statistics presented earlier on the systematic shortfall in growth outcomes compared with the programmed values.[11] In the equation presented in the second column in Table 6, the projection error in growth is regressed on a constant, using the general approach to examining the extent of bias in a projection. As before, projection errors are defined as programmed values *minus* actual values. Such errors can be presented at different time horizons. For the sake of brevity, we present the results with the one-year horizon.[12] Thus, the figure in the first

[9] As discussed previously, it is not quite right to think of the program numbers as projections in the general sense. Program numbers are best understood as the IMF staff's projections of outcomes *conditional* on the member country's achieving certain policy targets and adequate implementation of other elements of the program.

[10] Our empirical work should not be viewed as testing any one particular model of program design—see discussion in Section I. Rather, our regression results are best interpreted more broadly on the consistency between objectives and intermediate policies.

[11] See the Independent Evaluation Office (2004) for a comprehensive survey of the design of fiscal policy in IMF-supported adjustment programs.

[12] While a within-year horizon may be too short for a meaningful test of program design, a two-year horizon may be too long, in that unanticipated events can seriously weaken the assumptions on which targets were based. Therefore, we focus on the one-year horizon, although we conducted robustness checks for other lengths of horizon. The results for different horizon lengths were generally consistent.

Table 6. Regressions for Projection Errors in Growth and Fiscal Targets

	Dependent Variable					
	Proj. error in growth	Proj. error in growth	Proj. error in growth	Actual growth	Programmed growth	Proj. error in growth
Fiscal measure = broad fiscal balance						
Country fixed effects	No	No	Yes	Yes	Yes	Yes
Constant	0.890***	0.736***	−4.717	4.995	2.734	−2.538
	(0.000)	(0.002)	(0.233)	(0.268)	(0.242)	(0.519)
Proj. error in fiscal measure		0.251***	0.471***			
		(0.000)	(0.000)			
Actual fiscal measure				0.559***	−0.512***	
				(0.000)	(0.000)	
Programmed fiscal measure					0.106**	0.431***
					(0.018)	(0.000)
Wald test (p-value)						0.59
No. of observations	313	287	287	735	445	287
R squared	0.000	0.057	0.309	0.398	0.417	0.310
Fiscal measure = broad primary fiscal balance, excluding grants						
Country fixed effects	No	No	Yes	Yes	Yes	Yes
Constant	0.890***	0.599**	4.439	−10.465**	7.892***	2.849
	(0.000)	(0.023)	(0.207)	(0.045)	(0.006)	(0.458)
Proj. error in fiscal measure		0.298***	0.276***			
		(0.000)	(0.009)			
Actual fiscal measure				0.502***		−0.345***
				(0.000)		(0.007)
Programmed fiscal measure					0.112**	0.210*
					(0.023)	(0.090)
Wald test (p-value)						0.33
No. of observations	313	207	207	584	361	207
R squared	0.000	0.061	0.430	0.453	0.444	0.434

Notes: Projection error is defined as the programmed value minus the realized value. This table presents results for programmed values at the one-year horizon (see text). "Growth" refers to growth of real GDP in percentage points. Fiscal measures are in percentage of GDP. Parentheses report p-values for the estimated coefficients. An asterisk (*) denotes significance at 10 percent, ** at 5 percent, and *** at 1 percent. The Wald test corresponds to the null hypothesis that the sum of the coefficients on the actual and programmed fiscal measure in the last specification equals zero.

column indicates that, on average, actual growth is about 0.9 percentage points less than what was programmed a year earlier.[13]

In the second specification, we regress the projection error in growth on the projection error in the overall fiscal balance:[14]

$$e_{t-2}(g_{it}) = \alpha + \beta \cdot e_{t-2}(f_{it}) + \varepsilon_{it}, \quad (1)$$

where, for any variable x (g and f are growth and the fiscal balance, respectively) for country i, $e_{t-s}(x_t)$ denotes the projection error based on a projection made s periods ahead and defined as $e_{t-s}(x_t) {}_{t-s}x_t - x_t$. In our notation, ${}_{t-s}x_t$ denotes the s-period-ahead forecast, and x_t simply denotes the outcome for x in period t.

There are two points worth noting in the regression results. First, the coefficient of the projection error on the fiscal balance is consistent with the financial programming framework. That framework implies that with other factors remaining the same, a smaller fiscal deficit creates more room for private sector credit while respecting overall conditions for money growth. To the extent that private sector credit is conducive to financing investment and growth, this is expected to allow a greater expansion of output. The coefficient suggests that a 1 percentage point improvement in the extent to which the fiscal target is met is associated with a ¼ of 1 percentage point improvement in the extent to which the growth target is met.

The second notable point is that the growth objective is not met on average, even after controlling for the extent to which the intermediate policy target is met. This is indicated by the continued statistically significant coefficient on the constant term—the conventional measure of bias. When the programmed fiscal balance is exactly equal to the actual fiscal balance, actual growth performance remains systematically less than programmed, although the magnitude of the shortfall is somewhat less than when we do not control for the extent to which policy targets are met. Systematically being optimistic in setting growth objectives can have serious consequences for other aspects of program design, particularly for debt dynamics (Helbling, Mody, and Sahay, 2003). Taken together, these two points suggest that although programs get the direction of the framework right, their growth assumptions are more optimistic than can be justified.

In the third column of Table 6, we allow for country-specific heterogeneity by including a complete set of country fixed effects in the equation. The coefficient on the projection error on the fiscal balance strengthens, suggesting that programs find country-specific information useful in program design. In terms of bias, in this specification there is one estimated constant per country. The joint test for all country-specific constants being equal to zero is not rejected, suggesting that one constant could have been estimated.[15]

[13] The slight variations from the summary statistics presented earlier were due to small differences in the sample sizes.

[14] We use the broadest available measure of the fiscal balance throughout.

[15] The test may be compromised owing to the limited number of observations per country; however, in this specification, there are, on average, only three to four observations for *each* country. Since time-invariant, country-specific heterogeneity can be an important source of bias—which could contaminate our results—we include a complete set of fixed effects in all subsequent specifications.

A potential issue of interpretation in the previous specification is that a relationship estimated in the form of projection errors may suppress useful information in the respective relationships between actual growth and actual fiscal balance, and between programmed growth and programmed fiscal balance. The next two specifications in Table 6 essentially unravel this relationship. We first regress actual growth on actual fiscal balance and then do the same for the programmed values:

$$\begin{aligned} g_{it} &= \alpha_{1i} + \beta_1 \cdot f_{it} + \varepsilon_{1it} \\ {}_{t-2}g_{it} &= \alpha_{2i} + \beta_2 \cdot {}_{t-2}f_{it} + \varepsilon_{2it}. \end{aligned} \tag{2}$$

In each case, we get a significant relationship, although the magnitude is somewhat stronger for the relationship estimated in actuals. We formally test for whether actuals and programmed values can be pooled in the next column, where we regress the projection error in growth on both the actual and programmed levels of the fiscal balance:

$$({}_{t-2}g_{it} - g_{it}) = (\alpha_{1i} - \alpha_{2i}) + \beta_2 \cdot {}_{t-2}f_{it} - \beta_1 \cdot f_{it} + (\varepsilon_{2it} - \varepsilon_{1it}). \tag{3}$$

If $\beta_1 = \beta_2 = \beta$ and the errors are uncorrelated, we would simply get equation (1).[16] Table 6 shows the proximity between the estimated coefficients on β_1 and β_2. A Wald test for $\beta_1 = \beta_2$ is not rejected, vindicating our original approach.

The measure of fiscal balance we have used so far is the overall balance. There are two potential problems with it. First, to the extent that some revenue consists of fully funded grants—for instance, from official donors—an expansion of the deficit may not crowd out private sector credit and may not adversely affect growth. Hence, a more appropriate measure of fiscal balance in the context of the program framework may be one that excludes grants. Second, it may be more appropriate to look at the primary fiscal balance to more accurately measure fiscal effort by a country. The bottom panel of Table 6 repeats the above set of specifications for the primary fiscal balance excluding grants. We get the same pattern, with very similarly sized estimated coefficients, and again the Wald test is not rejected.[17]

Implicit in the preceding discussion is the notion that an improvement in the fiscal balance may lead to an improvement in growth. In reality, growth outcomes may well affect the realized fiscal balance. In particular, such endogeneity could arise in two forms. First, buoyancy in revenues may yield procyclical movements in the revenue-to-GDP ratio. Second, government spending may react to external shocks to stabilize output. Externally driven slowdowns in growth may cause the government to increase public outlays. Similarly, in good times, the government may let the private sector take the lead and roll back its own spending. We address each of these potential problems in turn.

[16] We address issues of endogeneity later in this subsection.

[17] We repeated these regressions for all possible permutations of the fiscal measures along the following dimensions: level of coverage (central government versus broadest available), treatment of grants (excluded versus included from revenues), and interest expenditure (excluded versus included from fiscal balance). We found the same general pattern of results reported previously.

As a first step toward reducing potential bias in the previously estimated equations, we start by differencing our data. Hence, we look at how the change in growth is correlated with the change in the fiscal balance. Although this automatically gets rid of country fixed effects, it allows us to additionally control for country-specific trends. Some countries may be on a "good path," with rising growth and fiscal balances. Using first differences and a complete set of country fixed effects allows us to control for such differences among countries. The first two rows of Table 7 show that the previously estimated relationships in levels survive when estimated in first differences, with and without country fixed effects. For example, an improvement of 1 percent of GDP in the fiscal balance is associated with a 0.5 percentage point increase in growth. The next two rows of Table 7 show that this relationship is not based on revenues. There is no relationship between changes in the revenue ratio (including or excluding grants) and changes in growth. Thus, buoyancy is probably not contaminating our results. The last two rows show that the relationship between the fiscal balance and growth emanates from the expenditure side. A 1 percentage point *increase* in expenditure is associated with about a 0.3 percentage point reduction in growth.

To test whether expenditure, and hence our fiscal-balance measures, may be reacting to output shocks owing to countercyclical fiscal policy, we present results from instrumental variable regressions in Table 8.[18] In this specification, we instrument the actual change in the fiscal balance by using the *programmed* change in the fiscal balance and export growth. Since adjustment programmed one year in advance is predetermined relative to the actual realization of the shock in period *t,* we think it may be useful as an instrument for identifying the exogenous variation in the actual change in the fiscal balance. In addition, export growth may capture external shocks to which fiscal policy may react. We run this specification both with and without country fixed effects. In each case, we find that the improvement in the fiscal balance, as identified, is associated with higher growth. We also test whether we should instead have these variables directly in the regression as right-hand-side variables by running a test of overidentifying restrictions. In each case, the test is not rejected, corroborating our approach.

Monetary Policy

We now examine the relationship between growth and monetary policy in the context of IMF-supported programs. The approach we follow is similar to the one we followed for fiscal policy. The key relationship examined is between growth and velocity. An assumption on velocity is integral to designing IMF-supported programs in the financial programming framework. After the growth and inflation objectives have been set, an implicit assumption regarding money demand is made by projecting a specific income velocity of money. Alternatively, a money-demand function is estimated, and a number for velocity is then derived. Setting the amount of monetary expansion under the program is key, since it establishes the overall "tightness" of the program. As discussed earlier, after the monetary growth and the net foreign asset targets have been set, the maximum tolerable expansion in net

[18] Kaminsky, Reinhart, and Végh (2004) find that fiscal policy is, in fact, procyclical for nonindustrial countries.

Table 7. Regressions for Growth and Fiscal Targets, First Differences

	Dependent Variable = First Difference of Growth Rate											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Fiscal balance, broadest coverage (*first difference*)	0.526*** (0.000)	0.532*** (0.000)										
Primary fiscal balance excluding grants, broadest coverage (*first difference*)			0.451*** (0.000)	0.458*** (0.000)								
Revenue (*first difference*)					0.046 (0.658)	0.047 (0.700)						
Revenue, excluding grants (*first difference*)							0.103 (0.425)	0.106 (0.499)				
Expenditure (*first difference*)									–0.319*** (0.000)	–0.312*** (0.000)		
Primary expenditure (*first difference*)											–0.280*** (0.000)	–0.263*** (0.002)
Constant	0.217 (0.425)	0.713 (0.916)	0.180 (0.534)	1.758 (0.786)	0.485 (0.108)	–0.328 (0.960)	0.383 (0.232)	2.306 (0.720)	0.451 (0.121)	1.343 (0.832)	0.488 (0.106)	1.157 (0.855)
No. of observations	609	609	459	459	407	407	349	349	414	414	385	385
R squared	0.086	0.201	0.088	0.166	0.000	0.066	0.002	0.091	0.047	0.118	0.038	0.126

Notes: The table reports results from regressions of the change in the growth rate on the change in the fiscal measure listed in the first column. "Growth" refers to growth of real GDP in percentage points. Fiscal measures are in percentage of GDP. Parentheses report p-values for the estimated coefficients. An asterisk (*) denotes significance at 10 percent, ** at 5 percent, and *** at 1 percent.

Table 8. Instrumental Variable Regressions for Growth and Fiscal Targets, First Differences

	Dependent Variable = First Difference of Growth Rate			
	(1)	(2)	(3)	(4)
Country fixed effects	No	Yes	No	Yes
Fiscal balance, broadest coverage (*first difference*)	1.274***	1.188***		
	(0.000)	(0.000)		
Primary fiscal balance excluding grants, broadest coverage (*first difference*)			0.399***	0.418**
			(0.008)	(0.016)
Constant	0.261	2.345	0.735*	2.440
	(0.541)	(0.723)	(0.072)	(0.688)
Test of overidentifying restrictions (p-*value*)				
Sargan test	0.40	0.28	0.62	0.39
Basmanns test	0.40	0.20	0.62	0.48
No. of observations	268	268	199	199
R squared		0.141	0.060	0.272

Notes: The table reports the results from instrumental variable regressions of the change in the growth rate on the change in the fiscal balance measure. The change in the fiscal balance is instrumented with the change in the fiscal balance programmed 1–2 years ago and with export growth. The test of overidentifying restrictions is the test of the joint hypothesis that the instruments are valid and correctly excluded from the estimated equation. A rejection of the test casts doubt on the validity of the instruments. "Growth" refers to growth of real GDP in percentage points. Fiscal measures are in percentage of GDP. Parentheses report p-values for the estimated coefficients. An asterisk (*) denotes significance at 10 percent, ** at 5 percent, and *** at 1 percent.

domestic assets is determined as a residual. Programming higher velocity would systematically lead to tighter monetary objectives, which, in turn, with other things held constant, would constrain total credit to the economy and, hence, output.[19]

Table 9 shows the results of the specifications we ran. One problem we encountered was the significant large volatility in the monetary aggregates typically observed in the early years in the transition countries, when many systemic changes and structural transformations took place. Under such circumstances, money demand was virtually impossible to predict. To be on the safe side, we therefore excluded all transition countries from the regressions in this subsection. Since this exclusion reduced our sample size, we used the within-year horizons to maximize available observations. The first column regresses the projection error in growth on a constant. The second regression adds the projection error in velocity:

$$e_{t-1}(g_{it}) = \alpha + \beta \cdot e_{t-1}(v_{it}) + \varepsilon_{it}, \tag{4}$$

[19] As an alternative, one could also focus on the projection errors in net domestic assets. We found considerable instability in the measures of net domestic assets in our database, however. In part this is due to cases of very high inflation in the sample during which the relationships among monetary aggregates become particularly unstable.

Table 9. Regressions for Growth and Velocity

	Dependent Variable = Programmed *Less* Actual GDP Growth					
	(1)	(2)	(3)	(4)	(5)	(6)
Country fixed effects	No	No	Yes	Yes		
Programmed velocity *less* actual velocity		0.398** (0.014)	0.635*** (0.003)			0.643*** (0.002)
Lagged programmed velocity *less* actual velocity				0.438* (0.061)		
Programmed velocity					0.645*** (0.003)	
Actual velocity					−0.603** (0.013)	
Fiscal balance projection error (*broadest available measure*)						0.144*** (0.010)
Constant	0.138 (0.333)	0.185 (0.168)	1.033 (0.648)	4.770** (0.023)	−2.072 (0.413)	−1.498 (0.510)
No. of observations	332	279	279	176	279	275
R squared	0.000	0.021	0.259	0.294	0.259	0.287

Notes: Projection error is defined as the programmed value minus the realized value. The table presents results for programmed values at the within-year horizon (see text). "Growth" refers to growth of real GDP in percentage points. Fiscal balance is in percentage of GDP. Parentheses report p-values for the estimated coefficients. An asterisk (*) denotes significance at 10 percent, ** at 5 percent, and *** at 1 percent.

where v denotes velocity. The positive estimated coefficient suggests that programming higher velocity drives actual growth performance below the programmed value. The next specification adds a complete set of country fixed effects. Controlling for country-specific heterogeneity strengthens the relationship between the projection errors in velocity and growth. To reduce the scope for contemporaneous correlation between velocity and growth, the next specification lags the projection error in velocity. Although the number of observations drops, the coefficient is still significant at 10 percent. The next specification removes constraints on the coefficients on actual and programmed velocity and shows that the two coefficients are close in magnitude and opposite in sign, as hypothesized. A Wald test for $b_1 = b_2$ is not rejected, indicating that the regression could be run in terms of projection errors.

The last specification in Table 9 regresses the projection error in growth on both the projection error in velocity and the projection error in the broad fiscal balance. These results suggest that even after controlling for the projection error in the fiscal balance, higher-than-actual programmed velocity depresses growth, and, conversely, even after controlling for the tightness of the monetary program, a higher fiscal surplus is associated with greater growth.

V. Conclusion

In this paper, we have attempted to analyze several aspects of IMF program design. We have documented systematically the relationship between programmed values

and outcomes for key program objectives and the intermediate policies designed to achieve them. We find that IMF-supported programs achieve the objectives set for external current account balance more frequently than those set for inflation and growth. All three objectives are met simultaneously in only about 10 percent of the programs. Likewise, the programmed values on intermediate policy targets on the fiscal and monetary variables were generally more ambitious than those actually achieved in the programs.

Second, we have explored the relationship between projection errors in growth objectives, on the one hand, and projection errors in fiscal and monetary policy targets, on the other hand. The evidence suggests that an improvement in the fiscal balance is associated with better growth outcomes, and that programming more ambitious fiscal targets implies higher growth. Fiscal targets are more often missed than met, however. Recognizing the difficulty in meeting fiscal targets, programs may tend to overcompensate by being tougher on the monetary policy side. Programming tight velocity may compensate for missing the fiscal objective, but it does so at the cost of dampening growth.[20]

Third, we find systematic biases in growth and inflation projections even after controlling for policy implementation.[21] To the extent that ambitious objectives are used to spur authorities into action, this may not, in itself, be a problem. However, if bias is more than what could be justified on the grounds of inadequate policy implementation, then there is cause for concern. One example of the costs of getting growth projections wrong is in the context of debt dynamics, where IMF-supported programs may predict much lower debt-to-GDP ratios than are actually achieved.

One question we were not able to address is whether, in a constrained world where fiscal targets are likely to be missed, overcompensating by having tighter monetary programs is the best strategy for designing programs to achieve more ambitious objectives. Although a tighter monetary program is likely to entail output costs, it may be required to ensure inflation stability and restore external current account balance (two other key objectives that we do not explore in greater depth in this paper).

Returning to the broader questions that we began with in this paper, we note that it is indeed the case that IMF-supported programs are ambitious with respect to their objectives and intermediate policy targets. In that sense, both those on the right and those on the left are correct: most program objectives are rarely fully achieved, and fiscal and monetary policy targets are ambitious. On the more interesting question of whether such ambition is defensible, this paper has attempted to substantiate that it is justifiable for the fiscal targets, because it helps achieve higher growth objectives than would otherwise be possible. There is also evidence, however, not explored in this paper, that ambitious growth objectives could have unwarranted side effects of

[20] Tighter monetary programs may be designed to bring down inflation, which may necessarily entail output costs. In this paper, we do not explore the relationship between intermediate policy targets and the inflation objective.

[21] Our results contrast with those of Musso and Phillips (2002), who do not find statistical bias in growth projections under IMF-supported programs. We note, however, that their sample, consisting of 54 countries, was much smaller than ours.

projecting lower debt-to-GDP ratios in IMF-supported programs than those actually realized.

REFERENCES

Baqir, Reza, Rodney Ramcharan, and Ratna Sahay, 2005, "IMF Program Design" in *Globalization and the Nation State: The Impact of the IMF and the World Bank,* ed. by Gustav Ranis, James Vreeland, and Stephen Kosack (New York: Routledge).

Barro, Robert J., and Jong-Wha Lee, 2002, "IMF Programs: Who Is Chosen and What Are the Effects?" NBER Working Paper No. 8951 (Cambridge, Massachusetts: National Bureau of Economic Research), pp. 1–37.

Bulíř, A., and S. Moon, 2004, "Is Fiscal Adjustment More Durable When the IMF Is Involved?" *Comparative Economic Studies,* Vol. 46 (September), pp. 373–99.

Conway, P., 1994, "IMF Lending Programs: Participation and Impact," *Journal of Development Economics,* Vol. 45 (December), pp. 365–91.

Dicks-Mireaux, Louis, Mauro Mecagni, and Susan Schadler, 2000, "Evaluating the Effect of IMF Lending to Low-Income Countries," *Journal of Development Economics,* Vol. 61 (April), pp. 495–526.

Ghosh, A., T. Lane, M. Schultze-Ghattas, A. Bulíř, J. Hamann, and A. Mourmouras, 2002, *IMF-Supported Programs in Capital Account Crises: Design and Experience,* IMF Occasional Paper No. 210 (Washington: International Monetary Fund).

Goldstein, Morris, and P. Montiel, 1986, "Evaluating Fund Stabilization Programs with Multi-country Data: Some Methodological Pitfalls," *Staff Papers,* International Monetary Fund, Vol. 33 (June), pp. 304–44.

Haque, Nadeem Ul, and Mohsin S. Khan, 1998, "Do IMF-Supported Programs Work? A Survey of Cross-Country Empirical Evidence," IMF Working Paper 98/169 (Washington: International Monetary Fund).

Helbling, Thomas, Ashoka Mody, and Ratna Sahay, 2003, "Debt Accumulation in the CIS-7 Countries: Bad Luck, Bad Policies, or Bad Advice?" IMF Working Paper 04/93 (Washington: International Monetary Fund).

Independent Evaluation Office, 2004, *Fiscal Adjustment in IMF-Supported Programs* (Washington: International Monetary Fund).

International Monetary Fund, 2004, *The Design of Fund Supported Programs—Overview* (Washington).

Kaminsky, Graciela L., Carmen M. Reinhart, and Carlos A. Végh, 2004, "When It Rains, It Pours: Procyclical Capital Flows and Macroeconomic Policies," in *NBER Macroeconomics Annual,* ed. by Mark Gertler and Kenneth Rogoff (Cambridge, Massachusetts: MIT Press).

Knight, Malcolm, and Julio A. Santaella, 1997, "Economic Determinants of IMF Financial Arrangements," *Journal of Development Economics,* Vol. 54, No. 2, pp. 405–36.

Khan, Mohsin S., 1990, "The Macroeconomic Effects of IMF-Supported Adjustment Programs," *Staff Papers,* International Monetary Fund, Vol. 37 (June), pp. 195–231.

———, and M. Knight, 1981, "Stabilization Programs in Developing Countries: A Formal Framework," *Staff Papers,* International Monetary Fund, Vol. 28 (March), pp. 1–53.

———, 1985, *Fund-Supported Programs and Economic Growth,* IMF Occasional Paper No. 41 (Washington: International Monetary Fund).

Mussa, Michael, and Miguel Savastano, 1999, "The IMF Approach to Economic Stabilization," IMF Working Paper 99/104 (Washington: International Monetary Fund).

Musso, Alberto and Steven Phillips, 2002, "Comparing Projections and Outcomes of IMF-Supported Programs," *IMF Staff Papers*, Vol. 49, No. 1, pp. 22–48.

Nsouli, S., R. Atoian, and A. Mourmouras, 2004, "Institutions, Program Implementation, and Macroeconomic Performance," IMF Working Paper 04/184 (Washington: International Monetary Fund).

Przeworski, Adam, and J. R. Vreeland, 2000, "The Effect of IMF Programs on Economic Growth," *Journal of Development Economics,* Vol. 62, No. 2, pp. 385–421.

Santaella, J., 1995, "Four Decades of Fund Arrangements: Macroeconomics Stylized Facts Before the Adjustment Programs," IMF Working Paper 95/74 (Washington: International Monetary Fund).

Stiglitz, Joseph, 2003, *Globalization and Its Discontents* (New York: W. W. Norton & Co.).