INTERNATIONAL MONETARY FUND

Macroeconomic and Structural Policies in Fund-Supported Programs: Review of Experience

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I. INTRODUCTION

1. A Fund-supported program is a package of envisaged policies which, combined with approved financing, is expected to achieve certain economic objectives such as fostering macroeconomic stability and orderly external adjustment, promoting growth and poverty reduction, and reducing vulnerability to future balance of payments problems or financial crises. This paper reviews experience with specific macroeconomic and structural policies intended to achieve these objectives.[1]

2. In designing their economic program, national authorities have at their disposal a number of instruments, including the exchange rate regime, the monetary stance, fiscal policies, and structural measures. Some of the considerations behind the setting of macroeconomic and structural policies are discussed in *Policy Formulation, Analytical Frameworks, and the Design of Fund-supported Programs*. This paper turns to experience, seeking to answer three broad questions for each policy instrument: Was use of the instrument geared towards achieving program objectives? Were the intended polices carried out? And what was the outcome?

3. Before turning to a summary of the main findings, four points are worth noting. First, by its very nature, cross-country analysis requires making generalizations—there are always exceptions, however, since individual programs must be tailored to the specific circumstances facing the member. Second, for expositional ease—and to complement the analysis of outcomes in *Fund-supported Programs: Objectives and Outcomes*—the discussion in this paper is organized around the role of each individual policy instrument.[2] But these various policy elements are also intended to work together, and an important consideration in program design is the complementarity of instruments and their appropriate assignment to targets. Third, policy choices and their implementation reflect deep social and institutional determinants of macroeconomic stability which are not modeled here. More generally, caution is required in interpreting the empirical findings owing to possible omitted

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[1] To include both program and post-program experience, the sample consists of arrangements approved over the period 1995-2000 and supported by the General Resources Account (GRA)—stand-by (SBA) and extended (EFF) arrangements—or by concessional facilities—the Enhanced Structural Adjustment Facility (ESAF) prior to 1999/2000 and the Poverty Reduction and Growth Facility since then. For simplicity, the term PRGF is used to refer to both ESAF- and PRGF-supported programs. A list of arrangements can be found in *Fund-Supported Programs: Objectives and Outcomes* (Appendix I); individual analyses reported below may use sub-samples according to data availability.

[2] However, to control for possible omitted variable bias, where relevant, the regressions reported below include the various policy instruments simultaneously.

variable bias and difficulties in establishing counterfactuals.[3] Fourth, during the period under review—1995–2000—Fund-supported programs in low-income countries underwent important changes with the shift in 1999/2000 from the Enhanced Structural Adjustment Facility (ESAF) to the Poverty Reduction and Growth Facility (PRGF); most of the experience of low-income countries reported in this paper pertains to ESAF-supported programs.

4. With these points in mind, the main findings based on aggregate, cross-country analysis are as follows. First, up-front devaluations or shifts in the **exchange rate regime** are the exceptions rather than the rule under Fund-supported programs—in less than 20 percent of all programs was the regime changed in the year the program was approved. Most regime shifts involved pegging the exchange rate in transition economies (as they embarked on disinflation programs) or moving to more flexible regimes in non-transition economies (as pegs were abandoned in the face of balance of payments difficulties). Among programs that explicitly targeted disinflation, GRA-supported programs typically used the exchange rate as a nominal anchor, while PRGF-supported programs tended to use money-based stabilizations. But rates of success did not differ markedly, making it difficult to generalize about which strategy is preferable. Rather, what appears to have been of greater importance in explaining success are the supporting policies—specifically, whether the targeted fiscal adjustment was achieved.

5. It is also worth examining whether external adjustment came at a lower output cost in countries with more flexible regimes (because of expenditure switching) and whether countries with pegged regimes prior to the program subsequently underwent greater external adjustment as balance sheet mismatches—built up because the guarantee implicit in the peg had encouraged excessive foreign currency exposure in the pre-crisis period—unwound. While there is evidence that countries with more flexible regimes achieve external adjustment at lower output cost, there is little empirical relationship between pegged regimes and the subsequent adjustment of the current account being greater than programmed.

6. Second, programs usually target at least some tightening of the **monetary stance**—in order to lower inflation, promote orderly external adjustment, and, especially in capital account crises, to help stem capital outflows. Empirically, the monetary stance is tightened, though usually by not as much as is programmed, leading to higher inflation than projected. Importantly, policies set in the context of Fund-supported programs appear to enjoy greater credibility, leading to higher money demand, and thus lower inflation for a given growth rate

[3] In particular, the coefficients on policy variables may be mis-estimated if regressors are correlated with the policy variable (and the dependent variable), but omitted from the regression (see *Fund-supported Programs: Objectives and Outcomes*, Appendix IV for a discussion of alternative methodologies for evaluating the effects of programs).

of broad money. The empirical evidence does not support the assertion that the monetary stance was set excessively tight in Fund-supported programs leading to lower output growth.[4]

7. Third, Fund-supported programs also target at least some **fiscal consolidation** to promote external adjustment, underpin macroeconomic stabilization, or put the public finances and debt dynamics on a more sustainable footing. In the event, however, there are typically large slippages in the fiscal adjustment targeted for the first program year, which widen in the following year, mainly because of primary (and, to a lesser degree, interest) expenditure overruns in GRA-supported programs and a combination of primary expenditure overruns and revenue shortfalls in PRGF-supported programs.[5]

8. The failure to maintain the programmed fiscal consolidation cannot be explained by the planned current account adjustment having been achieved—fiscal consolidation was not sustained even in cases where the external adjustment fell short of expectations. Fiscal slippages undermine disinflation efforts and result in significantly higher public debt ratios than programmed. (Below-the-line operations are, however, the most important source of public debt projection errors.) Fiscal adjustment does contribute to external adjustment—but cannot explain instances in which the country undergoes substantially more external adjustment than anticipated. Empirical evidence does not indicate that fiscal policies in Fund-supported programs have had negative consequences for growth.

9. Fourth, **structural measures** in Fund-supported programs can be classified according to their primary objectives—bolstering the management of aggregate demand, enhancing the flexibility of the economy and raising efficiency (both of which serve to strengthen a country's growth prospects), and reducing vulnerabilities to future crises. Classifying structural measures into these three categories shows some alignment between structural measures and the broad objectives of economic programs. While it is difficult to establish the impact of individual structural reforms, the evidence suggests that fiscal structural measures have been useful in underpinning fiscal adjustment and that there is a positive correlation

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[4] The Independent Evaluation Office comes to a similar conclusion in its assessment of programs in low-income countries (PRSP Review, IEO, July 2004).

[5] This paper examines performance during the year of program approval and the following year because most programs span more than one calendar year. The average duration of Fund-supported programs in the sample is 17 months for Stand-By Arrangements (SBAs), and 35 months for programs supported by the Extended Fund Facility (EFF) as well as by concessional facilities—Enhanced Structural Adjustment Facility (ESAF) and the Poverty Reduction and Growth Facility (PRGF). Further, when an arrangement was approved in the last quarter of the year, for analytical purposes it is treated as having been approved in the subsequent year.

between growth-related structural measures in Fund-supported programs and medium-term growth performance.

10. The paper follows the structure of this summary. Concluding remarks are presented in Section VI.

II. The Choice of Exchange Rate Regime

11. Given the primacy of external adjustment and macroeconomic stability in Fund-supported programs, a natural starting point is the exchange rate regime. In particular, a flexible exchange rate can allow for more of the improvement in the current account balance to take place through expenditure switching rather than by monetary and fiscal restraint alone—though, in some circumstances, this can also be achieved through a discrete devaluation under an existing peg.[6] Conversely, when disinflation is a primary objective, the use of the exchange rate as a nominal anchor can help induce policy discipline, engender confidence in the currency, and bring down inflationary expectations and real interest rates. The use of such "exchange-rate based stabilizations" is not uncontroversial, however (Box 1).

12. This Chapter considers the role of the exchange rate regime in Fund-supported programs—Chapter III, below, takes up the related but distinct issue of the monetary stance. Section A sets the stage by considering the extent to which the exchange rate regime has been used as an explicit tool for achieving program objectives. Section B turns to outcomes, examining three questions: Did use of the exchange rate as a nominal anchor assist in disinflation? Did more flexible exchange rate regimes help achieve external adjustment at a lower cost in terms of output? And did countries with pegged regimes subsequently undergo greater external adjustment as balance sheet mismatches unwound?

[6] Such up-front devaluations as part of the initial package of policies under the program are rare, however. In the sample (about 130 programs approved during the period 1995–2000), only Mauritania and Ukraine carried out a step devaluation at the beginning of the program.

Box 1. Exchange-Rate Based Stabilizations

Exchange rate based stabilizations (ERBS) are often advocated for countries starting from high and chronic inflation because the nominal exchange rate provides a highly visible anchor for private sector expectations. In particular, in countries with high dollarization and a high pass-through from the exchange rate to prices, the exchange rate can stabilize and coordinate expectations quickly, and may promote policy discipline.[1] An exchange rate anchor could also be attractive to countries with high real interest rates, as an ERBS might reduce them more rapidly than a money-based-stabilization (MBS). Another benefit could be the relative ease of conducting monetary policy, in contrast to MBS, where the appropriate rate of money growth must be determined, often in situations of highly-unstable money demand. The transparency of ERBS may also enhance the credibility of the monetary authorities, thus reducing the costs of disinflation.

However, the debate on ERBS is still open. Some authors maintain that the costs of disinflations carried out with an exchange rate anchor are merely postponed. They point to some empirical regularities observed in ERBS (the so-called ERBS syndrome), namely a substantial real exchange rate appreciation and related deterioration in the external accounts, which often leads to a balance of payments crisis, and a boom-bust cycle in GDP, consumption, and investment.[2] ERBS have been linked to financial crises as well.[3] The ability of a predetermined exchange rate regime to impose discipline on other policies, notably fiscal policy, is also disputed.[4] In addition, overvaluation under a pegged exchange rate regime may mask temporarily the extent of public indebtedness.

But other authors challenge empirical regularities that characterize the ERBS syndrome. For example, some authors do not find evidence that output dynamics differ based on the anchor used in the stabilization. Others find expansionary effects on output of ERBS from high inflation.[5] Similarly, the claim that ERBS have a higher percentage of failures has been questioned (see Tables 1 and 2).[6] In fact, these differences in findings may reflect the small samples used in some studies: for example, Calvo and Vegh (1999) examined 5 episodes of MBS compared to 12 ERBS. However, in studies where a large number of episodes are studied (typically identified by rules), the evidence of the ERBS syndrome is much weaker, if extant at all.[7]

Schadler et al. (1995) in the 1994 Conditionality Review studied 16 countries (out of a total sample of 36) that adopted a monetary anchor—defined as either a money supply rule (1 country) or a predetermined exchange rate path (15 countries). They concluded that, while there is no substitute for tight financial policies and wage restraint, exchange rate anchors appeared to have sped up disinflation and helped keep inflation low. At the same time, they pointed to significant costs in terms of competitiveness, export growth, and possibly short-term output growth associated with the disinflation gains. Finally, they viewed the adoption of some nominal anchor as indispensable in reducing high or intermediate inflation, but underscored the key role of supporting policies.

Finally, when the exchange rate regime chosen for disinflation differs from the regime considered more suitable for the country from a longer-run perspective, issues of exit arise. For example, as discussed in *Lessons from the Crisis in Argentina* (SM/03/345), the currency board arrangement adopted by Argentina in 19991 was instrumental in bringing down inflation after decades of high inflation, but given extensive dollarization of the economy and turbulence in international capital markets, it was difficult to find an opportunity to exit the regime gracefully even as it became apparent that a lack of competitiveness was impeding growth, and that fiscal policy necessary to sustain the peg was not forthcoming. The Fund-supported program in Turkey (1999) pre-announced an explicit exit strategy (and timetable) for exiting the quasi-currency board arrangement adopted at the outset of the stabilization program. The pre-announcement does not appear to have undermined credibility of the regime, though in the event it collapsed for other reasons prior to the planned exit date.

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1. See Calvo and Vegh (1999) and Hamann (2001) for surveys of the literature on ERBS.
2. See for example Kiguel and Liviatan (1992), Vegh (1992), and Calvo and Vegh (1994).
3. See Sobolev (2000) "Exchange Rate-Based Stabilization: A Model of Financial Fragility", IMF Working Paper WP/00/122.
4. Hamann (2001) does not find evidence of increased fiscal discipline of ERBS.
5. Fischer, Sahay, and Vegh, 2002.
6. See Easterly (1996), Ghosh, Gulde, Wolf (2002), Hamann (2001), Hamann and Prati (2002), and Santaella and Vela (1996).
7. Fischer, Sahay, and Vegh, (2002) "Modern Hyper- and High Inflations," IMF Working Paper WP02/97; and Hamann (2001).

Box 1. Exchange-Rate Based Stabilizations (continued)

Table 1. Successful Stabilization Episodes

		Successful 1/	
	Episodes	Criterion 1	Criterion 2
Total number of episodes	51	20	34
of which successful stabilizations (in percent)		39	67
Exchange rate based stabilizations	13	5	9
Of which successful stabilizations (in percent)		38	69

Source: Hamann, 2001.

1/ Criterion 1 defines success as inflation at t+2 and t+3 no higher than during the stabilization year. Criterion 2 defines success as inflation at t+2 and t+3 no higher than 3/4 of the inflation rate prevailing the year before stabilization.

Table 2. Disinflation Attempts under Alternative Exchange Rate Regimes

	Pegged	Intermediate	Float
Initial inflation above 50 percent per year, at least 20 percentage point decline			
Proportion of cases with inflation below post-disinflation level in:			
year t+1	53.1	41.0	51.4
year t+2	43.8	35.9	40.0
year t+3	43.8	25.6	28.6

Source: Ghosh, Gulde, and Wolf, 2003.

A. Exchange Rate Regimes in Fund-Supported Programs

13. Table 1 reports the distribution of exchange rate regimes in the year prior to (year t-1), and the year of (year t), the approval of the arrangement. PRGF-supported members are split almost equally between pegged and flexible exchange rate regimes, whereas for GRA-supported members a larger proportion (60 percent) had pegged exchange rates.[7] Transitions in the year that the Fund arrangement was approved occur in less than 20 percent of cases.[8] When regime changes occur, these were frequently towards greater flexibility in non-transition GRA-supported countries (as pegs were abandoned[9]) or towards less flexible regimes in transition economies (to assist disinflation efforts).

14. To examine the determinants of regime choice in Fund-supported programs, Table 2 reports the results of estimating an ordered probit, where a higher score on the regime index indicates a more flexible regime. This analysis shows a great deal of persistence in regime choice—that is, consistent with the observation above, the exchange rate regime is seldom changed as part of a Fund-supported program. The exchange rate regime (whether or

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[7] The results in this chapter are based on the IMF's official classification of exchange rate regimes, as reported in the *Annual Report on Exchange Arrangements and Exchange Restrictions*. The Fund uses a de facto classification that combines quantitative and qualitative information, including the authorities' stated exchange rate policy. While the Fund changed to a de facto classification in 1999, the data for previous years were obtained from Bubula and Otker-Robe (2002), who constructed the back series using the same methodology. Using a purely de facto classification (for instance, that proposed by Reinhart and Rogoff (2004)) would lead to a larger proportion of countries being classified as having pegged regimes (perhaps reflecting "fear of floating" (see Calvo and Reinhart 2002)), which would strengthen the relationship between pegged regimes and better inflation performance reported below. The main conclusions of this chapter, however, are unaltered.

[8] This proportion is similar to the proportion of countries changing their exchange rate regimes outside the context of a Fund-supported program. These statistics may overstate the proportion of cases where the regime was changed as part of the Fund-supported program since, in some cases, the regime change occurred a few months prior to or a few months following the approval of the Fund arrangement and thus may have not been part of the design of the program. For the purposes of these statistics, any change between the 8 categories of exchange rate regime presented in the *Annual Report on Exchange Arrangements and Exchange Restrictions* is counted as a regime shift.

[9] Conventional pegs are more than twice as frequent (37 percent of countries) when the country does not have a Fund-supported program as when it does (15 percent of countries).

Table 1. Macroeconomic Performance Under Alternative Exchange Rate Regimes

	Pegged 1/			Flexible 1/			Countries that moved to	
	t-1	t	t+1	t-1	t	t+1	Flexible regimes	Pegged regimes
Proportion of observations								
Full sample	54.3	56.6	57.4	45.7	43.4	42.6	8.5	10.9
GRA-supported non-transition economies	62.8	60.5	58.1	37.2	39.5	41.9	16.3	9.3
PRGF-supported non-transition economies	52.1	50.0	47.9	47.9	50.0	52.1	4.2	4.2
Transition economies	47.4	60.5	60.5	52.6	39.5	31.6	5.3	21.1

	Average for countries that did not switch regimes 2/						Change between years t-1 and t+1 for countries that switched regimes to:	
							flexible regimes	pegged regimes
Inflation (in percent per year) 3/								
Full sample	12.1	8.4	6.6	19.9	15.3	12.2	1.7	-27.5
GRA-supported non-transition economies	7.1	6.9	5.5	14.8	14.7	13.5	1.1	1.8
PRGF-supported non-transition economies	8.0	6.3	5.4	10.3	10.0	9.5	-8.4	-9.6
Transition economies	24.1	13.3	9.7	42.5	25.7	16.0	13.9	-42.9
Real GDP Growth (in percent per year)								
Full sample	3.2	3.5	3.1	2.2	3.3	4.3	-0.4	3.9
GRA-supported non-transition economies	3.2	3.9	2.5	1.5	1.3	3.3	-1.0	-3.6
PRGF-supported non-transition economies	5.1	4.2	3.4	4.9	3.8	4.0	2.0	-0.1
Transition economies	0.4	2.1	3.5	-2.0	4.5	5.7	-0.9	6.8

Sources: International Monetary Fund , *AREAER* and *WEO*; and IMF staff calculations.

1/ Exchange rate regimes as classified by the Fund *AREAER*. "Pegged regimes" include exchange arrangements with no separate legal tender, currency boards, other conventional pegs, pegs with horizontal bands, crawling pegs, and crawling bands; "flexible regimes" include managed and independently floating regimes.

2/ Classified by regime prevailing in year of program approval (t).

3/ To reduce the influence of outliers, the inflation rate is mapped into the interval (-100, 100) percent.

Table 2. Choice of Exchange Rate Regime: Results of Ordered Probit 1/ 2/

Dependent variable: exchange rate regime in year of program approval (t)			
	Non-transition GRA	Non-transition PRGF	Transition
Explanatory variables			
Exchange rate regime in year t-1	3.56 ***	1.21 ***	0.81 ***
Programmed change in inflation	0.31 **	0.00	-0.01
Programmed change in the current account balance	-0.22	0.01	0.06
Output gap at t-1 3/	0.30 **	-0.01	-0.01
Deviation of the real exchange rate from a long-term trend at t-1 4/	0.22 ***	0.01	0.06 ***
Level of reserves in months of imports at t-1	-0.15 *	-0.08	0.15
Dummy for CFA countries	...	-1.33	...
Pseudo-R^2	0.74	0.67	0.32
No. of observations	41	42	36
Observations correctly predicted (in percent)	90	90	44

Sources: International Monetary Fund, *AREAER* , *IFS* , *INS* , *MONA* , *WEO* ; and IMF staff estimates.
1/ A higher score indicates more flexible regimes on the eight-category scale of the IMF *AREAER* . The categories are: 1) no separate legal tender; 2) currency boards; 3) other conventional pegs; 4) pegged arrangements with horizontal bands; 5) crawling pegs; 6) crawling bands; 7) managed floats; and 8) independent floats.

2/ Significant at: *** 1 percent, ** 5 percent, * 10 percent levels.

3/ Positive value indicates output below trend. Trend GDP is obtained from a Hodrick-Prescott filter.

4/ Positive value indicates overvaluation. The trend real exchange rate is obtained from a Hodrick-Prescott filter.

not it is changed at the time of program approval) can be explained by various explanatory variables for non-transition country programs. Specifically, in GRA-supported non-transition programs, a pegged (or less flexible) regime is more likely the larger the programmed decline in inflation. Moreover, though the programmed change in the current account balance is not statistically significant, a flexible regime is more likely the greater the estimated overvaluation of the real exchange rate. Other significant determinants are foreign exchange reserves (a higher level of reserves makes a peg more likely) and the output gap (a smaller gap makes a peg more likely). Overall, the probit explains 90 percent of the observations correctly. By contrast, in a similar analysis for PRGF-supported non-transition countries**,** only the lagged regime variable has the correct sign and is statistically significant—suggesting greater inertia in the choice of exchange rate regime for these countries.[10] For transition economies, the fit of the equation is much worse, and only the lagged regime and the estimated degree of overvaluation are statistically significant.

B. Experience

15. A number of findings can be highlighted in terms of macroeconomic performance and exchange rate regime, though of course the regime choice may itself be endogenous to macroeconomic performance.[11] Inflation for the full sample is lower under pegged exchange rates and inflation declines rapidly over the program period under both pegged and flexible regimes, though remaining higher in countries with flexible regimes (Table 1). The evidence on growth is less clear. Pegged regimes experienced modest variations in real growth while countries with flexible regimes saw an acceleration in real growth. For countries that switched regimes, pegging the exchange rate is associated with better inflation performance, though the sample of such countries is small and the results mostly driven by the experience of the transition economies. The growth experience of countries switching regimes is mixed: transition economies saw a sharp acceleration in growth under their exchange rate pegs (albeit after an initial collapse in output and a sharp depreciation of the real exchange rate), while non-transition economies that switched to flexible regimes fared better than those that switched to pegged regimes.

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[10] Among PRGF-supported countries, members of the CFA zone maintain a pegged regime for long-standing institutional reasons. For non-CFA zone members, there may be hesitation in adopting a peg even in the context of an attempt at disinflation because the institutions and policy discipline necessary to maintain the peg may be lacking.

[11] Ghosh, Gulde and Wolf (2003) find that the association between low inflation and pegged exchange rate regimes survives the inclusion of other explanatory variables and a battery of robustness tests including possible endogeneity of the exchange rate regime. The association between the exchange rate regime and growth, however, breaks down once endogeneity of the regime is taken into account.

Disinflation Attempts

16. Most GRA-supported programs that started from high (above 20 percent per year) inflation rates and that targeted substantial disinflation used an exchange rate anchor. In 80 percent of the cases, the target was achieved, and in two-thirds inflation remained low up to three years later (Table 3, Figure 1). For GRA-supported programs starting with relatively low inflation rates, about half of the disinflation attempts were based on flexible regimes and these programs had higher rates of success than similar disinflations under pegged regimes. In PRGF-supported programs, by contrast, disinflation attempts starting from high inflation did not use the exchange rate as a nominal anchor. Success rates have been similar to GRA-supported programs: in about 80 percent of cases the initial disinflation was achieved, and in three-quarters inflation remained low up to three years later (Table 3, Figure 2).

17. While individual country circumstances—for instance, initial credibility of newly (re)-established central banks in transition economies—may suggest a particular (exchange rate-based versus money-based) disinflation strategy, the contrasting findings for disinflation attempts under GRA- and PRGF-supported programs do not allow for unequivocal conclusions about which strategy is more likely to succeed. Rather, a distinguishing feature between successful and failed stabilization efforts appears to be whether supporting policies were in place. Although the proximate reason that inflation targets are missed and disinflation attempts fail is often monetary overruns—as discussed in Chapter III, below—it is also worth considering some of the underlying causes of failures. To this end, Table 4 correlates success at disinflations—under both pegged and more flexible regimes—to fiscal performance under the Fund-supported program. From the Table, fiscal slippage is significantly greater in cases where disinflation was unsuccessful. Indeed, whereas the fiscal balance was marginally better than programmed in cases that succeeded in disinflation, it fell short by 2.3 percent of GDP in cases that failed—a difference that is statistically significant. Countries that succeeded in achieving and maintaining low inflation also managed to achieve their fiscal targets, compared to a fiscal slippage of 1.5 percent of GDP among those programs that failed to maintain low inflation.

18. When the exchange rate is not pegged, the country needs some other monetary framework to conduct monetary policy (Box 2). In Fund-supported programs, countries with no exchange rate peg, used either a monetary target, or an inflation target, or had no explicit nominal anchor.[12] Countries with monetary targeting aimed at more ambitious disinflations and achieved greater reductions in inflation than countries that had no explicit nominal

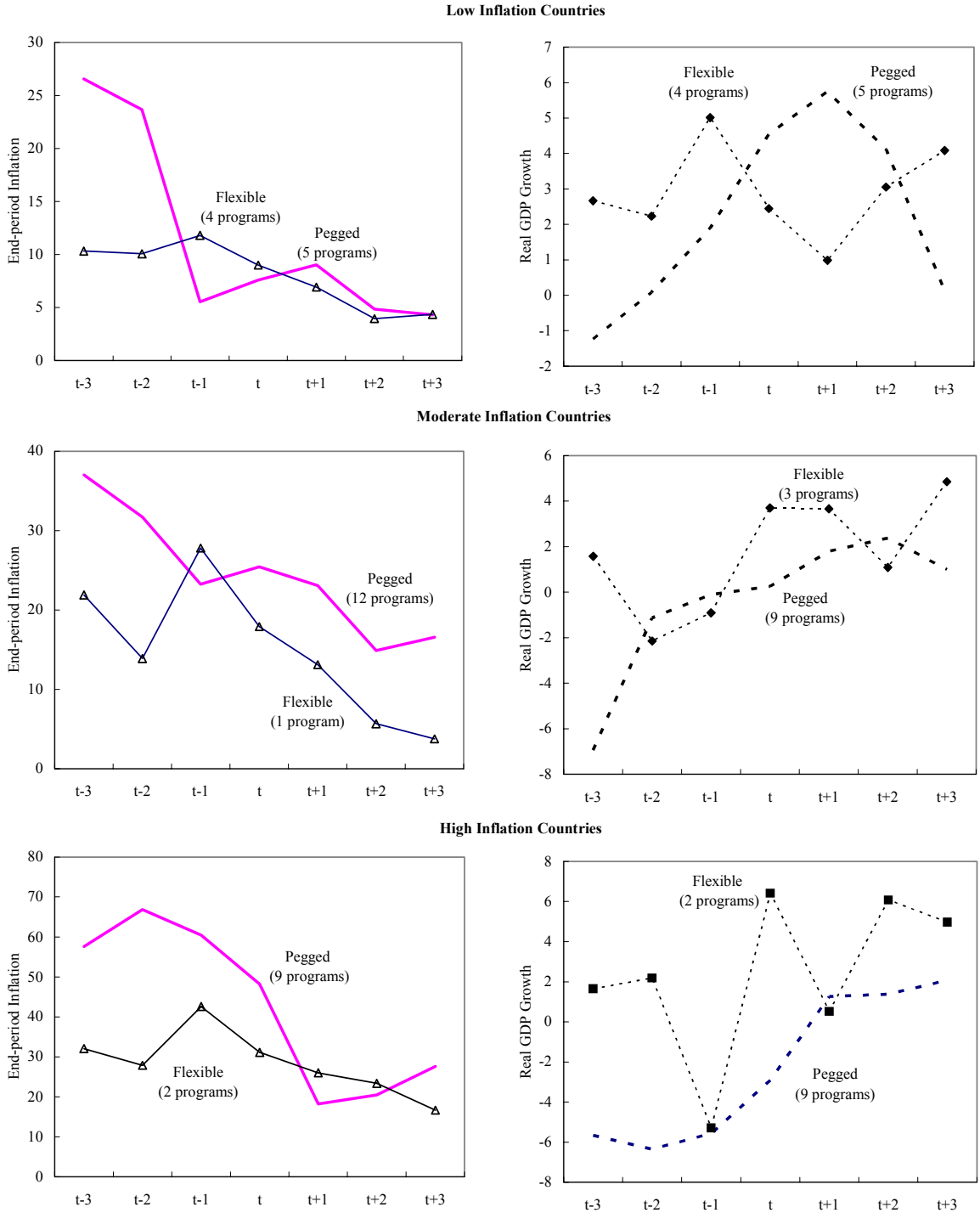
[12] In most cases where no explicit not monetary anchor was in place, a ceiling on net domestic assets (NDA) and a floor on net international reserves (NIR) were targeted.

Table 3. Success Rates for Disinflation Attempts under Alternative Exchange Rate Regimes

	All		Non-transition		Transition	
	pegged 1/	flexible 1/	pegged 1/	flexible 1/	pegged 1/	flexible 1/
I. GRA-supported programs						
1. Low inflation countries 2/	5	4	4	3	1	1
Success 3/	1	3	1	2	0	1
of which: Success II 4/	0	3	0	2	0	1
Failure	4	1	3	1	1	0
2. Moderate inflation countries 5/	12	1	5	1	7	0
Success 3/	8	1	3	1	5	0
of which: Success II 4/	7	1	3	1	4	0
Failure	4	0	2	0	2	0
3. High inflation countries 6/	9	2	1	1	8	1
Success 3/	9	2	1	1	8	1
of which: Success II 4/	7	1	0	0	7	1
Failure	0	0	0	0	0	0
II. PRGF-supported programs						
1. Low inflation countries 2/	8	9	8	7	0	2
Success 3/	5	3	5	2	0	1
of which: Success II 4/	3	1	3	1	0	0
Failure	3	6	3	5	0	1
2. Moderate inflation countries 5/	0	8	0	5	0	3
Success 3/	0	6	0	3	0	3
of which: Success II 4/	0	5	0	2	0	3
Failure	0	2	0	2	0	0
3. High inflation countries 6/	0	4	0	2	0	2
Success 3/	0	4	0	2	0	2
of which: Success II 4/	0	4	0	2	0	2
Failure	0	0	0	0	0	0

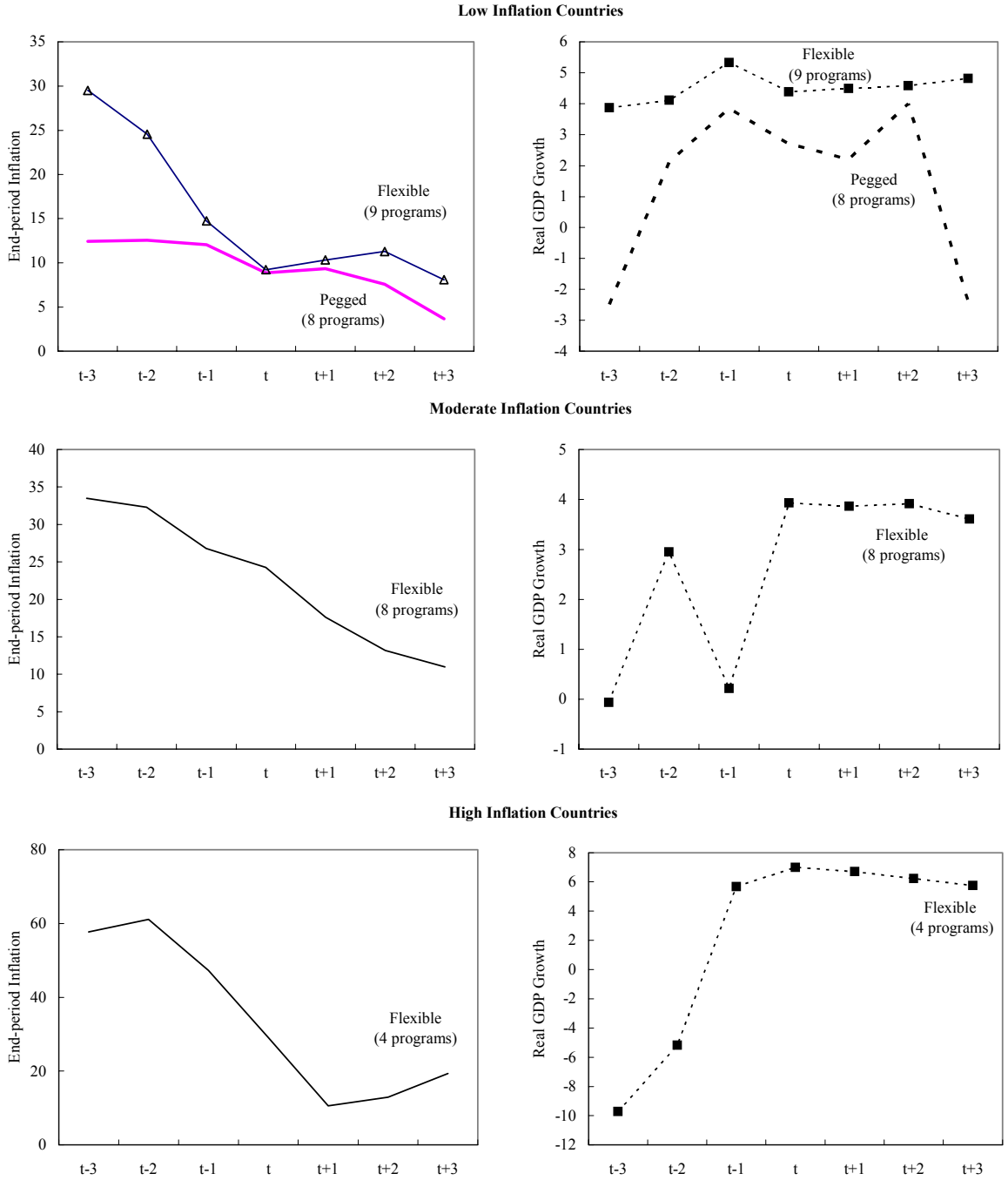
Sources: International Monetary Fund, *AREAER, WEO, MONA;* and IMF staff estimates.
1/ Exchange rate regime at t+1.
2/ Low inflation cases refers to end-of-period inflation of less than 20 percent and programmed change in inflation between t-1 and t+1 of less than -5 percent.
3/ Success is defined as actual disinflation performance at least meeting the programmed disinflation target (i.e. 5%, 10% and 20%).
4/ Success II refers to the cases within Success in which disinflation is maintained, as measured by the difference between the average of end-period inflation in t+2 and t+3 and inflation in t-1 at least meeting the programmed disinflation target (i.e. 5%, 10%, and 20%).
5/ Moderate inflation cases refers to end-of-period inflation between 20 and 50 percent and programmed change in inflation between t-1 and t+1 of less than -10 percent.
6/ High inflation cases refers to end-of-period inflation greater than 50 percent and programmed change in inflation between t-1 and t+1 of less than -20 percent.

Figure 1. Inflation and Growth in GRA Programs Under Alternative Disinflation Strategies 1/2/3/
(In percent; 1995-2000)



Sources: International Monetary Fund, *WEO, MONA,* and IMF staff estimates.
1/ Inflation rates are transformed to be mapped into the interval (-100, 100) percent.
2/ Exchange rate regime at t+1.
3/ Definition of low, moderate, and high inflation available in preceding table.

Figure 2. Inflation and Growth in PRGF Programs Under Alternative Disinflation Strategies 1/2/3/
(In percent; period 1995-2000)



Sources: International Monetary Fund, *WEO, MONA,* and IMF staff estimates.
1/ Inflation rates are transformed to be mapped into the interval (-100, 100) percent.
2/ Exchange rate regime at t+1.
3/ Definition of low, moderate, and high inflation available in preceding table.

Table 4. Fiscal Adjustment and Success Rates for Disinflation Attempts

	Projection Error: Actual - Projected 1/					
	Full sample		GRA-supported		PRGF-supported	
	Fiscal balance 2/	Inflation 2/	Fiscal balance 2/	Inflation 2/	Fiscal balance 2/	Inflation 2/
1. Disinflation Attempts 3/	-0.83	4.42	-0.75	5.98	-0.91	2.76
(no. of observations)	58	58	30	30	28	28
Success 4/	0.05	0.31	0.12	2.01	-0.03	-1.60
(no. of observations)	36	36	19	19	17	17
of which:						
Success II 5/	0.10	0.80	0.39	2.14	-0.34	-1.20
(no. of observations)	30	30	18	18	12	12
Failure II	-1.46	-4.02	-4.81	-0.25	0.22	-5.91
Failure	-2.26	11.16	-2.26	12.82	-2.26	9.49
(no. of observations)	22	22	11	11	11	11
2. Non-disinflation Programs	-0.50	0.62	-0.88	1.04	-0.09	0.16
(no. of observations)	54	54	28	28	26	26
3. Failure+Non-disinflation	-1.01	3.67	-1.27	4.37	-0.73	2.94
(no. of observations)	76	76	39	39	37	37
t-statistics for: 6/						
H_0: Success = Failure	3.62 ***	-4.02 ***	2.13 *	-2.39 **	3.37 ***	-3.71 ***
H_0: Success II = Failure II	0.92	1.72	…	…	-1.60	1.40

Sources: International Monetary Fund, *WEO* and *MONA;* and IMF staff estimates.

1/ Average of projection errors for years t and t+1.

2/ Fiscal balance refers to the change in fiscal balance in percent of actual GDP; inflation is end of period, in percent, per year.

3/ Disinflation attempts refer to programs that envisaged disinflation between years t-1 and t+1 of: 1) over 5%, when initial inflation in t-1 is less than 20%; 2) over 10%, when initial inflation is between 20% and 50%; or 3) over 20%, when initial inflation is higher than 50%.

4/ Success is defined as actual disinflation performance between years t-1 and t+1 at least meeting the disinflation target (i.e. 5%, 10%, and 20%).

5/ Success II refers to the cases within Success in which disinflation is maintained, as measured by the difference between average inflation for t+2 and t+3 and inflation at t-1 at least meeting the disinflation target (i.e. 5%, 10%, and 20%).

6/ Two-sided t-test for differences in mean. Significant at: 10% *; 5% **; 1% *** levels.

Box 2. Monetary Regimes when the Exchange Rate is not Pegged

When the country does not peg its exchange rate (thereby subordinating its monetary policy to maintaining the peg), it must have some other nominal anchor and monetary regime. Of countries without pegged regimes in the year of program approval, other monetary frameworks prevailed in 70 percent of the cases. In most cases, only a ceiling on net domestic assets (NDA) and a floor on net international reserves (NIR) were specified in a program context.[1] A further 27 percent targeted monetary aggregates (e.g. reserve, base money, or a broader monetary aggregate such as M2), and only 4 percent had an inflation-targeting framework.

Countries that had only an NDA ceiling and an NIR floor as part of the program conditionality and no explicit monetary framework, arguably lacked a nominal anchor as the NDA/NIR configuration in Fund-supported programs is intended primarily to monitor progress towards external viability and safeguard Fund resources—not to act as a nominal anchor for inflation expectations or monetary policy.[2]

Predictable money demand is required for aggregates to serve as a useful nominal anchor. Partly because of unstable money demand functions, central banks in several emerging market countries have shifted to inflation targeting. Indeed, in the sample, inflation targeting became more prevalent subsequently to the year in which the arrangement was approved, with several emerging market countries adopting inflation targeting within three years of the approval of the Fund arrangement. In part, this may be because inflation targeting needs institutional and technical requirements—such as central bank operational autonomy, effective monetary policy instruments, a system of accountability for the central bank, and reliable models to forecast inflation and the impact of monetary policy actions on inflation—to make it an effective monetary framework.[3] Some countries adopted inflation targeting "lite" before formally adopting this framework.[4] (In some programs, some of the changes required to establish a formal inflation targeting framework are part of the measures included under the program). The time pattern of adopting inflation targeting frameworks suggests that such frameworks have been considered useful for reducing inflation from moderate or relatively low levels, rather than disinflating from high inflation (Figure).

No PRGF-supported country in the sample adopted inflation targeting.

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[1] Due to data availability, these statistics on nominal anchors are based on a smaller sample (78 arrangements) compared to the sample used in the rest of the paper: only the most recent arrangement for each country is considered in the same 1995-2000 period. The monetary regimes are classified following the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* into 5 categories: 1) exchange rate anchor; 2) monetary aggregate target; 3) inflation targeting framework; 4) Fund-supported or other monetary program; and 5) other.

[2] The Fund's focus on NDA originated from the Polak model with a fixed exchange rate regime, where the overall money supply is endogenous and only its composition is under the authorities' control. Even under a flexible exchange rate arrangement, limits on NDA can: (i) prevent sterilized intervention in the presence of capital outflows; (ii) allow an accommodation of money growth if capital outflows are quickly reversed; and (iii) act as a disciplining device on fiscal policy. However, NDA limits do not control the overall monetary expansion when the latter is generated by foreign inflows, and hence may not provide a nominal anchor.

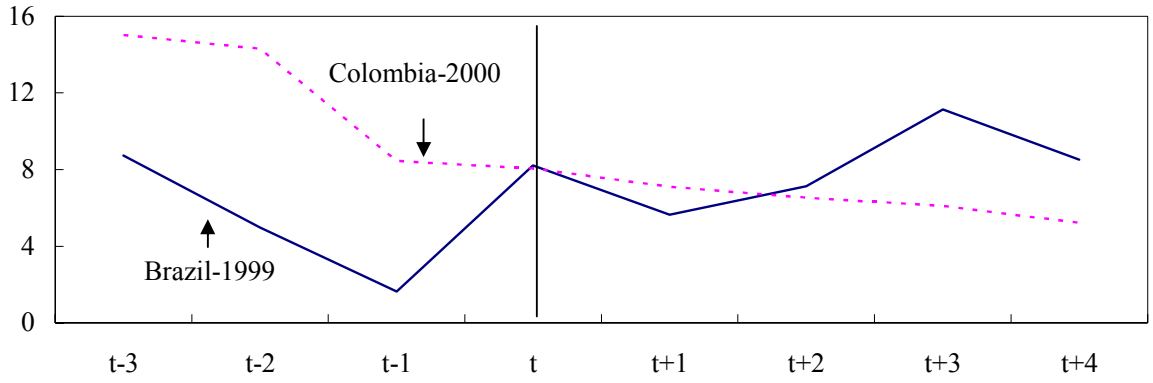
[3] Truman E., (2003) *Inflation Targeting and the International Financial System: Challenges and Opportunities* (Washington: Institute for International Economics); Schaechter, A., M. Stone, and M. Zelmer (2000), "Adopting Inflation Targeting: Practical Issues for Emerging Market Countries," IMF Occasional Paper 202.

[4] See Stone, M., (2003) "Inflation Targeting Lite," IMF Working Paper 03/12.

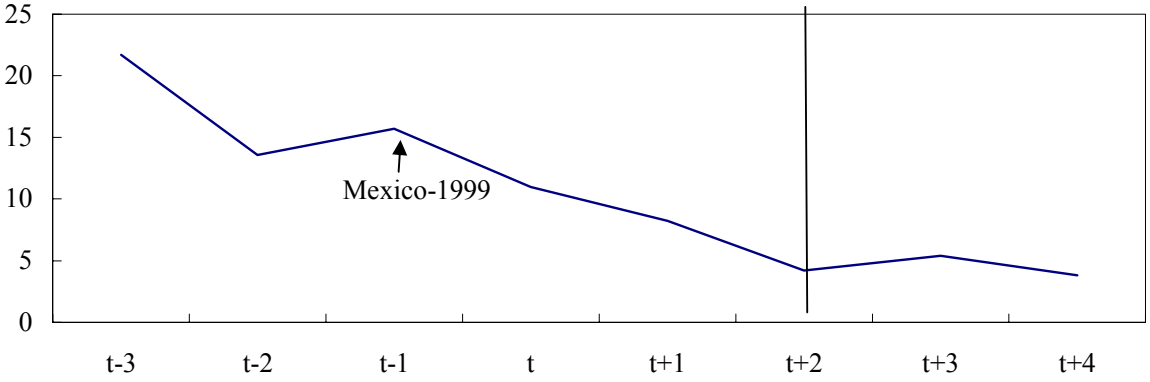
Box 2. Monetary Regimes (continued)

End-period Inflation in Inflation Targeting Countries (1995-2000) 1/
(in percent, per year)

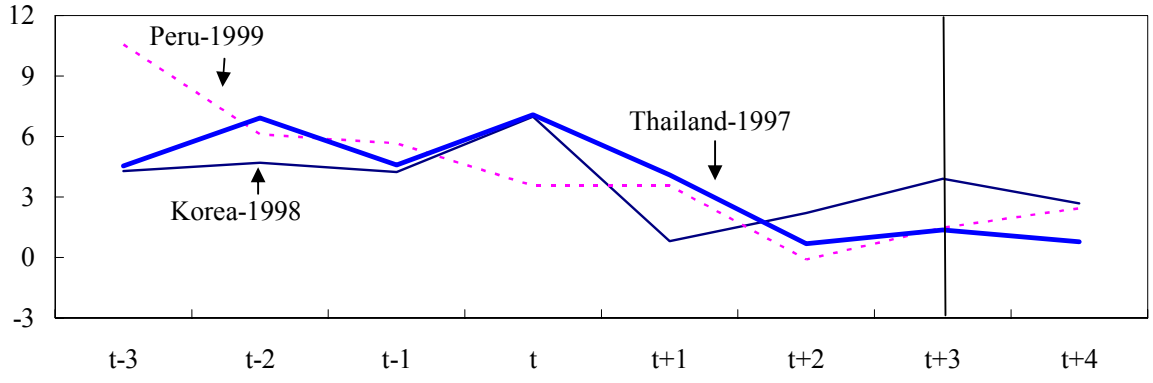
Countries that had inflation targeting in year t



Countries that adopted inflation targeting in year t+2



Countries that adopted inflation targeting in year t+3



Sources: International Monetary Fund, *WEO;* and IMF staff estimates.
1/ Inflation rates are transformed to be mapped into the interval (-100, 100) percent.

anchor (Table 5).[13] Even in those cases where the projected decline in inflation was smaller under monetary targeting than in countries without an explicit nominal anchor (GRA-supported programs in non-transition economies and PRGF-supported programs in transition economies), the actual decline in inflation was greater under monetary targeting. Only two countries in the sample had an inflation-targeting framework in the year the arrangement was approved. These countries sought to maintain inflation at about 5 percent; in the event, inflation turned out to be 6¼ percent per year.

External Adjustment

19. Besides the inflation objective, the exchange rate regime may be important for external adjustment. Flexible exchange rate regimes should allow for more of the adjustment to take place through expenditure switching rather than by demand restraint alone, implying a smaller output cost of a given improvement in the current account balance. To examine this hypothesis, the change in real GDP growth (between years t-1 and t+1) is regressed on the change in the current account balance, where the latter is instrumented by the projected change (Table 6). A given improvement in the current account balance is associated with lower output growth under fixed exchange rate regimes (significantly so for GRA-supported programs in non-transition economies[14]), but the corresponding coefficient under floating regimes is not significantly different from zero. The hypothesis of equality of coefficients under fixed and flexible regimes is strongly rejected, suggesting that, for these countries, more flexible regimes facilitated external adjustment.

20. A second hypothesis regarding the relationship between the exchange rate regime and external adjustment is that countries with pegged regimes are more susceptible to capital account shocks because the exchange rate guarantee implicit in the peg encourages unhedged foreign-currency denominated borrowing by the private sector.[15] Although a number of capital account crises countries had de jure or de facto pegs prior to the crisis and much larger capital outflows than projected at the time the arrangement was approved, this does not hold

[13] The 1994 Conditionality Review (Schadler et al. 1995) drew a similar conclusion.

[14] However, in contrast, for PRGF-supported programs in non-transition economies, the equation does not show any statistically significant correlations.

[15] A common argument is that the de jure or de facto exchange rate pegs in the Asian crisis countries provided an implicit exchange rate guarantee, encouraging unhedged foreign borrowing.

Table 5. Inflation Performance Under Alternative Monetary Regimes 1/ 2/

	Number of countries in year t	Inflation in year t-1	Change in Inflation between t-1 and t+1	
		Actual (Percent)	Programmed (Percentage points)	Actual (Percentage points)
Full sample	41	17.3	-11.3	-7.9
Of which for programs with				
Inflation targeting	2	5.0	-0.3	1.3
Monetary targeting	11	20.6	-14.8	-11.4
No explicit nominal anchor 3/	28	16.9	-10.8	-7.2
GRA-supported non-transition economies	11	8.1	-3.0	-0.7
Of which for programs with				
Inflation targeting	2	5.0	-0.3	1.3
Monetary targeting	3	5.6	-2.4	-2.7
No explicit nominal anchor 3/	6	10.3	-4.2	-0.3
PRGF-supported non-transition economies	19	9.5	-5.2	-3.2
Of which for programs with				
Inflation targeting	0	-	-	-
Monetary targeting	6	13.8	-9.0	-5.2
No explicit nominal anchor 3/	13	7.5	-3.4	-2.2
Transition economies	11	40.0	-30.4	-23.4
GRA-supported transition economies	4	50.1	-39.2	-24.9
Of which for programs with				
Inflation targeting	0	-	-	-
Monetary targeting	1	95.7	-82.6	-61.2
No explicit nominal anchor 3/	3	34.9	-24.7	-12.8
PRGF-supported transition economies	7	34.1	-25.3	-22.5
Of which for programs with				
Inflation targeting	0	-	-	-
Monetary targeting	1	30.8	-19.3	-25.2
No explicit nominal anchor 3/	6	34.7	-26.3	-22.1

Sources: International Monetary Fund, AREAER, MONA, WEO; and IMF staff estimates.
1/ The monetary regime classification is based on the regime prevailing in year of program approval (t). The sample used for this exercise is smaller than in the rest of the paper due to data availability. Only the last arrangement of each country is considered.
2/ Inflation is end of period. To reduce the influence of outliers, the inflation rate was transformed to be mapped into the interval (-100,100) percent.
3/ No explicit nominal anchor was in place, except - in most cases - for a ceiling on net domestic assets (NDA) of the central bank and a floor on net international reserves (NIR) under the Fund-supported program.

Table 6. External Adjustment and Growth Under Alternative Exchange Rate Regimes: Regression Results 1/

Dependent Variable: Change in output growth 2/	All programs	Non-transition GRA-supported		Non-transition PRGF-supported	Transition Economies
		All	Excluding CACs		
			I. Fixed Exchange Rate Regime 3/		
Constant	0.427	0.686	0.423	-1.780	3.732 **
Chg. in terms of trade growth 2/	0.065 *	0.122 *	0.117 *	0.011	0.085
Chg. in current account balance 2/ 4/	-0.686 ***	-0.860 **	-0.879 **	-0.361	-0.181
R^2	0.154	0.307	0.363	0.045	0.035
No. of observations	71	26	24	24	21
			II. Flexible Exchange Rate Regime 3/		
Constant	1.899 **	0.950	1.358	-0.463	4.558 **
Chg. in terms of trade growth 2/	0.086	0.136 *	0.172 **	-0.033	0.267 ***
Chg. in current account balance 2/ 4/	-0.134	0.375	0.507	0.480	-0.490
R^2	0.081	0.299	0.480	0.057	0.406
No. of observations	53	15	11	23	15
t-statistics for equality: 5/					
Constant	1.439 *	0.189	0.576	1.089	0.441
Chg. in current account balance	1.643 *	2.747 ***	2.763 ***	1.201	-0.738

Sources: International Monetary Fund, *WEO* and *MONA* ; and IMF staff estimates.

1/ *: significant at 10%; **: significant at 5%; ***: significant at 1%.

2/ Changes between year t-1 and t+1; the current account balance (net of official transfers) is in percent of GDP at t-1; all regressors except for the constant term were transformed to be mapped into an interval (-100,100) to reduce the influence of outliers.

3/ Exchange rate regimes are classified by AREAER; "fixed regimes" include no separate legal tender, currency board arrangement, other conventional pegs, pegs with horizontal bands, crawling pegs, and crawling bands; "flexible regimes" include managed and independent floats.

4/ Instrumented by programmed change in the current account balance and the change in actual growth of the terms of trade.

5/ t-statistics for the hypothesis of equality of coefficients between fixed and flexible regime.

more generally. In fact, countries with more flexible regimes were more likely subsequently to undergo greater external adjustment than programmed (Table 7).[16]

C. Summary

21. Empirically, countries are no more likely to alter their exchange rate regime at the outset of a Fund-supported program than otherwise. Successful disinflations have been undertaken both under pegged and under flexible exchange rate regimes, suggesting that the

[16] In *Fund-Supported Programs: Objectives and Outcomes* two metrics were employed to assess external adjustment: the comparison with the projected current account balance, and the comparison with the debt-stabilizing balance (when the initial level of external debt is below 40 percent of GDP). There is no statistically significant difference between (subsequent) external adjustment under pegged and flexible regimes using the latter criterion.

consistency of macroeconomic policies, and the fiscal adjustment achieved, may be of greater importance than the choice of the nominal anchor. At the same time, some nominal anchor seems needed for disinflation. The exchange rate regime also has implications for external adjustment—in some cases, countries with more flexible regimes achieved a given improvement in the current account at a lower output cost.

Table 7. Exchange Rate Regime and External Adjustment 1/

	Year t-1			Year t		
	Pegged 2/	Flexible 2/		Pegged 2/	Flexible 2/	
GRA-supported non-transition economies	25	18		26	17	
Of which proportion with current account balance (in percent) :						
above programmed current account balance	*32.0*	*77.8*	**	*34.6*	*76.5*	**
above debt-stabilizing balance and initial debt below 40 % of GDP	*24.0*	*5.6*		*19.2*	*11.8*	
GRA-supported transition economies	17	13		23	7	
Of which proportion with current account balance (in percent) :						
above programmed current account balance	*5.9*	*30.8*		*13.0*	*28.6*	
above debt-stabilizing balance and initial debt below 40 % of GDP	*35.3*	*15.4*		*26.1*	*28.6*	

Sources: International Monetary Fund, *AREAER* , *MONA* , *WEO* ; and IMF staff estimates.

1/ The difference in proportions under pegged and flexible regimes is tested. Significant at the: 1% (***); 5% (**); and 10% (*) level.

2/ Exchange rate regimes as classified by IMF *AREAER* ; "pegged regimes" include exchange arrangements with no separate legal tender, currency boards, other conventional pegs, pegs with horizontal bands, crawling pegs, and crawling bands; "flexible regimes" include managed and independent floats.

III. MONETARY POLICY

22. Beyond the exchange rate (and, under flexible exchange rates, the monetary) regime, the authorities must also specify the monetary stance under their Fund-supported economic programs. This Chapter therefore discusses the monetary stance in terms of the behavior of broad money. Since the monetary authorities typically control (or have influence over) narrow aggregates, a first question concerns the mapping between narrow and broad money—that is, behavior of the money multiplier. It turns out that this relationship is generally stable and well-predicted in programs, making it appropriate to consider the monetary stance in terms of broad money aggregates (Box 3). Section A therefore considers broad money growth rates and velocity targeted in Fund-supported programs and their relationship to program objectives. Section B examines the impact of monetary policy on inflation and growth. In particular, does a tighter monetary stance contribute to lower inflation? Do overruns of broad money growth account for cases where program inflation targets were missed; and does the composition of this overrun (between net domestic assets and net foreign assets) matter for inflation performance? Was the monetary stance associated with lower output growth?

Box 3: Relationship between Program and Actual Money Multiplier

The text discusses the programmed monetary stance—and its impact on key macroeconomic targets—in terms of the behavior of broad money (and the velocity of broad money). Since national authorities typically control (or have more direct influence over) narrower monetary aggregates, this raises questions about the stability of the money multiplier, and whether errors in projecting the money multiplier are an important source of program slippages.

The Table below seeks to examine the behavior of money multiplier—defined as the ratio of broad money to reserve money—in Fund-supported programs that were arranged during 1995-2000. The actual money multiplier has remained remarkably stable around its historical average across all types of programs (top panel): the null hypothesis of a constant multiplier cannot be rejected by the data. In addition, according to the regression results (bottom panel), program multiplier appears to be a good predictor of the actual multiplier (none of the reported *F*-statistics are statistically significant), accounting for more than 80 percent of cross-country variation. As such, the link between narrow and broad money aggregates is relatively stable and predictable.

Table. Money Multiplier: Program versus Actual 1/

1. Actual money multiplier (mm^A)	average(t-5:t-1)	year t-1	year t	year t+1	H_0: constant multiplier 2/
Non-transition GRA-supported	6.22	6.33	6.43	6.29	0.01
Non-transition PRGF-supported	2.41	2.49	2.49	2.54	0.20
Transition economies	2.37	2.39	2.37	2.37	0.03
2. Regression results: $mm^A = b_0 + b_1 * mm^P$ 3/	**b_0**	**b_1**	**R^2**		**H_0: $b_0 = 0$ and $b_1 = 1$ 2/**
year t					
GRA-supported	-0.133	0.994 ***	0.894		1.145
PRGF-supported	0.412	0.801 ***	0.811		2.538
Transition economies	-0.161	1.048 ***	0.847		2.101
pooled (year t and t+1)					
GRA-supported	0.038	0.932 ***	0.838		1.391
PRGF-supported	0.291	0.891 ***	0.808		0.870
Transition economies	-0.083	1.029 ***	0.844		0.098

Source: International Monetary Fund WEO, IFS and MONA database; and staff estimates.

1/ Money multiplier is defined as the ratio of broad money to reserve money; year t refers to the year of program approval; significant at: * 10%, ** 5%, *** 1%.

2/ F-statistics are reported.

3/ mm^A and mm^P refer to actual and program multiplier, respectively. Due to limited data availability, the sample of GRA- and PRGF-supported programs includes both transition and non-transition country programs.

A. Programmed Monetary Stance

23. Across various Fund-supported programs, broad money growth rates are targeted to decline, as are inflation rates (Table 8). The higher the initial inflation rate and rate of monetary expansion, the greater the targeted deceleration. For countries whose initial inflation was below 20 percent per year, the targeted deceleration was modest—from

Table 8. Programmed Money Growth, Velocity and Inflation
(in percent)

	Broad money growth 1/			Velocity growth 2/			Inflation 1/		
	t-1	t	t+1	t-1	t	t+1	t-1	t	t+1
1. Full sample	19.5	14.5	11.3	6.4	5.3	0.4	17.2	12.2	6.1
inflation at t-1 < 20%	12.0	10.3	10.7	5.0	-0.7	-0.5	6.9	6.4	4.5
20% < inflation at t-1 < 50%	19.7	16.7	13.0	2.3	6.0	4.4	23.9	16.5	8.8
inflation at t-1 > 50%	52.6	30.8	12.7	18.6	31.7	-0.3	55.8	33.9	10.3
2. GRA-supported	22.6	16.9	11.8	11.3	9.2	1.1	20.9	15.9	7.0
non-transition	12.4	11.0	10.7	14.1	3.5	2.0	10.2	9.7	5.5
transition	36.9	25.0	16.3	7.3	16.9	-2.2	36.0	24.8	9.5
inflation at t-1 < 20%	12.5	10.9	11.3	10.9	-1.2	0.4	6.8	7.6	4.9
20% < inflation at t-1 < 50%	18.2	17.3	14.4	3.2	6.5	6.6	23.4	18.7	10.1
inflation at t-1 > 50%	54.7	33.0	11.1	21.2	42.1	-2.5	58.2	38.2	10.7
3. PRGF-supported	15.4	11.6	10.8	-0.1	0.2	-0.2	12.3	7.2	4.9
non-transition	12.7	10.3	10.0	-0.2	0.3	0.0	9.2	5.8	4.3
transition	31.6	18.8	16.0	0.4	0.1	-1.6	31.1	15.4	8.7
inflation at t-1 < 20%	11.4	9.7	10.2	-0.8	-0.2	-1.1	7.0	5.2	4.2
20% < inflation at t-1 < 50%	22.1	15.7	11.9	0.9	5.1	2.6	24.7	13.0	6.8
inflation at t-1 > 50%	44.7	22.6	15.8	6.8	-4.7	3.9	46.7	17.9	9.1

Sources: International Monetary Fund, *WEO* and *MONA*; and IMF staff estimates.
1/ Money growth and inflation are end-period figures and transformed to be mapped into (-100,100).
2/ For non-transition economies, programmed velocity growth for year t and t+1 is relative to trend velocity growth as measured by the five-year historical average; velocity is defined as nominal GDP divided by (period-average) stock of broad money.

12 percent in the year prior to program approval to 10 percent in the year following program approval. For countries whose initial inflation exceeds 50 percent per year, the deceleration is more marked, declining to annual rates of 13 percent in the year following program approval.[17]

24. Nominal money growth provides one gauge of the intended monetary stance, but it does take account of the increase in money demand associated with either real growth or inflation projected under the program.[18] A simple metric is the expected change in money velocity—with an increase relative to the historical trend indicating that a tighter monetary stance was envisaged (though a decrease need not indicate a monetary loosening if inflation is expected to decline).[19] By this metric, programs in high inflation countries sought significant monetary tightening, especially in the GRA sample (Table 8).

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[17] To reduce the influence of high-inflation outliers, all figures are transformed to map into the interval (-100, 100) percent prior to taking averages.

[18] An alternative gauge of monetary policy is given by the behavior of interest rates. Problems of availability and comparability of data however make it less useful in cross-country comparisons.

[19] Define a benchmark growth in broad money $\Delta\bar{m}$ as the growth rate implied by program expectations of inflation and real GDP growth and the expected behavior of velocity: $\Delta\bar{m} = \pi^p + \Delta y^p - \Delta\hat{v}$. One way to capture the expected behavior of velocity is to use the country's trend velocity growth: $\Delta\hat{v} = \Delta\bar{v}$. Similarly, the programmed increase in broad money growth can be written $\Delta m^p = \pi^p + \Delta y^p - \Delta v^p$. Subtracting, yields: $\Delta m^p - \Delta\bar{m} = \Delta\bar{v} - \Delta v^p$ so that $\Delta v^p > \Delta\bar{v}$ implies that broad money growth envisaged under the program is lower than would be implied by trend velocity (and program expectations of inflation and growth). As such, it can be interpreted as a programmed tightening of the monetary stance. One possibility, however, is that velocity itself depends upon expected inflation. In that case, the appropriate benchmark is not the trend change in velocity but the expected change in velocity, $\Delta\hat{v}$, taking account of possible remonetization. Although it is difficult to establish how much remonetization should occur, since programs typically target disinflation, this should at least imply $\Delta\hat{v} \leq \Delta\bar{v}$. Therefore, if programmed velocity is *higher* than the historical trend, then this necessarily implies a tighter programmed monetary stance: $\Delta v^p > \Delta\bar{v} \Rightarrow \Delta v^p > \Delta\hat{v} \Leftrightarrow \Delta m^p < \Delta\bar{m}$. (To the extent that velocity rises relative to trend in the year prior to approval of the arrangement, however, this measure may overstate the degree of tightening.) On the other hand, if programmed velocity is *lower* than the historical trend, then this needs not indicate a monetary loosening since it is possible that $\Delta v^p < \Delta\bar{v}$ but $\Delta v^p > \Delta\hat{v}$.

25. To examine more systematically the determinants of the programmed monetary stance (as captured by program velocity), Table 9 reports the results of a regression of the programmed change in broad money velocity. Higher initial inflation and a larger targeted improvement in the current account balance should call for a tighter monetary stance (an increase in programmed velocity), while a larger output gap, a flexible exchange rate, or a higher expected rate of remonetization of the economy (proxied by the targeted decline in inflation) would, ceteris paribus, argue for a looser stance. For GRA-supported programs, all variables have the expected signs and are statistically significant. Overall, the regression explains some 60 percent of the variation in velocity in GRA-supported non-transition programs. Among PRGF-supported programs and programs in transition economies, the most important determinants are the lagged inflation rate and the expected inflation decline, while the exchange rate regime is not statistically significant; nonetheless, the regression explains some 50 percent of the variation in transition economies but only about 35 percent of the variation in PRGF-supported programs.

B. Experience

Inflation

26. Fund-supported programs generally succeed in reducing inflation—though by not as much as targeted. Slippages in the year of program approval were generally modest, about 1½ percent per year across GRA-supported programs and ½ percent per year in PRGF-supported programs, though as much as 5 percent per year for countries whose starting inflation rates were between 20 and 50 percent per year. In addition, for the following year, inflation was, on average, higher than programmed by about 4½ percent per year in GRA-supported programs and 2½ percent per year in PRGF-supported programs (Table 10). The decline in inflation was driven in part by lower money growth rates. Moreover, a given growth rate of the money supply in the context of a Fund-supported program is associated with lower inflation, possibly because greater credibility in the authorities' policies engenders confidence in the currency and thus raises money demand (Box 4). In GRA-supported programs, this effect is both economically and statistically significant—ceteris paribus, inflation is 10 percentage points lower (in the year following program approval) under a Fund-supported program than it would be under similar money growth rates but without a program. The effect is weaker and not statistically significant among PRGF-supported countries.

27. While lower money growth contributed to the disinflation achieved, money growth tended to be higher than programmed—by about 4 percent in the year of program approval and 6 percent the following year in GRA-supported countries, and 1.6 percent and 0.4 percent respectively in PRGF-supported countries. Again, among countries starting with high inflation rates, the slippages are considerably greater—as much as 25 percent in the year following program approval in GRA-supported countries (Table 10). Table 11 seeks to explain some of the factors behind the slippage in broad money growth. In part, higher broad money growth reflects the effect of depreciation of the nominal exchange rate on foreign

Table 9. Programmed Monetary Stance: Regression Results 1/

Dependent variable: Monetary stance 2/			
Regressor 3/	Non-transition GRA-supported	Non-transition PRGF-supported	Transition economies
Initial inflation	0.937 ***	1.011 ***	1.207 ***
Initial output gap 4/	-1.102 ***	0.428	-1.693 ***
Programmed change in current account balance	0.763 *	0.731 *	1.264
Programmed change in inflation	0.545 ***	1.802 ***	1.361 **
Flexible exch. regime	-2.142 ***	0.352	-1.219
Constant	2.245	-3.969	-13.619
R^2	0.609	0.340	0.522
No. of observation	38	43	36

Sources: International Monetary Fund, *WEO* and *MONA* ; and IMF staff estimates.

1/ Significant at: *** 1 percent, ** 5 percent, * 10 percent.

2/ Monetary stance is measured as programmed velocity growth in year t relative to trend velocity growth (as measured by the five-year historical average).

3/ The current account balance (net of official transfers) is in percent of GDP; inflation was transformed to be mapped into an interval (-100,100) to reduce the influence of outliers.

4/ Output gap is defined as a percentage deviation of real GDP from its Hodrick-Prescott filtered trend; positive value implies current output below trend.

Table 10. Programmed and Actual Inflation, Money Growth, and NDA Contribution

	Actual Inflation 2/		Projection Error 1/					
			Inflation		Broad money growth		NDA contribution 3/	
	t	t+1	t	t+1	t	t+1	t	t+1
1. Full sample	13.3	9.4	1.1	3.6	2.9	2.9	22.3	7.5
inflation at t-1 < 20%	6.47	5.57	2.1	-0.2	6.4	4.5	29.5	4.6
20% < inflation at t-1 < 50%	22.1	18.7	5.5	10.5	4.6	13.1	2.0	14.8
inflation at t-1 > 50%	34.9	17.5	1.0	6.8	5.4	9.4	-32.7	29.0
2. GRA-supported	17.6	11.1	1.6	4.5	4.0	5.8	24.5	9.9
non-transition	11.0	8.5	1.3	3.6	3.4	3.4	33.6	12.1
transition	27.2	14.8	2.1	5.9	4.8	14.8	2.1	-6.4
inflation at t-1 < 20%	7.3	5.3	-0.3	0.9	3.3	1.0	35.8	12.8
20% < inflation at t-1 < 50%	24.4	22.4	5.7	12.3	4.1	24.8	4.8	-21.0
inflation at t-1 > 50%	41.9	19.0	3.7	8.0	6.3	11.3	-32.7	31.4
3. PRGF-supported	7.7	7.2	0.5	2.7	1.6	0.4	19.7	5.6
non-transition	7.6	6.8	1.8	2.7	1.1	1.7	17.2	8.8
transition	8.2	9.8	-7.3	2.8	4.5	-7.4	36.3	-8.1
inflation at t-1 < 20%	5.7	5.8	0.5	1.8	0.9	-1.0	22.8	-2.5
20% < inflation at t-1 < 50%	18.3	12.6	5.2	7.5	5.3	5.4	-1.5	32.7
inflation at t-1 > 50%	8.8	12.1	-9.1	3.1	1.9	5.6	…	26.5

Sources: International Monetary Fund, *WEO* and *MONA* ; and IMF staff estimates.

1/ Projection errors are calculated as actual minus program values after transformation.

2/ Transformed to be mapped into (-100,100).

3/ NDA contribution is defined as $\Delta NDA/\Delta M$ where Δ indicates level difference.

Box 4: Does Fund Support Engender Confidence in Disinflation Efforts?

Beyond the effects of slower money growth on inflation, if Fund support enhances the credibility of the authorities' policies then this should be reflected in greater confidence in the currency and higher money demand. Higher money demand, in turn, should result in lower inflation for a *given* growth rate of money. To test this hypothesis, it is useful to consider a standard money demand function:

$$m - p = \alpha y - v \tag{1}$$

where m is broad money, p the consumer price index, y real GDP, and v is (residual) velocity. Inverting and taking first differences yields:

$$\pi = \Delta m - \alpha \Delta y + \Delta v \tag{2}$$

where the behavior of velocity is assumed to reflect the additional confidence that Fund support might impart.

Equation (2) is estimated for both low- and middle-income countries that had a Fund-supported program at some point during the period 1990-2000 and whose inflation is above 10 percent per year.

The results in the Table for upper- and lower-middle income countries suggest that, while Fund support has little immediate effect on confidence and inflation (in part because inflation in the current year may be largely determined), it has an economically and statistically significant impact by the following year; ceteris paribus, lowering inflation by as much as 10 percentage points.

The confidence effects of Fund support in low-income countries are much weaker (ceteris paribus, lowering inflation by 3 percentage points) and not statistically significant. Although broad money growth is highly significant in both regressions, the residual standard error is 15 percent per year in the low-income country regression compared to 7 percent per year in the middle-income country regression.

Table. Inflation and Money Growth under Fund-supported Programs: Regression Results 1/

Dependent variable: π 2/	Regressor 2/					R^2	nobs
	Const	*prog*	*prog* $_{-1}$	Δm	Δy		
middle-income countries	0.07 *	-0.02	-0.10 ***	1.00 ***	-1.25 ***	0.63	222
low-income countries	0.09 *	-0.02	-0.03	0.91 ***	-1.27 ***	0.71	205

Source: Staff estimates.
1/ ***: significant at 1%; **: significant at 5%; *: significant at 10%.
2/ π, Δm and Δy represent inflation, broad money growth and real GDP growth, respectively; *prog* is a dummy variable indicating a Fund-supported program; Δm and Δy are instrumented with their own lags; annual dummies are also included in the regression (not reported).

Table 11. Determinants of Broad Money Growth: Regression Results 1/

Dependent Variable: Δm^{ER} 2/	Regressor 2/					R^2	nobs
	Constant	Δexr^{ER}	$\Delta fbal^{ER}$	Δy^{ER}	$\Delta \pi^{P}$		
1. All programs							
year t	2.729 ***	0.152	-0.315	0.198	0.037	0.032	117
year t+1	-1.554	0.345 ***	0.274	0.341	-0.929 ***	0.501	65
year t and t+1 (pooled)	2.020 **	0.301 ***	-0.032	0.357	-0.076	0.096	182
fixed 3/	1.824	-0.087	-0.402	0.258	-0.034	0.026	98
flexible 3/	2.466 *	0.421 ***	0.596	0.470	-0.042	0.260	84
2. Non-transition GRA-supported 4/							
year t	2.344	-0.145	-0.277	0.169	-0.401	0.089	33
year t+1	0.240	0.013	-1.360 **	0.766 *	-0.708 ***	0.603	22
year t and t+1 (pooled)	1.662	-0.147	-0.809 *	0.440	-0.597 ***	0.261	55
fixed 3/	1.620	-0.489 ***	-1.144 **	0.111	-0.704 ***	0.503	36
flexible 3/	1.129	0.263 *	0.713	0.713	0.094	0.277	19
3. Non-transition PRGF-supported							
year t	-0.295	0.829 ***	-1.099 **	0.182	-0.159	0.246	45
year t+1	-4.274 ***	0.537 ***	0.333	0.244	-2.346 ***	0.514	31
year t and t+1 (pooled)	-1.046	0.685 ***	-0.520	0.458	-0.300	0.214	76
fixed 3/	-2.725	0.589 **	-0.569	0.501	-0.216	0.152	37
flexible 3/	0.799	0.696 ***	-0.358	0.166	-0.257	0.252	39
4. Transition economies							
year t	5.109 **	0.769 *	-0.399	0.899	0.084	0.152	33
year t+1	-6.384	0.401	2.141	0.730	-0.935	0.715	11
year t and t+1 (pooled)	2.992	0.580 ***	0.455	0.209	0.020	0.261	44
fixed 3/	3.635	0.366	0.169	0.321	0.078	0.055	23
flexible 3/	2.825	0.524 *	0.996	-0.181	-0.096	0.378	21

Sources: International Monetary Fund, *WEO* and *MONA*; and IMF staff estimates.

1/ ***: significant at 1%; **: significant at 5%; *: significant at 10%.

2/ Δm^{ER}, Δy^{ER}, Δexr^{ER} and $\Delta fbal^{ER}$ represent projection error in broad money growth, real GDP growth, percentage change in the nominal exchange rate (national currency per US dollar) and fiscal balance in percent of GDP, respectively; $\Delta \pi^{P}$ refers to programmed change in inflation; projection errors are calculated as actual minus program values after transformation that maps underlying variables into an interval (-100,100).

3/ Exchange rate regimes are classified by AREAR; "fixed regimes" include no separate legal tender, currency board arrangement, other conventional pegs, pegs with horizontal bands, crawling pegs, and crawling bands; "flexible regimes" include managed and independent floats.

4/ Excludes capital account crisis programs.

currency deposits—the only variable statistically significant for the sample of transition economies. Beyond this effect, among non-transition economies, fiscal slippages are correlated with money growth slippages, while the performance of output growth appears to have little explanatory power (except for GRA-supported programs in year t+1). Finally, a larger programmed decline in inflation is associated with larger money growth slippages, presumably reflecting the difficulty of achieving ambitious disinflations. Overall, the regressions have greater difficulty in explaining slippages during the first program year, accounting for only 9 to 25 percent of the variation, but somewhat greater success in accounting for slippages in the subsequent year.

28. In turn, Figure 3 correlates the slippage in broad money growth to the higher-than-programmed inflation rates. The relationship is statistically significant and—for the sub-sample in which money growth was higher than programmed—accounts for 30-60 percent of the variation of inflation projection error. The inflationary impact of monetary overruns naturally depend on whether there was a concomitant increase in money demand. A common hypothesis, in this regard, is that monetary expansions that reflect higher net foreign assets correspond to capital inflows responding to higher money demand, and should thus have a smaller inflationary impact; conversely, monetary overruns that reflect larger NDA growth than programmed should have a larger inflationary impact. Empirically, however, the source of the monetary overrun makes no difference to the inflationary impact (Table 12). This underscores the finding above that a NDA/NIR framework is not well suited to controlling inflation, which generally requires a more explicit nominal anchor. It also underscores the need to sterilize capital inflows or large donor support if the inflation target is to be achieved.[20]

Output Growth

29. While controlling inflation is usually the primary goal of monetary policy in Fund-supported programs, the monetary stance may also affect other macroeconomic variables—for instance, output growth. One concern is that tight monetary policies in Fund-supported programs may have deleterious effects on activity and output growth. In fact, the empirical evidence does not support the hypothesis that monetary policy has been tightened excessively in Fund-supported programs leading to lower output growth.[21] Table 13 (top panel) reports the results of a regression of output growth on the monetary stance, where the latter is instrumented by its programmed value.[22] Only for the transition economies sample is the coefficient significant, and even in this case, the effect is numerically small: a 1 percentage point increase in velocity growth is associated with less than one-tenth of a percentage point decline in the output growth rate. Moreover, an unexpectedly tight monetary stance cannot explain growth projection errors.

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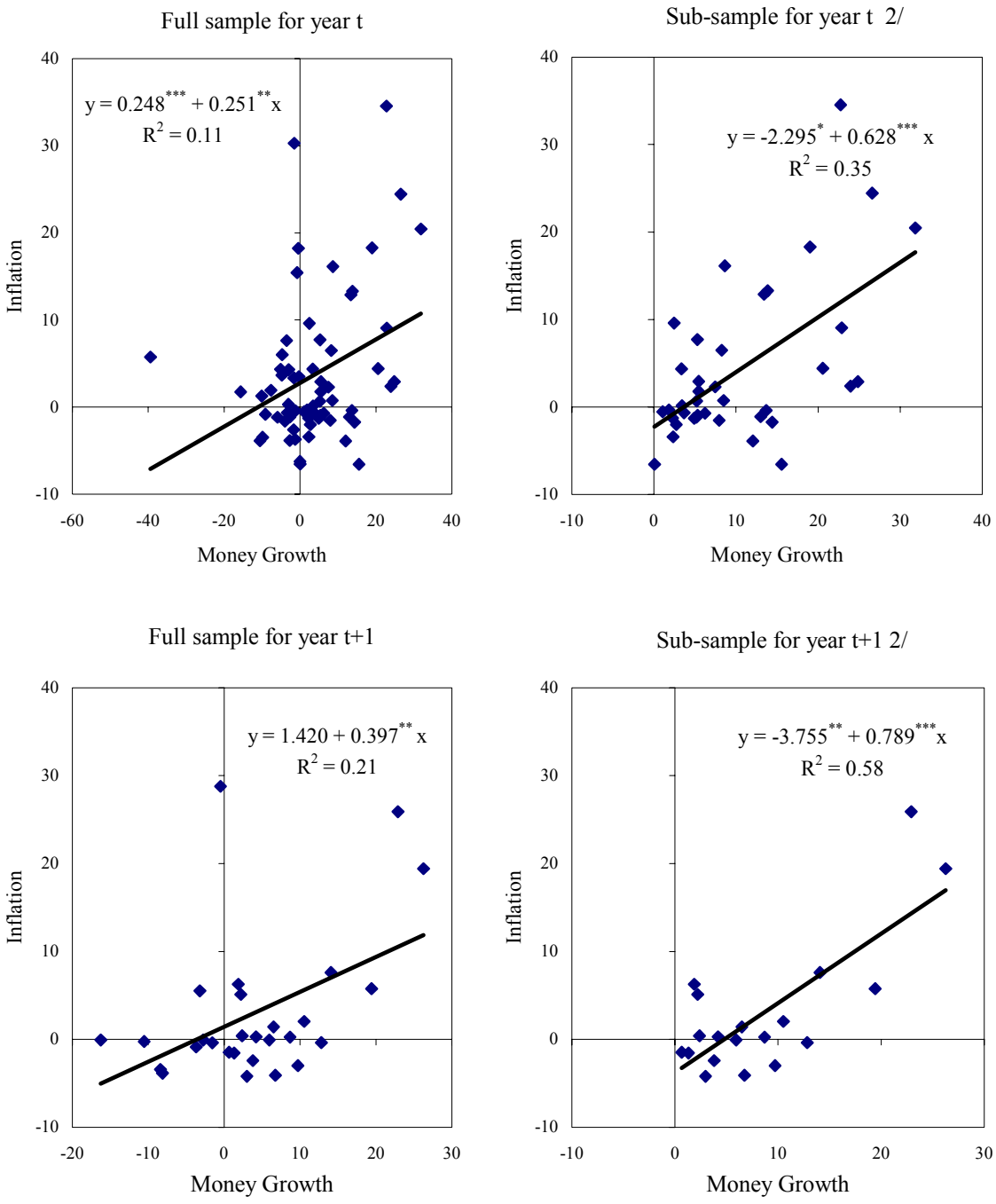
[20] The appropriate response to large donor inflows will be examined in the forthcoming review of PRGF-supported programs.

[21] The IEO came to a similar conclusion based on a smaller sample of PRGF-supported programs.

[22] For this exercise, the monetary policy stance is measured by velocity (with an increase indicating a tighter stance), instrumented by the programmed velocity. These regressions also include the overall fiscal balance (instrumented by its program projection) to control for possible omitted variable bias. The role of fiscal policy is discussed in Section IV, below.

Figure 3. Projection Error in Inflation and Money Growth 1/

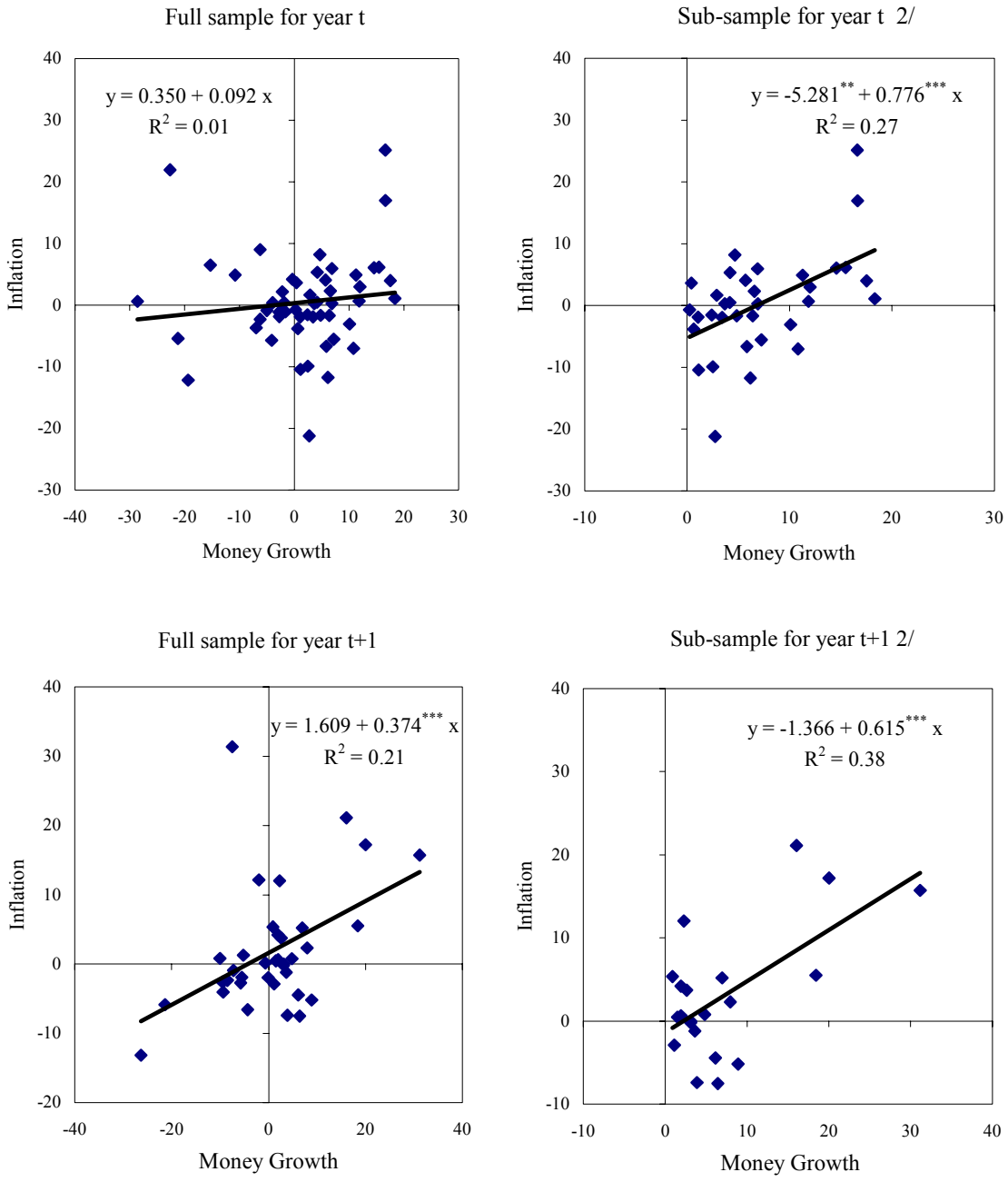
GRA-supported Programs



Source: International Monetary Fund, MONA, WEO, and staff estimates.
1/ *: significant at 10%; **: significant at 5%; ***: significant at 1%.
2/ Sub-sample inlcudes observations with positive projection error in money growth only.

Figure 3. Projection Error in Inflation and Money Growth (continued) 1/

PRGF-supported Programs



Source: International Monetary Fund, MONA, WEO, and staff estimates.
1/ *: significant at 10%; **: significant at 5%; ***: significant at 1%.
2/ Sub-sample inlcudes observations with positive projection error in money growth only.

Table 12. Projection Errors in Inflation and Money Growth: Regression Results 1/

Dependent Variable: INF^{ER} 2/	Regressor 2/							R^2	No. obs
	Constant	MG^{ER}	D50	D90	D50*MG^{ER}	D90*MG^{ER}	NDAMG		
A. Regression with no dummy									
1. Full sample									
GRA-supported									
year t	2.106 *	0.228 **	-	-	-	-	-	0.153	62
year t+1	0.121	0.335 **	-	-	-	-	-	0.406	28
year t and t+1 (pooled)	1.481	0.253 ***	-	-	-	-	-	0.219	90
fixed 3/	0.958	0.167 *	-	-	-	-	-	0.185	59
flexible 3/	1.851	0.383 ***	-	-	-	-	-	0.316	31
PRGF-supported									
year t	0.205	0.065	-	-	-	-	-	0.074	53
year t+1	-0.708	0.295 ***	-	-	-	-	-	0.459	36
year t and t+1 (pooled)	-0.068	0.164 **	-	-	-	-	-	0.223	89
fixed 3/	1.662 *	-0.097	-	-	-	-	-	0.462	36
flexible 3/	-2.191 *	0.400 ***	-	-	-	-	-	0.322	53
2. Sub-sample: MG^{ER} > 0 only									
GRA-supported									
year t	-2.644 *	0.604 ***	-	-	-	-	-	0.360	37
year t+1	-3.464 **	0.685 ***	-	-	-	-	-	0.641	19
year t and t+1 (pooled)	-2.931 **	0.625 ***	-	-	-	-	-	0.437	56
fixed 3/	-2.450 *	0.504 ***	-	-	-	-	-	0.418	39
flexible 3/	-3.121	0.732 ***	-	-	-	-	-	0.441	17
PRGF-supported									
year t	-6.221 ***	0.844 ***	-	-	-	-	-	0.338	34
year t+1	-6.663 ***	1.153 ***	-	-	-	-	-	0.871	20
year t and t+1 (pooled)	-7.151 ***	1.073 ***	-	-	-	-	-	0.707	54
fixed 3/	-2.664 *	0.573 ***	-	-	-	-	-	0.685	22
flexible 3/	-8.627 ***	1.238 ***	-	-	-	-	-	0.763	32
B. Regression including NDA dummy									
1. D50 (ΔNDA/ΔM > 50%)									
year t	0.212	0.168 *	0.056	-	0.065	-	-	0.205	64
year t+1	0.560	0.364 ***	-2.212	-	-0.061	-	-	0.474	38
year t and t+1 (pooled)	0.398	0.236 **	-0.666	-	0.037	-	-	0.314	102
fixed 3/	0.127	0.169 *	-0.850	-	-0.074	-	-	0.485	54
flexible 3/	0.189	0.295 *	-0.729	-	0.145	-	-	0.283	48
2. D90 (ΔNDA/ΔM > 90%)									
year t	0.824	0.261 *	-	-1.136	-	-0.194	-	0.234	64
year t+1	0.343	0.298 **	-	-1.969	-	0.099	-	0.468	38
year t and t+1 (pooled)	0.617	0.268 ***	-	-1.548	-	-0.025	-	0.323	102
fixed 3/	-0.043	0.101	-	-1.110	-	0.161	-	0.490	54
flexible 3/	0.460	0.464 ***	-	-1.806	-	-0.211	-	0.310	48
C. Regression including NDA contribution to money growth									
year t	0.245	0.203 *	-	-	-	-	0.003	0.203	64
year t+1	-0.151	0.355 ***	-	-	-	-	-0.018	0.459	38
year t and t+1 (pooled)	0.098	0.260 ***	-	-	-	-	-0.006	0.313	102
fixed 3/	-0.150	0.164 **	-	-	-	-	-0.054	0.501	54
flexible 3/	-0.210	0.371 ***	-	-	-	-	0.001	0.276	48

Sources: International Monetary Fund, *WEO* and *MONA*; and IMF staff estimates.

1/ Projection error in fiscal balance (in percent of GDP) was added to all regressions as a control; significant at: * 10%, ** 5%, *** 1%.

2/ INF^{ER}, MG^{ER} and $fbal^{ER}$ refer to projection error in inflation (end-period), broad money growth and fiscal balance (in percent of GDP), respectively; D50 and D90 are dummy variables that equal 1 if ΔNDA/ΔM > 50% and ΔNDA/ΔM > 90% respectively, and 0 otherwise; NDAMG represents the contribution of NDA to broad money growth.

3/ Exchange rate regimes are classified by AREAR; "fixed regimes" include no separate legal tender, currency board arrangement, other conventional pegs, pegs with horizontal bands, crawling pegs, and crawling bands; "flexible regimes" include managed and independent floats.

Table 13. Monetary Stance, Growth and External Adjustment: Regression Results 1/

	Regressor 2/					R^2	no. obs.
	Constant	Δv 3/	Δv_{-1}	Δy_{-1}	ΔCA_{-1}		
				I. Dependent variable: Δy 2/			
A. Contenporaneous effect:							
Non-transition GRA-supported							
year t	2.048	0.047	-	0.138	-	0.056	38
year t+1	1.268	0.135	-	0.263	-	0.167	22
year t and t+1 (pooled)	2.300 ***	-0.111	-	0.077	-	0.072	60
fixed 4/	3.209 ***	-0.093	-	0.315 *	-	0.217	38
flexible 4/	0.848	-0.238	-	-0.417	-	0.186	22
Non-transition PRGF-supported							
year t	0.806	-0.040	-	-0.125	-	0.065	45
year t+1	1.976	-0.120	-	0.500	-	0.252	31
year t and t+1 (pooled)	2.560 ***	0.024	-	0.313 ***	-	0.130	76
fixed 4/	2.784 **	-0.021	-	0.224	-	0.084	37
flexible 4/	2.175 **	0.091	-	0.379 ***	-	0.223	39
Transition economies							
year t	0.425	0.067 **	-	-0.189	-	0.254	35
year t+1	0.642	0.002	-	-0.302	-	0.240	11
year t and t+1 (pooled)	1.765 *	-0.037	-	0.498 ***	-	0.337	46
fixed 4/	-0.031	-0.069 **	-	0.431 ***	-	0.508	24
flexible 4/	4.016 **	0.012	-	0.488 **	-	0.263	22
B. Lagged effect:							
Non-transition GRA-supported							
year t+1	2.326 *	-	-0.029	0.161	-	0.039	38
Non-transition PRGF-supported							
year t+1	1.021	-	0.036	0.455 **	-	0.182	46
Transition economies							
year t+1	3.500 ***	-	0.048 ***	0.651 ***	-	0.619	30
				II. Dependent variable: ΔCA 2/			
A. Contenporaneous effect:							
Non-transition GRA-supported							
year t	2.425	0.036	-	-	-0.125	0.057	38
year t+1	1.496	0.080	-	-	-0.340 *	0.249	22
year t and t+1 (pooled)	2.251 ***	0.041	-	-	-0.251 *	0.154	60
fixed 4/	0.046	0.146 **	-	-	-0.385 ***	0.254	38
flexible 4/	5.024 ***	-0.002	-	-	-0.023	0.295	22
Non-transition PRGF-supported							
year t	0.505	-0.041	-	-	-0.209 *	0.101	45
year t+1	3.582	-0.107	-	-	-0.369 *	0.207	31
year t and t+1 (pooled)	1.209 *	-0.059	-	-	-0.281 **	0.114	76
fixed 4/	1.941 *	-0.115	-	-	-0.432 *	0.221	37
flexible 4/	-0.180	0.035	-	-	-0.229	0.079	39
Transition economies							
year t	0.991	0.065 ***	-	-	-0.221 *	0.282	35
year t+1	0.241	-0.002	-	-	-0.928 ***	0.705	11
year t and t+1 (pooled)	1.084	0.052 **	-	-	-0.357 ***	0.339	46
fixed 4/	0.642	0.033	-	-	-0.304 **	0.551	24
flexible 4/	1.676	0.075	-	-	-0.387 *	0.297	22
B. Lagged effect:							
Non-transition GRA-supported							
year t+1	1.198	-	-0.005	-	-0.344 ***	0.233	38
Non-transition PRGF-supported							
year t+1	2.805	-	-0.004	-	-0.431 *	0.162	46
Transition economies							
year t+1	0.102	-	0.034	-	-0.502 *	0.186	30

Sources: International Monetary Fund, *WEO* and *MONA*; and IMF staff estimates.

1/ All regressions include as a control the change in fiscal balance (instrumented by programmed change); significant at: * 10%, ** 5%, *** 1%.

2/ Δv, Δy and ΔCA represent velocity growth relative to trend velocity growth (as measured by the five-year historical average prior to year t), real GDP growth, and change in the current account balance (net of official transfers) in percent of GDP at t-1, respectively; all underlying variables are transformed to be mapped into an interval (-100,100) prior to taking differences; velocity is defined as nominal GDP divided by (period-average) stock of broad money with an increase, ceteris paribus, indicating a tighter monetary stance.

3/ Velocity growth (Δv) was instrumented by its own lag and programmed velocity growth (relative to trend velocity growth).

4/ Exchange rate regimes are classified by AREAR; "fixed regimes" include no separate legal tender, currency board arrangement, other conventional pegs, pegs with horizontal bands, crawling pegs, and crawling bands; "flexible regimes" include managed and independent floats.

External Adjustment

30. A further reason for monetary restraint in Fund-supported programs is to promote external adjustment.[23] Table 13 (bottom panel) examines the impact of a tighter monetary stance on external adjustment. The results are broadly similar to those for output growth. Except for the transition economies sample, almost no coefficient is statistically significant —suggesting a limited role for monetary policy in targeting current account adjustment.

C. Summary

31. Fund-supported programs normally target and achieve a deceleration of broad money growth and a tightening of the monetary stance. Stabilization efforts undertaken in the context of Fund-supported programs appear to enjoy greater credibility such that, in GRA-supported programs, inflation is lower for a given rate of money growth; a similar impact in PRGF-supported programs was not found. Overruns in broad money growth—whether reflecting unanticipated NDA or NFA expansion—are associated with slippages in inflation performance relative to program targets. The high correlation between monetary aggregates and inflation reaffirms the importance of nominal anchors for controlling inflation.

32. Monetary policy appears to have played a limited role in regard to external adjustment and real activity. This suggests that, in terms of instrument assignment, monetary policy should be geared mainly toward inflation control, while fiscal and exchange rate policies take center stage in achieving the necessary external adjustment.

IV. Fiscal Policy

33. Fiscal adjustment often forms a key element of Fund-supported programs for a variety of reasons, including the need to foster orderly external adjustment, to underpin disinflation and macroeconomic stabilization, to put public debt dynamics on a more sustainable footing, or to raise economic efficiency. This Chapter takes up the role of fiscal adjustment in Fund-supported programs. Section A examines the fiscal adjustment envisaged in Fund-supported programs and its relation to program objectives. Section B turns to experience, reviewing first the record on adjustment and the reasons for slippages and then considering the implications for public debt dynamics, external adjustment, and growth.

34. While the focus here is on aggregate fiscal adjustment, the role of fiscal policy in Fund-supported programs typically goes much beyond fiscal consolidation. Indeed, other important objectives of fiscal policy changes in Fund-supported programs include improving

[23] Monetary policy also has an important role to play—particularly in capital account crises—in stemming capital outflows and achieving a more orderly external adjustment. Empirical evidence on the impact of higher interest rates on capital flows is discussed in *IMF-Supported Programs in Capital Account Crises* (Occasional Paper 210).

governance, protecting social welfare, and reducing poverty. Often, this is to be achieved by lowering the interest bill, reducing tax distortions, and freeing resources for priority primary expenditures, especially those targeted to vulnerable groups. Over the short run, this may require reducing the overall deficit, but with the goal of permitting higher primary expenditures once the stabilization gains have been consolidated. In low-income countries, expenditure on poverty-reducing activities may be raised by increasing the resource envelope (through donor support or domestic resource mobilization) and by reorienting expenditures from non-priority areas; indeed, more recent programs in low-income countries, supported by PRGF arrangements, have tended to target somewhat less fiscal adjustment than previous programs supported by SAF/ESAF arrangements (which generally had to contend with worse initial macroeconomic conditions) as well as laying greater emphasis on supporting poverty-reducing expenditures (Box 5).[24]

A. Programmed Fiscal Adjustment

35. The initial fiscal positions, programmed adjustment and outcomes across Fund-supported programs are summarized in Table 14. On average, the initial fiscal positions (inclusive of grants) were substantially better than those prevailing at the time of the previous Conditionality Review (Box 6). Programs targeted improvements in the overall balance during the first program year ranging from 0.2 percent of GDP in PRGF-supported programs to about 1½ to 2 percent of GDP in non-transition and transition GRA-supported programs, and a further improvement in the following year ranging from 0.2 to 0.9 percent of GDP. In capital account crisis programs, the overall balance was projected to deteriorate by 1.2 percent of GDP during the first program year (from a deficit of 3.3 percent of GDP in the year prior to the program),[25] but the projections also assumed substantial fiscal consolidation (3.2 percent of GDP) in the following year.

36. Of the targeted improvement of 2.2 percent of GDP in the overall balance over two years in GRA-supported non-transition programs, 1.6 percent of GDP represents a higher primary balance, consisting of higher revenues (0.9 percent of GDP) and lower primary expenditures (0.5 percent of GDP). In PRGF-supported programs, around one-half of the narrowing of 0.9 percent of GDP in the overall deficit represents a higher primary balance (0.5 percent of GDP), consisting of higher revenues (0.3 percent of GDP) and lower primary

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[24] Since the sample here is arrangements approved over the period 1995-2000, the results reported for PRGF-supported programs actually refers mostly to ESAF-supported programs.

[25] These figures pertain to targets specified in the original program. As discussed in *Fund-Supported Programs: Objectives and Outcomes* (Box 2), in a number of capital account crises, especially in East Asia, the initial fiscal targets were revised as it became apparent that activity was turning out significantly weaker than expected.

Box 5: Fiscal Adjustment under PRGF-Supported Programs

Two of the key features of the Poverty Reduction and Growth Facility (PRGF) are fiscal flexibility and budgets that are more pro-poor and pro-growth. Fiscal flexibility implies that fiscal targets should accommodate higher public spending in support of a country's poverty reduction strategy as long as macroeconomic stability is not threatened. Pro-poor budgeting implies that government spending should be oriented towards poverty-reducing activities and outlays that foster the development of human and physical capital.

PRGF-supported programs, on average, have targeted an increase in the budget deficit and government expenditures in the first year of these program (Table 1). With external financing, grants, and revenues increasing, countries were targeted to increase their outlays by about 0.5 percent of GDP. In this way, PRGF programs have sought to combine both macroeconomic stability with a higher envelope for government spending. In later years of the program—where data on external support were less certain—spending increases were not necessarily envisaged. Earlier assessments of PRGF program design have also confirmed the fiscal flexibility of these arrangements.[1/]

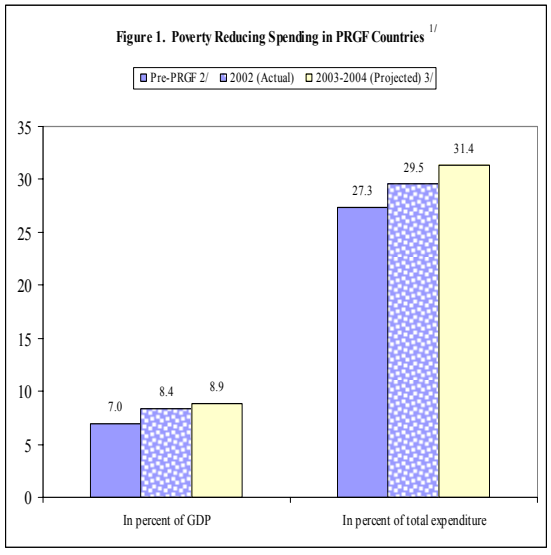
Table 1. Targeted Fiscal Adjustment in PRGF-Supported Programs, 1999-2003 1/
(Averages, in percent of GDP)

	Pre-PRGF Level	PRGF Program Targets Change from Pre-PRGF year		
		Year 1	Year 2	Year 3
Fiscal balance, including grants	-4.9	0.7	1.2	1.6
Fiscal balance, excluding grants	-8.4	-0.2	0.6	1.5
Total revenues, excluding grants	18.5	0.4	0.9	1.6
Total expenditures and net lending	26.9	0.5	0.2	-0.1
Grants	3.6	0.8	0.7	0.1
Net external financing 2/	6.4	0.7	0.8	-0.3

Source: IEO, Report on the Evaluation of Poverty Reduction Strategy Paper (PRSP) and the Poverty Reduction and Growth Facility (PRGF), International Monetary Fund, July 2004.

1/ Based on a sample of 41 PRGF programs. However, due to missing observations, some of the averages are based on fewer observations than others.
2/ The sum of grants and net external borrowing in the government accounts.

PRGF countries have been successful in increasing poverty-reducing spending (Figure 1). Such spending increased by 1.4 percent of GDP in 2002 with respect to the pre-PRGF year. Budgets are also becoming more pro-poor, as the share of these outlays in government spending increased by more than 2 percentage points over the same period. Poverty-reducing spending is projected to increase further during 2003-04 both as a share of GDP as well as total government spending.



Sources: Country authorities; and staff estimates
1/ Based on a sample of 30 countries.
2/ In most cases refer to 1999.
3/ Average projected expenditure for 2003 and 2004.

[1/] See Gupta, Sanjeev et al., *Is the PRGF Living Up to Expectations? An Assessment of Program Design*, Occasional Paper 216 (Washington D.C.: International Monetary Fund).

Table 14. Initial Conditions, Programmed, and Actual Fiscal Adjustment.
(In percent of GDP)

	Level (in percent of GDP)								Changes (in percent of GDP)					
	Program			Outturn			Outturn - Program 1/		Program		Outturn		Outturn - Program 1/	
	t-1	t	t+1	t-1	t	t+1	t	t+1	t	t+1	t	t+1	t	t+1
EFF/SBA Non-Transition Economies														
Fiscal balance	-3.2	-1.9	-1.0	-3.0	-2.5	-4.2	-0.6	-3.2 ***	1.3	0.9	0.5	-1.7	-0.8	-2.5
Primary balance	1.2	2.9	2.8	1.7	1.9	0.2	-0.9	-2.6 ***	1.6	-0.1	0.2	-1.7	-1.4	-1.7 **
Total expenditure	27.4	27.3	26.2	27.8	28.1	29.6	0.8	3.4 ***	-0.1	-1.1	0.3	1.5	0.5	2.6 ***
Interest payments	4.5	4.8	3.8	4.8	4.4	4.4	-0.4	0.7	0.3	-1.0	-0.4	0.1	-0.7	1.1
Revenues	24.3	25.4	25.2	24.8	25.6	25.4	0.2	0.2	1.1	-0.3	0.8	-0.2	-0.4 *	0.0
EFF/SBA - Economies in Transition														
Fiscal balance	-3.6	-1.7	-1.5	-4.3	-2.4	-1.8	-0.7	-0.3	1.9	0.2	1.9	0.6	0.0	0.4
Primary balance	0.6	1.7	2.0	-0.3	0.7	1.0	-1.0	-1.0	1.1	0.3	1.0	0.2	-0.1	0.0
Total expenditure	38.3	36.2	34.1	38.5	36.8	36.6	0.6	2.6	-2.1	-2.1	-1.7	-0.2	0.5	1.9
Interest payments	4.2	3.4	3.4	4.0	3.1	2.8	-0.3	-0.6	-0.7	-0.1	-0.9	-0.4	-0.1	-0.3
Revenues	34.8	34.5	32.6	34.3	34.4	34.8	0.0	2.3	-0.3	-1.9	0.2	0.4	0.5	2.3 *
Capital account crisis countries														
Fiscal balance	-3.3	-4.5	-1.3	-3.9	-4.0	-4.9	0.4	-3.7	-1.2	3.2	-0.2	-0.9	1.0 *	-4.1 *
Primary balance	1.4	1.5	2.5	2.6	0.2	-0.4	-1.3	-3.0	0.1	1.0	-2.4	-0.7	-2.5 *	-1.7 **
Total expenditure	21.5	23.4	19.7	26.2	26.8	28.8	3.4	9.1 **	1.9	-3.8	0.6	2.0	-1.3	5.8 ***
Interest payments	4.7	6.0	3.8	6.5	4.3	4.5	-1.7	0.7 *	1.3	-2.2	-2.2	0.2	-3.5	2.4
Revenues	18.2	19.0	18.4	22.3	22.7	23.9	3.8 *	5.5 *	0.7	-0.6	0.4	1.1	-0.3	1.7
SAF/ESAF/PRGF														
Fiscal balance	-4.1	-3.9	-3.2	-3.7	-3.7	-4.7	0.2	-1.5 ***	0.2	0.7	-0.1	-0.9	-0.3	-1.7
Primary balance	-0.4	-0.4	0.1	-0.1	-0.5	-1.5	-0.1	-1.6 ***	0.0	0.5	-0.4	-1.1	-0.4 *	-1.6
Total expenditure	26.7	26.9	26.1	26.0	26.3	27.0	-0.6	0.9	0.2	-0.8	0.3	0.7	0.1	1.5 **
Interest payments	3.7	3.6	3.3	3.5	3.3	3.1	-0.3 *	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1	0.1
Revenues	22.6	23.0	22.9	22.4	22.6	22.3	-0.4	-0.6	0.4	-0.1	0.2	-0.3	-0.1	-0.2

Source: International Monetary Fund, *MONA* ; and IMF staff calculations.

1/ Statistically significant differences are at the 1% (***); 5% (**); 10% (*) levels.

Box 6: Fiscal Adjustment Then and Now: Conditionality and ESAF Reviews

The last comprehensive review of fiscal adjustment in Fund-supported programs took place in 1994.[1] For low-income countries, an ESAF review was conducted in 1997.[2] A comparison between their findings and the findings in this paper provide an interesting snapshot of how things have changed over the last decade. Although there are some methodological incompatibilities between the papers, including a rather small sample utilized in the 1994 conditionality review (covering programs spanning only a three year period, from 1988-1991), a longer sample utilized in the 1997 ESAF review (covering the period 1985-1995), and occasionally different analytical categories in terms of program types, some interesting patterns nevertheless emerge.

The average program in the previous studies faced an overall fiscal deficit of 8.2 percent of GDP (vs. 3.7 percent of GDP in the current study) and a primary deficit of 2.2 percent of GDP (compared to a surplus of 0.3 percent). For SAF/ESAF programs, when the 1985-1995 sample is split, the deficit is similarly found to have fallen from 9.1 percent of GDP for the average program in the period 1981-85, to 5.6 percent of GDP in the period 1991-95. Prolonged users of Fund resources in the 1994 Conditionality Review, as in this paper, tended to face more favorable initial conditions than new users. Transition economies faced lower fiscal deficits then, but much larger public sectors, which programs aimed to reduce. Over time, it is striking how successful adjustment has been in achieving the desired reduction in the size of the public sectors of transition economies.

Adjustment in programs included in the previous studies sought to improve the overall fiscal balance by 3.4 percent of GDP (compared to 1.5 percent of GDP between years t-1 and t+1 in the current study), and the primary balance by 3.3 percent of GDP (compared to 1.0 percent of GDP). In the 1997 ESAF sample, the average programmed improvement in the primary balance was 3.0 percent of GDP. Then as now, there was a pattern that new users had larger planned adjustments than more frequent users of Fund resources. Transition economies also had larger planned fiscal adjustments then, but the difference is smaller than for other program types.

Comparing program/forecast errors across studies is difficult because of the wide variation across program types and some incompatibility in the definitions. The error for all countries is now lower in the year of program approval (an under-performance of 0.4 percent of GDP in the overall balance) but higher overall because of a much larger error in year t+1 (1.6 percent of GDP). For transition economies there was an over-performance of 1.3 percent of GDP then (compared to 0.4 percent of GDP in the current study). From the 1997 ESAF review the stylized fact is that about ½ the targeted improvement was achieved. For these countries the error is now relatively small in the year of program approval (0.3 percent of GDP) but much larger in the following year (1.7 percent of GDP).

There has been significant improvement in the fiscal situation facing countries over time, and it has therefore been possible for programmed fiscal adjustment to become less ambitious for countries. On the other hand, difficulties in attaining fiscal targets appear to have persisted over time, with no clear trend toward a reduction in the program/forecast errors—though there has been some improvement with year of program approval but a widening of the slippage in the subsequent year.

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[1] *IMF Conditionality: Experience Under Stand-By and Extended Arrangements* (Part II: Background Papers), IMF Occasional Paper No. 129 (1994) and IEO report of PRGF Reviews (2004).
[2] *Fiscal Reforms in Low-Income Countries: Experience Under IMF-Supported Programs* (and supporting papers), IMF Occasional Paper No. 160 (1997).

expenditures (0.2 percent of GDP). Regarding expenditure sub-components, although a lack of consistent data makes any systematic treatment difficult, it is noteworthy that PRGF-supported programs in particular strive to protect capital expenditure, which is programmed to increase (as a share of GDP) throughout the program period.

37. Beyond these averages, to what extent does the targeted fiscal adjustment reflect program objectives? The targeted fiscal adjustment (between years t-1 and t+1) depends positively (and, generally, significantly) on the initial level of expenditure, the size of the initial fiscal deficit, and on the programmed improvement in the current account balance; the resulting R^2 of the regressions are high, ranging from 0.5 to 0.75 (Table 15). [26] [27] Regression results for the primary fiscal balance are broadly similar, except that in the GRA-sample, a larger output gap is associated with a smaller adjustment effort in non-transition economies.[28] In sum, the targeted fiscal adjustment appears to be quite closely aligned to program objectives.[29] Moreover, consistent with the greater fiscal flexibility of Fund-supported programs in low-income countries, the targeted fiscal adjustment in these programs is 1.3 percent of GDP less than the adjustment targeted in GRA-supported programs.

B. Experience

Fiscal Adjustment

38. In GRA-supported programs in non-transition economies, fiscal adjustment falls short of program targets by 0.8 percent of GDP in the first program year and by 2.5 percent of GDP in the following year (Table 14)—though there are some cases in which fiscal adjustment was

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[26] Other variables that might influence the programmed fiscal adjustment are public debt and either the pre-program inflation rate or the targeted reduction in inflation. Specifications (not shown in Table 15) that included these variables did not yield significant coefficients however, and—in the case of public debt—entailed dropping a large number of observations due to the lack of data availability.

[27] The results here are given in terms of overall fiscal balance adjustment. Qualitatively, the results are similar when the primary balance is used in the regressions, albeit with generally lower statistical significance because fewer observations are available.

[28] In the transition economies, by contrast, a larger gap is associated with a larger adjustment effort, though this most likely reflects the difficulties of estimating meaningful output gaps in a period in which potential output growth was changing rapidly.

[29] The Independent Evaluation Office Report on Fiscal Adjustment in Fund-Supported Programs (IEO, 2003) likewise finds that programmed fiscal adjustment is tailored to the country's specific circumstances.

Table 15. Programmed Fiscal Adjustment: Regression Results 1/

	Full sample		GRA-supported		PRGF-supported		Non-transition		Transition	
	coef.	t-stat.	coef.	t-stat.	coef.	t-stat.	coef.	t-stat.	coef.	t-stat.
Based on Overall Fiscal Balance										
Constant	-0.736	-1.06	-1.587	-1.91 *	-1.898	-2.45 **	-1.258	-1.93 *	-1.827	-1.33
Transition dummy	-0.200	-0.37	-0.438	-0.77	0.230	0.28	...	...	...	...
Lagged expenditure	0.030	1.75 *	0.044	1.86 *	0.044	1.68 *	0.057	3.11 ***	0.025	0.98
ESAF/PRGF dummy	-1.327	-3.09 ***	...	...	...	...	-1.091	-2.51 **	-2.117	-1.74 *
Lagged fiscal balance	-0.459	-7.16 ***	-0.686	-9.70 ***	-0.295	-3.59 ***	-0.342	-5.45 ***	-0.902	-9.79 ***
Programmed change in current account balance	0.162	2.92 ***	0.111	1.85 *	0.232	2.82 ***	0.146	2.36 **	0.124	1.68 *
Output gap 2/	0.009	0.20	-0.005	-0.15	0.076	1.58	0.042	0.53	-0.021	-0.67
Flexible exchange rate dummy	0.155	0.37	0.404	0.76	0.582	1.07	0.452	1.08	-1.250	-1.25
F-statistic, p-value	10.795	0.000	13.966	0.000	3.789	0.001	8.148	0.000	6.517	0.000
Number of observations, R^2	125	0.54	70	0.73	55	0.49	88	0.54	37	0.74
Based on Primary Fiscal Balance										
Constant	-0.143	-0.14	1.354	0.83	-2.677	-3.13 ***	-0.770	-1.07	0.040	0.02
Transition dummy	0.020	0.02	0.024	0.02	1.123	0.82	...	...	...	...
Lagged expenditure	0.020	0.55	0.026	0.49	0.028	0.91	0.048	1.72 *	-0.001	-0.03
ESAF/PRGF dummy	-1.002	-1.90 *	...	...	...	...	-1.130	-2.70 ***	5.162	3.50 ***
Lagged fiscal balance	-0.258	-2.79 ***	-0.171	-1.31	-0.302	-3.67 ***	-0.241	-2.98 ***	-0.027	-0.25
Programmed change in current account balance	0.152	1.96 **	0.139	1.07	0.191	2.52 **	0.200	2.64 ***	0.070	0.34
Output gap 2/	0.109	1.55	0.169	2.28 **	0.060	0.80	-0.256	-1.77 *	0.310	5.80 ***
Flexible exchange rate dummy	0.273	0.56	-0.590	-0.57	0.358	0.60	0.672	1.50	-4.950	-3.63 ***
F-statistic, p-value	3.088	0.002	1.050	0.434	4.614	0.001	6.091	0.000	2.634	0.182
Number of observations, R^2	74	0.35	36	0.30	38	0.63	59	0.56	15	0.87

Sources: International Monetary Fund, *WEO* and *MONA* ; and IMF staff estimates.

1/ Dependent variable is fiscal balance in year t+1minus fiscal balance in year t-1; annual dummies included in regression (not reported).
Regression estimated using heteroskedasticity-robust estimator of the covariance matrix.

2/ Positive gap implies current output below Hodrick-Prescott trend

greater than projected (Box 7). In the first program year, these slippages are mainly on account of higher primary expenditures (1.2 percent of GDP) and lower revenues (0.4 percent of GDP). Interestingly, in the following year, both primary and interest expenditures are higher than programmed, perhaps because slippages during the first program year result in a resurgence of interest rates at which the government borrows. Another possibility may be the resumption of orderly debt service—the precise timing of which may be difficult to capture in program projections.

39. In capital account crises, fiscal adjustment exceeds the target by 1 percent of GDP in the first program year, though mainly because lower interest payments offsets higher primary expenditures. Fiscal adjustment falls short of the target by 4.1 percent of GDP in the second year because of much higher expenditures (both primary and interest). In low-income countries, slippages in the overall balance amount to 2 percent of GDP over a two-year period, reflecting almost entirely higher primary expenditures (1.6 percent of GDP) and lower revenues (0.3 percent of GDP). The revenue impact of programmed trade liberalization is often difficult to judge ex ante, and may have contributed to revenue slippages.

40. What accounts for these fiscal outturns? While individual outturns are the result of many complex factors including country-specific circumstances, in general, the fiscal balance is more likely to fall short of the program target in cases where: growth was weaker than expected; the adjustment was based primarily on improvements in revenue;[30] or the targeted adjustment was especially large[31]—perhaps because of the social and political costs of undertaking such adjustment (Table 16).[32] These findings seem consistent with the literature, especially that emphasizing political economy variables (so that expenditure reductions can

[30] Defined as cases in which more than one-half of the programmed improvement in the fiscal balance reflects improved revenues.

[31] Defined as the top quartile of programs ranked by the programmed adjustment.

[32] When interpreting these results it is important to bear in mind the possible endogeneity of the regressors, particularly the projection errors for the current account balance and real GDP growth. The results reported below (Table 19) using instrumental variable estimation suggest that (actual) fiscal adjustment contributes to current account adjustment, which would imply a positive bias to the coefficient on the programmed current account balance reported in Table 16; the results in Table 19 suggest that fiscal adjustment has very little effect on growth. An alternative specification is to estimate a probit of cases where fiscal adjustment fell short of the program target, regardless of the magnitude of the slippage. Although the main findings are similar, those results are somewhat stronger in both the GRA- and PRGF-samples, with about 80 percent of the observations correctly classified.

Box 7: Fiscal Over-Adjustors

While attention is usually focused on countries that achieve less than their targeted fiscal adjustment, in about one-third of programs in the sample, fiscal adjustment was greater than targeted—primarily in the transition economies and some low-income countries (Table). Not surprisingly, growth tended to be stronger than expected in these programs (at least for the GRA sample; in the PRGF-sample, the pattern is less clear-cut). In the GRA sample, among fiscal over-adjustors there was a somewhat larger proportion of cases where the current account balance was weaker than programmed. In the PRGF sample, reflecting a tighter link between fiscal and external adjustment, countries with stronger fiscal balances than targeted also had stronger external positions than programmed.

When examining expenditure and revenue component contributions separately, it is found that expenditure tends to be the dominant component for all program types of under-adjustment, and for most instances of over-adjustment. In some cases, it is even the case that expenditure more than reverses an opposite effect from revenues, so that revenue short-falls are more than made up by expenditure over-performance (and vice versa for under-performers).

Table. Selected Characteristics of Fiscal Overadjustors
(in percent of GDP unless otherwise noted)

	All programs			SAF/ESAF/PRGF			SBA/EFF		
	all	transition	non-transition	all	transition	non-transition	all	transition	non-transition
Overadjustors									
Number of programs	41	14	27	21	2	19	20	12	8
Percent of category	32.5	37.8	30.3	37.5	25.0	39.6	28.6	41.4	19.5
Average fiscal balance forecast error	1.6	2.4	1.3	1.4	1.5	1.4	1.9	2.6	0.9
Underadjustors									
Number of programs	85	23	62	35	6	29	50	17	33
Percent of category	67.5	62.2	69.7	62.5	75.0	60.4	71.4	58.6	80.5
Average fiscal balance forecast error	-3.4	-3.3	-3.4	-3.2	-2.9	-3.2	-3.6	-3.4	-3.6
Overadjustors, of which:									
Growth higher than program									
Percent of category	57.5	61.5	55.6	42.9	50.0	42.1	73.7	63.6	87.5
Average fiscal balance forecast error	2.2	3.5	1.5	2.0	2.2	1.9	2.3	3.7	1.0
Growth lower than program									
Percent of category	42.5	38.5	44.4	57.1	50.0	57.9	26.3	36.4	12.5
Average fiscal balance forecast error	1.0	1.2	1.0	1.0	0.7	1.0	1.0	1.3	0.0
Overadjustors, of which:									
Current account higher than program									
Percent of category	53.7	42.9	59.3	66.7	100.0	63.2	40.0	33.3	50.0
Average fiscal balance forecast error	1.7	2.2	1.5	1.6	1.5	1.6	1.8	2.5	1.1
Current account lower than program									
Percent of category	46.3	57.1	40.7	33.3	0.0	36.8	60.0	66.7	50.0
Average fiscal balance forecast error	1.6	2.6	0.9	1.0	...	1.0	1.9	2.6	0.6

Source: MONA and WEO databases and Fund staff estimates.

Table 16. Determinants of Fiscal Adjustment: Regression Results 1/

	Full sample		GRA-supported		PRGF-supported	
	coef.	t-stat.	coef.	t-stat.	coef.	t-stat.
Constant	-0.330	-0.42	-0.222	-0.204	0.646	0.641
ESAF/PRGF dummy	1.030	1.16	...	...	...	...
Growth projection error 2/	0.155	2.67 ***	0.100	1.10	0.148	1.90 *
Current account balance proj. error 3/	-0.010	-1.32	-0.178	-1.56	-0.060	-0.71
Primarily revenue adjustment dummy	-1.621	-1.86 *	-0.622	-0.41	-2.564	-1.69 *
Transition economy dummy	1.890	1.84 *	1.405	1.22	2.900	1.73 *
Terms-of-trade, change at t	-0.314	-0.07	-3.453	-0.38	0.354	0.10
Terms-of-trade, change at t+1	4.220	1.00	12.542	1.79 *	3.559	0.83
Large-adjustment dummy (top quartile)	-2.620	-2.75 ***	-3.347	-2.65 ***	-2.812	-3.25 ***
F-statistic, p-value	3.777	0.001	2.341	0.041	2.142	0.068
Number of observations, R^2	80	0.31	41	0.37	39	0.35

Sources: International Monetary Fund, *WEO* and *MONA*; and IMF staff estimates.
1/ Dependent variable: Actual-program change in fiscal balance between years t-1 and t+1.
Annual dummies included in regression (output not shown).
Regression estimated using heteroskedasticity-robust estimator of the covariance matrix.
2/ Projection error: actual minus program real GDP growth rate
3/ Projection error: actual minus program current account balance (in percent of GDP)

be more long-lasting than revenue increases).[33] The finding on large adjustment mirrors the finding in the IEO report on fiscal adjustment. A less convincing finding (whose interpretation is discussed below) is that greater external adjustment than programmed is associated with weaker fiscal adjustment, though the coefficient is not statistically significant. Both the magnitude and statistical significance of the results are generally stronger for the PRGF sample, with the exception of external adjustment variable, which is larger (albeit only marginally significant) in the GRA-sample.

41. Inasmuch as fiscal adjustment is intended to promote external adjustment, and the current account improves by more than programmed, sustained fiscal adjustment may be viewed as less pressing. The positive correlation between greater current account adjustment and lower fiscal adjustment (both relative to the program) for GRA-supported countries, noted above, is suggestive of this policy behavior. To examine this possibility more closely, fiscal and external adjustment achieved (compared to the programmed adjustment) are

[33] A recent paper that indeed finds that expenditure cuts increase the probability of successful fiscal adjustment (albeit for the short-term) is Baldacci et al. (2004). They also find that political economy variables capturing social cohesion as well as IMF-supported programs contribute to a higher probability of successful fiscal adjustment.

separated into over- and under-performers in Table 17. The 31 GRA-supported programs in non-transition economies where fiscal adjustment was below the program target are split almost evenly between cases where the current account balance in the first program year was stronger than programmed (15 cases) and those where it had been weaker than programmed (16 cases).[34] Of the 26 PRGF-supported programs where fiscal adjustment was below target, in 10 external adjustment in the first program year had been greater than programmed and in 16 it had been weaker than programmed. Similar patterns are evident for the transition economies. As such, whether the external objective was fulfilled does not explain fiscal adjustment falling short of program targets.

Public Debt Dynamics

42. Beyond the direct effects on the overall balance, fiscal policy—and slippages relative to program targets—has implications for other macroeconomic variables, such as inflation. Fiscal performance also has implications for public debt dynamics. Since consistent time series on public debt (especially on the domestic component) are generally lacking, Table 18 focuses on the experience of 24 emerging market countries, decomposing the error in the debt projection into the part attributable to lower real output growth than expected, to lower inflation than expected, and to a higher overall deficit than programmed.[35] The residual difference represents below-the-line operations (realization of contingent liabilities and privatization receipts) as well as exchange rate movements on the foreign currency denominated part of public debt that are not offset by inflation.

43. From the Table, Fund-supported programs on average targeted a reduction in public debt from 70 percent of GDP to 51 percent of GDP at the end of three years; in the event, the debt ratio rose slightly instead. Of the 20 percentage points of GDP difference between outcome and target, 3 percentage points was due to lower real output growth, which was more than offset by higher than projected inflation, while slippages in the overall fiscal deficit contributed 4 percentage points of GDP. By far the largest source of this difference was below-the-line effects, amounting to just over 17 percentage points (or 85 percent of the

[34] This distribution is not statistically significantly different from the distribution of cases where fiscal adjustment was more than had been programmed (12 cases, total); 7 out of 12 cases had above programmed external adjustment and 5 out of 12 cases had below-programmed external adjustment.

[35] As noted in the IEO report on fiscal adjustment (IEO, 2003) and the 2003 WEO chapter on public debt, consistent time series on public debt (including the domestic component) are often lacking. A recent paper (Christensen (2004)) reports data on domestic debt for a set of 27 sub-Saharan African economies, but issues of coverage and the lack of consistent series on above-the-line fiscal accounts preclude its use here.

Table 17. External Adjustment and Fiscal Adjustment in IMF-Supported Programs.

Fiscal adjustment year t, t+1	Current Account Balance (t) 1/ above programmed	Current Account Balance (t) 1/ below programmed	Total
Non-transition economies			
GRA-supported			
Fiscal, above programmed	7	5	12
Fiscal, below programmed	15	16	31
Total	22	21	43
PRGF-supported			
Fiscal, above programmed	8	14	22
Fiscal, below programmed	10	16	26
Total	18	30	48
Transition economies			
GRA-supported			
Fiscal, above programmed	2	6	8
Fiscal, below programmed	3	19	22
Total	5	25	30
PRGF-supported			
Fiscal, above programmed	0	2	2
Fiscal, below programmed	2	4	6
Total	2	6	8
All	47	82	129

Sources: International Monetary Fund, *WEO, MONA* ; and IMF staff estimates.
1/ Statistically significant differences in proportions are at the 10 percent (*), 5 percent (**), and 1 percent (***) levels.

Table 18. Initial Conditions and Evolution of Public Debt in Emerging Market Countries under Fund-Supported Programs.
(in percent of GDP)

	Stock of Public Debt				*Error, of which:*			
	Actual t-1	Prog. t+2	Actual t+2	Error	Growth Effect	Inflation Effect	Deficit Effect	Below-the-line cumulative
Full Sample								
Average	70.0	51.2	71.4	20.2	3.1	-4.3	4.4	17.1
Averages for:								
First Quartile	29.2	21.9	50.7	28.8	3.1	-3.6	7.0	22.3
Second Quartile	50.9	42.7	61.6	18.9	4.7	-5.1	4.9	14.5
Third Quartile	85.1	61.8	74.5	12.7	3.1	-4.8	3.6	10.9
Fourth Quartile	116.9	79.8	99.9	20.1	1.4	-3.6	1.8	20.6
Total Observations	54	54	54	54	54	54	54	54
Standard Deviation	36.8	28.2	29.3	11.4	8.7	12.7	5.5	25.2
Standard Error of the Mean	5.0	3.9	4.0	1.6	1.2	1.7	0.8	3.5
Selected Cases								
Average	50.0	40.9	74.1	33.3	6.0	-8.1	8.4	27.0
Argentina, 1998	38.1	34.3	45.0	10.7	4.8	3.4	6.8	-4.2
Brazil, 1999	41.7	46.6	52.6	6.0	-0.5	-6.4	8.9	4.0
Indonesia, 1998	23.7	16.7	91.8	75.0	4.7	-9.1	4.8	74.7
Indonesia, 2000	91.8	81.6	80.7	-1.0	3.4	-14.5	-1.8	12.0
Mexico, 1995	35.8	22.7	51.2	28.5	3.0	-10.9	9.7	26.7
Mexico, 1999	54.9	36.9	48.0	11.1	-5.5	7.6	9.5	-0.5
Philippines, 1994	95.1	72.7	75.4	2.7	-7.9	2.9	-0.8	8.6
Philippines, 1998	83.2	60.7	99.0	38.3	31.0	-30.0	9.6	27.7
Thailand, 1997	14.5	9.5	55.6	46.1	1.7	1.6	16.8	26.0
Turkey, 1999	43.7	57.9	95.0	37.1	29.9	-40.7	9.3	38.6
Total Observations	10	10	10	10	10	10	10	10

Sources: International Monetary Fund, *MONA, WEO*, and *RES* databases; and IMF staff estimates.

Note: Programmed data are forward estimates based on fiscal balance programmed flows and program assumptions on GDP growth. The timing of the end-point data is t+2 or latest available. The error is defined as actual minus programmed in t+2 or the latest available year. Quartiles defined on the basis of t-1 actual debt stocks.

deviation). In some individual cases (Table 18, bottom panel), these effects reflected the fiscal costs of banking crises (Turkey, 30 percent of GDP; Indonesia, 55 percent of GDP; Thailand, 45 percent of GDP; and Mexico, 20 percent of GDP) and the impact of real exchange rate depreciations in the aftermath of currency crises.

External Adjustment

44. As noted above, an important reason for fiscal adjustment in Fund-supported programs is to promote orderly external adjustment. Table 19 examines the impact of fiscal policy on the current account balance, estimating some simple fiscal multipliers using program projections to instrument for possible endogeneity of the fiscal balance. The multipliers suggest that a 1 percent of GDP improvement in the fiscal balance is associated with a 0.83-1.65 percent of GDP improvement in the current account balance.

45. As documented in *Fund-Supported Programs: Objectives and Outcomes,* in some GRA-supported programs (particularly in capital account crises) external adjustment was greater than programmed, raising the question of whether this was the result of fiscal tightening. Empirically, however, there is almost no relationship: the correlation between fiscal adjustment and the error in projecting the current account balance is insignificant and the regression R^2 is less than 1 percent. Thus, excessively tight fiscal policy does not appear to have caused greater external adjustment than projected (Figure 4).

46. These apparently contradictory findings—that fiscal consolidation promotes external adjustment but cannot explain cases where the improvement in the current account balance was much sharper than expected—can be reconciled by recognizing that different forces may be at play in different situations. In particular, the current account may reflect the effects of lower aggregate demand (driven, in part, by fiscal tightening) or a sharp reduction in available external financing (most notably in capital account crises). In the latter case, the appropriate fiscal policy response depends on whether the loss of confidence and capital outflows stem from perceived fragilities in the public finances (in which case fiscal tightening, or at least a credible commitment to a path of future primary surpluses, would be required) or in private sector balance sheets, in which case the appropriate fiscal policy

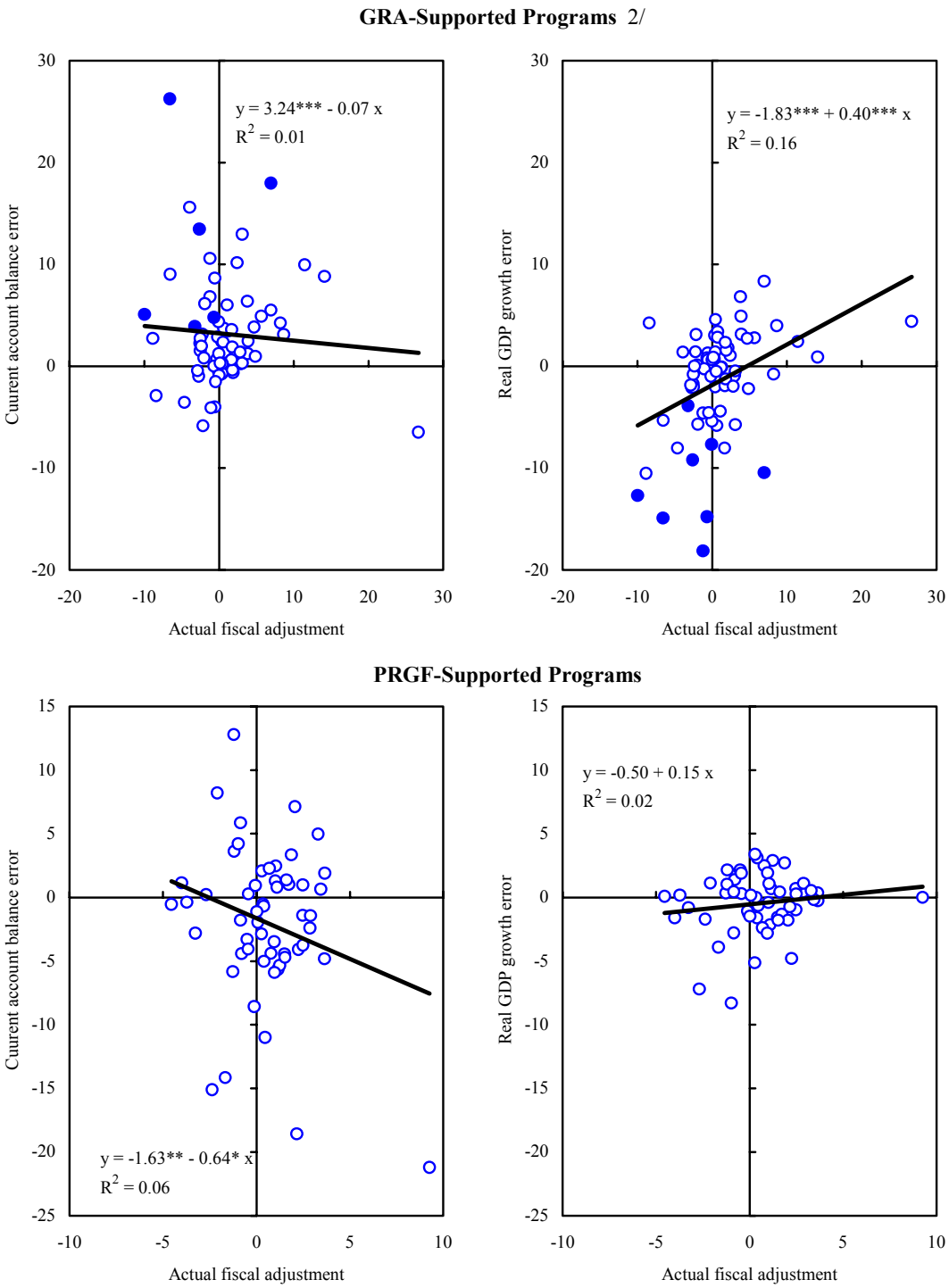
Table 19. Estimated Impact of Fiscal Adjustment on Growth and Current Account Balance 1/

	PRGF			GRA		
	1	2	3	4	5	6
. OUTPUT GROWTH AND FISCAL BALANCE						
Dependent variable						
Change in the GDP growth rate						
Regressors 2/						
Change in the fiscal balance (instrumented) 3/	1.56**	0.17	0.13	0.28	0.33	0.14
Growth lagged		-0.88***	-0.93***		-0.76***	-0.70***
Fiscal balance lagged 4/		0.11	0.02		0.33	0.31
Broad money growth 3/			0.10			-0.12**
Terms of trade			-0.03			0.15***
Intercept	0.39	2.95***	1.52	-0.90	0.31	1.68
# observations 5/	108	108	88	118	118	83
R squared	0.10	0.58	0.66	0.10	0.48	0.56
I. CURRENT ACCOUNT AND FISCAL BALANCE						
Dependent variable						
Change in the current account balance as a percent of GDP						
Regressors 2/						
Change in the fiscal balance (instrumented) 3/	1.69**	1.52*	1.24	0.83***	0.93**	0.91**
Current account lagged		-0.17**	-0.14**		-0.30***	-0.32***
Fiscal balance lagged 4/		0.27**	0.30**		0.07	-0.05
Broad money growth 3/			-0.12			0.09*
Terms of trade			0.06			0.17***
Intercept	-0.70	-1.30	0.84	1.12	1.07	-0.03
# observations 5/	108	108	88	118	118	83
R squared	0.09	0.16	0.23	0.15	0.26	0.57

Source: MONA database and staff estimates.

Note: * = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level.
1/ Fixed effect regressions. OLS regressions provide similar results.
2/ Econometric estimations include year dummies and dummies for type of program (i.e., transition economy and capital account crises).
3/ Instrumented using MONA projections.
4/ Based on MONA database.
5/ Balanced panel dataset for period t and period t+1 except for equation 3 and 6. Equation 3 and 6 are estimated for available data.

Figure 4. Fiscal Adjustment and Current Account and Growth Projection Errors 1/



Sources: International Monetary Fund, MONA; and IMF staff estimates.
1/ Errors defined as actual minus projection.
2/ Solid dots represent capital account crisis countries.

response depends on whether the effects of the capital outflows on the economy are in the nature of a supply-side or a demand-side shock.[36]

Output Growth

47. Finally, an important consideration in setting fiscal policy—and targeting fiscal adjustment under the program—is the possible impact on output growth. Estimated fiscal multipliers (using program projections to instrument for possible endogeneity of the fiscal balance) are reported in Table 19.[37] In particular, in the PRGF sample, a higher fiscal surplus (or smaller deficit) is associated with higher output growth, though the coefficient becomes insignificant once lagged real GDP growth is included in the regression. In the GRA sample, the lagged effects of a larger fiscal surplus (or smaller deficit) is associated with higher growth, though the coefficient again becomes insignificant when other controls are included in the regression. While caution is required in interpreting these findings since there is always the possibility of omitted variable bias, it is noteworthy that none of the reported regressions suggest a negative effect on growth or a larger fiscal surplus (or a smaller deficit)—possibly because of "crowding in" effects of lower interest rates and greater availability of finance to

[36] Arithmetically, for a given capital outflow, the higher the public sector saving-investment balance, the smaller the private sector's balance needs to be, but this does not necessary imply a lower burden of adjustment on the private sector in terms of consumption and investment. If the effects of capital outflows are in the nature of a supply-side shock (for example, the associated exchange rate depreciation raises the price of imported intermediate inputs or leads to widespread bankruptcies because of the private sector's foreign exchange exposure), then a higher public sector balance indeed reduces the adjustment burden on the private sector. By contrast, if capital outflows represent (or exacerbate) a demand-side shock, and if Keynesian effects are important so that a fiscal loosening has an expansionary effect on activity, then allowing the public sector balance to deteriorate could help achieve the requisite external adjustment with a smaller decline of output and of private consumption and investment. For a fuller discussion, see *IMF-Supported Programs in Capital Account Crises* (OP 210).

[37] Although there is an extensive literature on this topic (with various findings), most of it does not focus on countries that have Fund-supported programs. Hemming et al. (2002) provide a literature review, which generally asserts that there are significant multiplier effects between fiscal and output, though these results pertain mostly to industrialized economies. Consistent with the results reported here, Gupta et al. (2002), find instead that strong fiscal consolidation is associated with higher growth in a sample of low-income countries. One explanation may be that fiscal consolidation stimulates growth in countries with weak institutions by a reduction in rent-seeking and the scope for corruption, raising overall productivity and growth.

the private sector, confidence effects, and flexibility of prices and wages in countries typically seeking Fund support makes Keynesian effects relatively unimportant.[38] Consistent with this, fiscal adjustment does not explain cases in which growth turned out to be weaker than projected (Figure 4).

C. Summary

48. Fund-supported programs target fiscal adjustment according to the size of the initial deficit, the level of public expenditure, the targeted improvement in the current account balance, and the estimated output gap. On average, fiscal adjustment falls short of that targeted for both the first program year and the following year, with adverse consequences for macroeconomic stabilization and for public debt dynamics. Fiscal adjustment contributes to external adjustment but cannot explain cases where current account adjustment was greater than programmed. In terms of instrument assignment, this suggests that fiscal policy in Fund-supported programs should be directed primarily at tackling external adjustment.

V. Structural Reforms

49. Since the mid-1980s, structural policies have played an important role in Fund-supported programs.[39] These structural measures are intended to complement and buttress macroeconomic policies, raising the likelihood that program objectives will be attained. This chapter examines whether structural measures included in Fund-supported programs have been geared towards, and have contributed to, achieving program objectives.[40] To this end,

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[38] Some specifications (not reported), for instance using two lags of the fiscal balance, yield a negative coefficient (that is, a larger fiscal balance is associated with lower growth), but even in these regressions the implied Keynesian effects are small: a 1 percent of GDP improvement in the overall balance would be associated with 0.3 percentage points lower growth two years later. Similarly, using government expenditures rather than the overall balance does not suggest a substantial role for stimulative fiscal policy. Inclusion of other control variables, such as the real effective exchange rate, does not affect the results. Segmenting observations by exchange rate regime suggest a stronger positive impact of fiscal adjustment on growth among countries with flexible regimes.

[39] Structural Conditionality in Fund-Supported Programs (SM/01/160) documents the increase in the structural content of Fund-supported programs over the period 1987-1999. In 2000-02, the Fund undertook a broad review of structural conditionality in Fund-supported programs, culminating in the 2002 Conditionality Guidelines. The forthcoming Review of the Conditionality Guidelines will examine the application of the revised guidelines.

[40] Recognition that balance of payments problems may reflect structural weaknesses was part of the rationale for the Board decision to create the Extended Fund Facility (EFF) in 1974. The Decision notes that structural policies are required in "an economy experiencing serious

(continued…)

Section A proposes a simple classification of structural measures according to their primary economic objective—underpinning stabilization efforts, increasing economic flexibility and efficiency, and addressing vulnerabilities.[41] It then reviews the structural content of programs to see how various measures, thus classified, have been aligned to the broad objectives of different types of Fund-supported programs. While recognizing the inherent difficulties in establishing the impact of individual structural measures, Section B considers experience with two of the most common goals of structural measures in Fund-supported programs: underpinning fiscal adjustment and promoting sustained output growth. This analysis is based on the outcomes observed in the first three years following the approval of each arrangement.

A. Structural Content of Fund-Supported Programs

50. Structural reforms in Fund-supported programs range from measures that are very specific to the particular circumstances of the country or the macroeconomic instruments being employed—such as the establishing the legal and institutional framework of a currency board arrangement—to those that are more common across programs such as the introduction of a value-added tax to raise revenues. To examine the alignment of structural reforms to program objectives requires classifying these disparate measures. While any classification system inevitably involves an element of arbitrariness—some measures may fit more than one group,[42] while others are difficult to assign to any category—it is useful to divide reforms into three categories or groups according to their intended goals.[43] These groups are:

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payments imbalance relating to structural maladjustments … or … characterized by slow growth and … weak balance of payments" (Decision No. 4377-74/114).

[41] The classification into these three categories is carried out by mapping the eight categories in the MONA database into the three groups specified. The MONA classification is prepared by country teams at the time of approval and following each review. The alignment between structural measures and policy objectives is examined in the upcoming review of the conditionality guidelines. The review will also look into conditionality developments in specific sectors.

[42] For instance, changes to the tax structure may be important to bolster macroeconomic stabilization (category 1, below) but also for increasing economic efficiency (category 2). Likewise, reforms in specific sectors such as agriculture may reduce the cost of untargeted subsidies, but may also have important efficiency and growth benefits as well as raising incomes of farmers by dismantling distortionary state marketing boards.

[43] Fund-supported programs have increasingly included measures geared towards institution building, which are usually included in the "economic efficiency" category. Indeed, the share of conditions that are related to institution-building has risen from about 3 percent of all annual conditions in 1995 to more than 10 percent by 2000 (especially in transition

(continued…)

- **Measures that underpin a medium-term framework for demand management and for addressing flow imbalances.** These policies are designed to underpin stabilization efforts and to enhance the functioning of fiscal, monetary, and exchange rate policies. For example, reducing fiscal imbalances may require underlying reforms to expenditure and revenue in order to be sustained and remain credible. Structural policies in the fiscal area include measures that improve the tax structure—including widening the tax base—and tax administration, as well as policies that strengthen public expenditure management. Deepening financial markets and expanding the menu of instruments available to the monetary authorities can provide for a more stable environment for conducting monetary policy. Finally, other policies aim at strengthening exchange systems; e.g., measures that strengthen foreign exchange markets.

- **Measures that enhance economic flexibility and efficiency**. These measures often have a combination of objectives, making it difficult to distinguish precisely their flexibility and efficiency goals. Nevertheless, among the flexibility goals are all measures that increase the ability of the economy to adapt to new conditions. Usual examples are trade reforms and policies that affect resource allocation across sectors, such as pricing policies of factor markets (labor and capital) and the institutional features of these markets. They also include pricing policies that transcend individual sectors, such as energy prices. In contrast, the private sector efficiency component refers to impediments to investment and growth and reforms that affect individual sectors, such as pricing policies and marketing arrangements in agricultural markets and institutional changes that affect corporate sector behavior. Privatization of state enterprises and utilities also fall into this category, though often these measures have other objectives as well, including use of privatization receipts for stabilization efforts or to strengthen balance sheets.[44] Finally, the public sector efficiency component relates to measures that improve the delivery of public services or redefine the role of the state in the economy.

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economies and PRGF-supported programs), though these figures probably understate the proportion of measures related to institution-building as many might be classified elsewhere within the MONA database; for example, measures to improve budget control and expenditure management also aim at improving a country's institutional framework.

[44] Many goals are sought through privatization. For example, the sale of utility companies is proposed when services are poor and an infusion of capital is needed—the purpose is to improve services and modernize the capital infrastructure. In some cases, this is also an opportunity through which to attract foreign investment. Privatization receipts may also play a fiscal role. Privatization of utilities should be assessed carefully so as to avoid transforming a public monopoly into a private monopoly. In contrast, privatization of state firms in other sectors (from wineries to steel mills) are sought either to redefine the role of the state or to stem the fiscal implications of loss-making state firms. In particular, Fund conditionality is justified when loss-making state firms compromise the sustainability of the fiscal position.

- **Measures that address economic vulnerabilities, including stock or balance sheet mismatches**. These policies may be directed at tackling unsustainable public or external debt dynamics, reducing the vulnerability of domestic balance sheets to sharp swings in the exchange rate or interest rates, as well as structural weaknesses in the financial sector—particularly those that may result in contingent liabilities of the public sector. Strengthening prudential regulations and financial sector supervisory capabilities form an important element of this category.[45]

51. As discussed in *Fund-Supported Programs: Objectives and Outcomes*, most Fund-supported programs can be usefully classified as "classic" (current account) adjustment, poverty-reducing and growth-enhancing programs, or capital account crises. In a classic adjustment program, structural policies are expected to center primarily on the first of the above categories, but reforms that increase efficiency and reduce vulnerabilities can also be important.[46] The emphasis of structural reforms in PRGF-supported programs is on efficiency measures that improve potential output growth, including measures to enhance human capital, health, and education. However, medium-term demand management measures are also necessary for various reasons, including the role played by macroeconomic stability in strengthening growth and the challenges faced by these countries in mobilizing tax revenues and strengthening expenditure control.[47] Transition economies, reflecting the numerous systemic transformation challenges faced by these countries, are a hybrid of these two types of programs; efficiency and growth-oriented measures are critical, though demand management and financial sector reforms are also needed. Capital account crisis programs have more clearly defined reform needs. Specifically, reforms that reduce stock vulnerabilities take center stage among these countries, partly driven by the urgency in improving confidence in the economy. In crises where the capital outflows are primarily from

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[45] Typically, reforms in the financial sector are divided between measures aimed at strengthening the central bank, such as measures to increase its independence, and measures aimed at strengthening the financial sector more generally. The latter focuses on strengthening banking supervision and dealing with problem banks. The review of the conditionality guidelines will examine financial sector reforms in Fund-supported programs in greater detail.

[46] Within GRA-supported programs, therefore, those supported by EFF arrangements are more likely to have structural measures oriented towards enhancing economic flexibility and efficiency than those supported by stand-by arrangements.

[47] Between classic adjustment and PRGF-supported programs, the former might be expected to have a slight bias towards demand management measures, and the latter towards efficiency and growth-enhancing measures. Programs in transition economies are likely to straddle these two groups, since achieving macroeconomic stability and adjustment was a critical objective of these programs as was longer-term structural transformation of the economy.

the private sector, this means financial and corporate sector reforms. By contrast, where markets are responding to concerns about public debt sustainability, measures that improve the viability of public finances are required, even if they only have an impact over the medium-term. Although the source of the balance sheet imbalances has a bearing on the design of reforms and may reveal structural weaknesses throughout the economy (from weak demand management to efficiency bottlenecks for private sector growth), the core reform efforts of these programs are directed towards addressing balance sheet weaknesses.

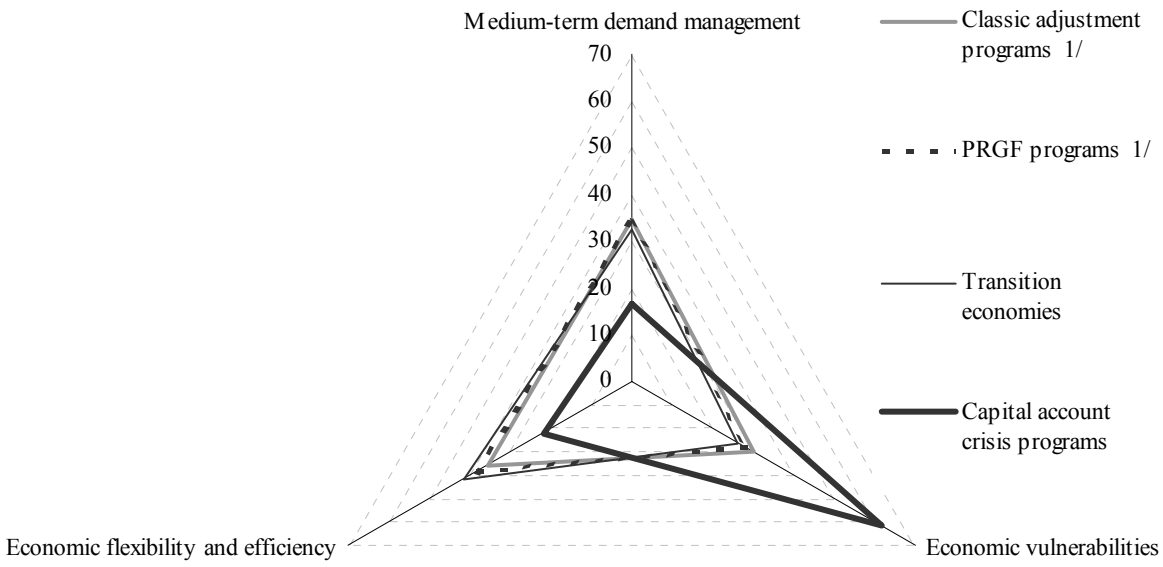
52. How well aligned are structural measures to the broad objectives of the various types of Fund-supported programs in practice? The distribution of structural measures (classified into the three categories described above) is reported in Figure 5 for GRA-supported programs (excluding programs in transition economies and capital account crises), transition economy programs, capital account crises, and PRGF-supported programs in low-income countries (again, excluding transition economies). The distribution mirrors, at least to some extent, the expected distribution by type of Fund-supported programs. In particular, measures in GRA-supported programs in non-transition economies are split between macroeconomic management (35 percent) and efficiency and growth-related measures (35 percent), and those aimed at reducing vulnerabilities (30 percent). Relative to this benchmark, programs in transition economies are somewhat more oriented towards growth enhancing measures (41 percent, a difference that is statistically significant from the non-transition GRA sample). PRGF-supported programs likewise show a somewhat greater preponderance of growth enhancing measures (38 percent, though this difference with GRA-supported programs is not statistically significant). The largest, and statistically significant, difference lies between capital account crisis programs, with their much greater emphasis on reducing sources of vulnerability—60 percent of measures (versus 17 percent on macroeconomic management and 22 percent on growth-related measures), and all other program groups.

B. Experience

53. The inherent problems of quantifying structural policies make it difficult to establish links between specific structural reforms and macroeconomic outcomes. With this limitation in mind, this section takes up two of the most common goals of structural measures in Fund-supported programs—underpinning fiscal adjustment, and enhancing economic efficiency and output growth—with a view to shedding some light on whether, or to what extent, structural policies have been useful in attaining these objectives. Given the lack of better alternatives, the analysis is limited to the effects of the number of conditions on the objectives these structural measures seek to accomplish. The analysis also distinguishes between stopped and non-stopped programs in an attempt to identify implementation issues.

Figure 5. Distribution of Structural Conditionality in Fund-Supported Programs

(In percent of total number of conditions per program year; average 1995-2000)



Type of Conditions
(In percent of total conditions per program year; 1995-2000)

	Medium-term demand management	Economic vulnerabilities	Economic flexibility and efficiency
GRA 2/	0.35	0.30	0.35
TEs	0.32	0.26	0.41 *
PRGF 2/	0.34	0.28	0.38
CAC	0.17 ***	0.61 ***	0.22 ***

Source: MONA database and staff estimates.

Note: * = significant at 10% level, *** = significant at 1% level.
1/ Test for null hypotheses that the difference in the proportion of each type of condition is equal to zero. Tests are always relative to GRA-supported programs.
2/ Excludes transition economies.

Fiscal Adjustment

54. Part of the impetus for structural reforms in Fund-supported programs was the observation in the early 1980s that fiscal adjustment efforts were often not sustained. To examine whether structural measures help underpin fiscal adjustment, program conditions related to fiscal measures were classified according to their intended effects on revenues and expenditures. The three categories related to tax and expenditure measures in the MONA database, are re-classified into two core revenue categories (tax policy and tax administration), two core expenditure categories (expenditure control and expenditure management), and a number of ancillary revenue and expenditure categories.[48] The ancillary group includes measures related to fiscal transparency, debt-related measures, civil service reform, and measures targeting a country's social security system.

55. Table 20 reports the results of regressions of fiscal adjustment—over the three year period that begins with the approval of each arrangement—in the overall balance, and of adjustment in revenues and expenditures separately, on the corresponding structural measures. The results suggest that structural measures are related with better fiscal performance, particularly in regard to core revenue measures on revenue adjustment and to core revenue and core expenditure measures on the overall fiscal adjustment. Core expenditure measures do not, however, appear to have a correlation with expenditure reduction—except perhaps among transition economies where the country-type dummy is positive and highly significant. Not surprisingly, among arrangements that did not go off-track, the impact of these measures on fiscal adjustment is stronger.[49] In addition, the numerous ancillary fiscal measures that characterize Fund-supported programs (see previous paragraph) are not found to have a correlation with overall balance, revenue, or expenditure adjustment and are not included in the regressions reported in the table.

Output Growth

56. Both in PRGF-supported programs and, to a lesser degree, in classic adjustment programs, structural reforms may be undertaken to enhance economic efficiency and long-

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[48] The three categories reclassified are the "tax and expenditures" category of the MONA database, a category referenced as "other measures", that also includes fiscal measures, and a category related to trade measures as many of those measures aim at improving the collection of customs taxes.

[49] The results presented are derived using a balanced panel of 100 programs approved in the period 1995-2000 and for which fiscal data (projected and actual) is available for three years after program approval. Data used includes fiscal revenues, fiscal expenditures, and the fiscal balance. An unbalanced panel based on available data provides broadly similar results.

Table 20. Structural Measures and Fiscal Adjustment: Regression Results 1/

Dependent variables	Actual adjustment in 2/					
	the fiscal balance		government revenue		government expenditure	
	All programs	Non-stoppage programs 3/	All programs	Non-stoppage programs 3/	All programs	Non-stoppage programs 3/
Regressors						
Number of fiscal measures related to the 4/						
Fiscal balance 5/	0.11 *	0.14 *				
Revenues			0.16 **	0.32 ***		
Expenditures					0.00	0.02
Dummy variables						
Stopped program 3/	-0.27	-	-0.13	-	-0.05	-
PRGF program	-0.05	-0.69	0.05	-0.08	0.18	0.20
Transition economy	0.71 *	0.31	-0.37	-0.54	1.40 ***	1.29 ***
Capital account crisis	0.45	-0.09	0.80	0.46	0.08	0.39
Intercept	-0.14	0.28	-0.17	-0.17	-0.32	-0.18
# observations/programs	100	67	100	67	100	67
R^2	0.11	0.12	0.08	0.16	0.15	0.23
F-statistic 6/	1.9 *	1.6	1.3	2.2 *	2.8 **	3.7 ***

Sources: International Monetary Fund, *MONA* ; and IMF staff estimates.

Note: * = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level.
1/ Regressions based on a dataset of programs approved during the period 1995-2000 for which data on fiscal balance, revenues, and expenditures are available.
2/ Average adjustment in years t, t+1, and t+2, where t is the year the program is approved.
3/ A stoppage program is defined as a program that terminates earlier than was originally anticipated.
4/ The number of fiscal measures is normalized by the duration of the program.
5/ Structural measures that affect the fiscal balance includes revenue and expenditure reforms.
6/ F-statistic for null hypothesis that all explanatory variables (other than the constant) are jointly equal to zero.

term growth performance, raising the question of the effectiveness of such reforms. Typical reforms include measures aimed at liberalizing the trade regime as well as changes in pricing and marketing policies. Table 21 reports the results of a regression of the average change in real GDP growth (between years *t-1* and *t+2*) on growth-related structural measures. Growth, of course, may depend on a number of other factors. To purge the effects of variables that are unlikely to vary significantly over a two- to three-year horizon—such as the stocks of human and physical capital—the dependent variable is specified as the change in real GDP growth. To proxy for macroeconomic variables that are likely to change at higher frequency, both the change in the fiscal balance and the change in the inflation rate are included in the regression as additional explanatory variables.

57. From the Table, growth-related structural measures are positively and significantly related to better growth performance, especially in programs in which there are no stoppages. At the same time, the effects are not large: from the estimates, each additional measure is associated with 0.1 percentage point higher real GDP growth. Of course, it bears emphasizing that these results should only be viewed as indicative, given the possibility of omitted variables, endogeneity of program participation, and the inherent difficulties of quantifying structural measures. Moreover, it is plausible that the real relationship is non-linear, possibly dependent of threshold effects, with diminishing returns to the number of structural measures. These more complicated relationships, however, would not be captured by the simple linear regression reported here.

C. Summary

58. Structural policies have played an increasingly important role in Fund-supported programs, complementing macroeconomic policies by underpinning stabilization efforts and orderly adjustment, enhancing efficiency and growth, and reducing vulnerabilities to future crises. There is broad alignment between the nature of structural reforms included in Fund-supported programs and the objectives of the program. Thus classic adjustment programs tend to focus on medium-term demand management issues, PRGF-supported programs include growth and efficiency measures (as is also the case for transition economies), and capital account crisis programs aim at addressing vulnerabilities. Turning to experience, within the inherent limitations of quantitative analysis of the effects of structural reforms, the evidence suggests that structural measures included in Fund-supported programs might have had some positive effects on achieving sustained fiscal adjustment and output growth.

VI. Conclusions

59. Fund-supported programs are intended to address specific economic problems such as fostering macroeconomic stability and orderly external adjustment, promoting growth and poverty reduction, and reducing vulnerability to future balance of payments problems or financial crises. In formulating their economic programs, national authorities have at their disposal a number of instruments, including the country's exchange rate regime, the monetary stance, fiscal policies and structural reforms.

Table 21. Structural Measures and Growth: Regression Results 1/

Dependent variables	Average change in real GDP growth rates in the first three years following program approval 2/			
	All programs		Non-stoppage programs 3/	
Regressors				
Number of growth-related structural measures 4/	0.08 **	0.07 **	0.12 *	0.10 *
Dummy variables				
Stopped program 3/	-0.04	0.06	-	-
PRGF program	-0.30	-0.26	-0.53	-0.38
Transition economy	1.77 ***	0.93 **	1.38 **	0.98 *
Capital account crisis	0.52	0.52	0.77	0.71
Macro variables				
Average change in the fiscal balance	-	0.28 **	-	0.25 *
Average change in the inflation rate	-	-0.08 ***	-	-0.04
Intercept	-0.24	-0.38	-0.19	-0.30
# observations/programs	100	100	63	63
R^2	0.30	0.40	0.27	0.32
F-statistic 5/	8.2 ***	8.7 ***	5.4 ***	4.4 ***

Sources: International Monetary Fund, *MONA* ; and IMF staff estimates.

Note: * = significant at 10% level, ** = significant at 5% level, *** = significant at 1% level.
1/ Regressions based on a dataset of programs approved during the period 1995-2000.
2/ Average growth in years t, t+1, and t+2, where t is the year the program is approved.
3/ A stoppage program is defined as a program that terminates earlier than was originally anticipated.
4/ The number of growth-related structural measures is normalized by the duration of the program.
5/ F-statistic for null hypothesis that all explanatory variables (other than the constant) are jointly equal to zero.

60. Although there is some alignment between the choice of exchange rate regime and program objectives, countries are no more likely to alter their exchange rate regime at the outset of a Fund-supported programs than otherwise, perhaps because of concerns about the difficulty of achieving a graceful exit if the regime is less well suited for the country over the longer term. At the same time, successful disinflations have been achieved both under pegged and under flexible regimes—the key underlying factor determining success at disinflation being whether the requisite fiscal adjustment is undertaken. National authorities also typically tighten the monetary stance in Fund-supported programs to restore macroeconomic stability and reduce inflation, and Fund support appears to impart greater credibility to the authorities' policies thus assisting in the disinflation effort.

61. Fiscal policy often forms a key element of Fund-supported programs in order to underpin stabilization efforts and to foster orderly external adjustment. Programs target fiscal adjustment according to the size of the initial deficit, the level of public expenditure, and the targeted improvement in the current account balance—ceteris paribus, targeted adjustment is smaller when there is a large output gap and in PRGF-supported programs. On average, fiscal adjustment falls short of program targets, undermining disinflation efforts and leading to worse public debt dynamics than programmed—though the most important factor explaining debt projection errors is below-the-line operations, including the costs of financial sector restructuring. Fiscal adjustment contributes to external adjustment, but there is no evidence that fiscal tightening resulted in cases of greater current account adjustment than programmed or in lower output growth.

62. Structural measures are intended to buttress stabilization efforts, reduce vulnerabilities and balance sheet mismatches, and enhance economic flexibility and efficiency. Structural measures in Fund-supported programs are broadly aligned to the overall objectives of the program—thus, for instance, capital account crisis programs have a proportionately larger share of measures aimed at reducing vulnerabilities, including in the financial sector; while other programs mirror the alignment expected from the program objectives, these are not always statistically significant. Fiscal structural measures are related to better fiscal performance, particularly in regard to revenue measures. Finally, there is at least some evidence that structural measures oriented towards improving economic flexibility and efficiency are correlated with better output growth performance.

63. Overall, the findings of this paper suggest that the setting of macroeconomic and structural policies in Fund-supported programs are generally well aligned to program objectives. By the same token, however, this also means that any slippages in policy implementation (especially in fiscal policy) are likely to be reflected in program targets being missed.