INTERNATIONAL MONETARY FUND

2011 Review of Conditionality

Background Paper 3: Outcomes of Fund-Supported Programs

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In consultation with other Departments

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Contents Page

Figures

Appendices

GLOSSARY

AM	Advanced Market Country
ECF	Extended Credit Facility
EFF	Extended Fund Facility
EM	Emerging Market Country
ENDA	Emergency Natural Disaster Assistance
EPCA	Emergency Post Conflict Assistance
FCL	Flexible Credit Line
GRA	General Resources Account
HIPC	Heavily Indebted Poor Countries
LICs	Low-Income Countries
MDRI	Multilateral Debt Relief Initiative
PCL	Precautionary Credit Line
PRGF	Poverty Reduction and Growth Facility
PRGT	Poverty Reduction and Growth Trust
PSI	Poverty Support Instrument
RCF	Rapid Credit Facility
SCF	Stand-by Credit Facility
SBA	Stand-by Arrangement
SMP	Staff-Monitored Program

I. INTRODUCTION

1. **This paper examines the effects of Fund-supported programs initiated during 2002-11**, with special emphasis on programs started after the onset of the recent global economic crisis.[1,2] The paper investigates the effects of Fund-supported programs on key macroeconomic variables and, data restrictions permitting, on social variables (social government spending, unemployment and social outcome indicators). Further, it analyzes the contribution of fiscal and external accommodation in helping program countries get through the recent global crisis. The assessment of the impact of Fund-supported programs is necessarily incomplete to the extent that the global financial crisis is ongoing and the most recent crisis programs such as the March 2012 program for Greece are not included. The Crisis Program Review provides detailed analysis of recent GRA-supported programs.

2. **The main objective of most Fund-supported programs, particularly GRA-supported programs, is to bring about macroeconomic and external stability**. In the traditional GRA-supported program, a member country faces external financing difficulties and internal imbalances, requiring stabilization measures. The problems can be exacerbated by capital outflows. Facing external imbalances, the member must adjust while obtaining financing from official sources—in a few cases, also restructuring its external obligations. In the case of a purely temporary disequilibrium, financing accompanied by limited adjustment would be appropriate, while a permanent shock requires more substantial adjustment. A key objective in traditional Fund-supported programs, therefore, is to reduce the current account deficit to a sustainable level and to reconstitute reserves over a time frame that complements Fund and possibly other official financing. Thus economic policies are intended to bring

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[1] Prepared by a staff team led by Hans Weisfeld, comprising Christian Henn, Emmanuel Hife, Jean-Baptiste Le Hen, Armine Khachatryan, Sarah Sanya, Joe Thornton, Jarkko Turunen, and Nick Young, under the guidance of Dominique Desruelle and Ranil Salgado (all SPR). Contributions were also provided by Masahiro Nozaki (FAD). This is the third of four background papers for the 2011 Review of Conditionality and the Design of Fund-Supported Programs, consistent with the Concept Note for the Review and the subsequent Board discussion on February 14, 2011. The first background paper is titled "The Content and Application of Conditionality" (hereafter, referred to as BP1), the second "Design of IMF-Supported Programs" (BP2) and the fourth "Technical Appendices" (BP4).

[2] The sample includes programs initiated during March 2002 - September 2011. The term "Fund-supported program" denotes upper-credit tranche financial arrangements under the IMF's GRA (General Resources Account: Stand-by Arrangements (SBAs) and Extended Fund Facility (EFF)), as well as under the concessional PRGT (the Poverty Reduction and Growth Trust: Extended Credit Facility (ECF; formerly Poverty Growth Reduction Facility (PRGF)), Stand-by Credit Facility (SCF), and the high access component of the ESF (ESF-HAC)), as well as the non-financial Poverty Support Instrument (PSI). Non-upper-credit tranche financial support under Emergency Post Conflict Assistance (EPCA), Emergency Natural Disaster Assistance (ENDA) and Rapid Credit Facility (RCF) were excluded, as were staff-monitored programs (SMP). Further, Flexible Credit Line (FCL) and Precautionary Credit Line (PCL) programs were excluded, as ex-post conditionality in these programs is non-existent or very limited. Most data are from the September 2011 release of the World Economic Outlook.

about the required macroeconomic adjustment, while Fund and other financing are intended to smooth the adjustment. Since a given adjustment can be achieved through different combinations of policies, making good policy choices involves picking those alternatives that raise the likelihood of restoring macroeconomic and external stability in the least costly way. In PRGT-supported programs, while stabilization objectives may be important, the promotion of growth and poverty reduction are key objectives, with the need to maintain external viability as an overarching constraint. In these programs, stabilization in the sense of a reduction in fiscal or external deficits is therefore generally less of an issue as long as sustainability is preserved. For example, temporarily larger deficits may reflect appropriate priority social or infrastructure spending.

3. **Determining the macroeconomic and social effects of Fund-supported programs is challenging, and despite substantial research, there is as yet no consensus**. One way to explore the effects of programs is by comparing outcomes in countries that had programs to outcomes that would have been observed in these same countries if they had not had programs (or a "counterfactual").[3] Researchers have tried different ways to determine these unobservable outcomes. Appendix I provides an overview of how they have gone about this and what conclusions they have drawn, and Appendix II surveys the results of previous Reviews of Conditionality (RoCs). So far, large uncertainties associated with constructing a counterfactual remain and there is no consensus on the effects of Fund-supported programs.

4. **Against this background, the paper pursues a multi-pronged strategy to assess the impact of Fund-supported programs**. First, it describes economic outcomes by examining the path of key variables before, during, and after programs (descriptive analysis). Second, it assesses the degree to which key program objectives are met by enumerating the share of program countries that achieve satisfactory levels for growth, inflation, and fiscal balances (threshold analysis).[4] Third, it explores whether programs put countries in a position to stabilize or reduce external and public debt in the medium term (debt dynamics analysis). Fourth, it assesses programs by comparing the evolution of macroeconomic variables in program countries to that in "control groups" of similar non-program countries (comparator

[3] A complication concerns Fund-supported programs that "went off track." For the purposes of this analysis, countries are considered under a program until it is cancelled. Thus, the sample may contain some programs that went off track at some point but were not immediately cancelled. To the extent that programs that go off track have weaker outcomes, the analysis will therefore tend to underestimate the benefits of programs.

[4] Given the intricacies of determining satisfactory levels of external balances, the threshold analysis does not assess the degree to which program countries achieved satisfactory external balances. One of these intricacies is that developing countries that are scaling up public investment to remove infrastructure bottlenecks will tend to see substantial external deficits that cannot be sustained indefinitely but may tolerated for a limited time. Also, the analysis was unable to assess the effect of Fund-supported programs on poverty, in part because of a lack of annual data on poverty rates for most of the sample. The paper, however, examines other social indicators: unemployment (in GRA-supported programs), social expenditures and some social outcomes.

analysis).[5] And fifth, it assesses programs by the need to have successor programs within a short span of time.[6] The paper also describes fiscal and external accommodation during the recent crisis period.

5. **Assessing the effects of programs requires careful consideration of trade-offs in macroeconomic stabilization**. Starting in a situation of macroeconomic disequilibrium, there are numerous possible paths to a combination of satisfactory growth, inflation, fiscal balance, and external balance. Changes in one variable may affect other variables. Also, the speed of change in one variable tends to affect the speed and extent of changes in other variables. For example, rapid disinflation and rapid fiscal or external contractions could entail large output losses. In line with this, more financing will allow more gradual external and fiscal adjustment, reducing immediate output losses but leading to higher eventual absolute levels of debt. Depending on the size of the reaction of output to fiscal and external adjustment, sharper adjustment may therefore result in higher or lower eventual debt to GDP ratios ("debt burdens").[7] Recent research suggests that maintaining growth can greatly facilitate a successful stabilization.[8]

6. **Most Fund-supported programs in the sample appear to have helped member countries improve macroeconomic and social conditions**, particularly where programs provided for substantial fiscal and external accommodation of the negative demand effects of the recent global crisis:

- **Achieving appropriate stabilization**: In a large majority of GRA- and PRGT-supported programs, appropriate stabilization was achieved and pre-existing difficulties were largely resolved.[9]

- **Helping countries improve macroeconomic and social conditions by more than in comparable non-program countries**: Economic conditions in GRA-supported program countries improved often by more than in control group countries, particularly as concerns inflation, fiscal balances and international reserves, while

[5] In the baseline methodology for GRA-supported programs, similarity is defined as having a similar estimated propensity to request and obtain a Fund-supported program.

[6] For GRA-supported programs only, given the fact that many LICs have received sustained Fund support.

[7] In this paper, the term debt burden refers to the public domestic and external debt to GDP ratio, or a country's public and private external debt to GDP ratio, as the case may be.

[8] See for example Mauro (2011), who finds that growth is a main determinant of the success of fiscal stabilization attempts. Countries where growth held up well or surprised on the upside have been successful in fiscal adjustment much more often than countries where growth was weak or surprised on the downside.

[9] Stabilization success was measured by comparing inflation, growth, and fiscal balances at program end against simple static thresholds.

social spending was largely safeguarded.[10] The macroeconomic effects of PRGT-supported programs are more difficult to detect given that with the exception of improvements in debt ratios, on average a pronounced improvement across key variables is not observed over the course of a typical program period. This likely reflects the fact that unlike most GRA-supported programs, which have short-term stabilization as their primary goal, most PRGT-supported programs aim at resolving long-term balance of payment problems while supporting growth and poverty reduction. Also, the control group methodology used to determine effects of GRA-supported programs cannot be applied to PRGT-supported programs (see Section II.D). Despite these challenges, previous studies found that low-income countries (LICs) do benefit from longer-term program engagement (IMF 2009a). Also, PRGT-supported programs helped raise social spending over the longer period 1985-2009, and there is initial evidence that higher social spending has helped improve social outcomes.[11]

- **Responding flexibly to the global crisis**: Fiscal and external accommodation in many program countries during the recent global economic crisis was somewhat larger than in previous crisis periods, and this may well have helped many countries get through the crisis better. The reform of the GRA and PRGT lending facilities in 2009 helped the Fund provide substantial parts of the financing needed for this larger accommodation.

7. **Meanwhile, some recent program countries are facing weak growth and challenging public debt dynamics**. This is the case in particular for programs in the euro area and in some Caribbean countries. In Europe, during 2009-10 fiscal space vanished rapidly in Greece, Portugal, and Ireland because debt levels were already fairly high at the start of the crisis, output contraction lowered fiscal revenue, and/or bank restructuring added to debt. Macroeconomic and fiscal data revisions, including upward revisions of the 2009 fiscal deficit and debt stock, and the impact of a credit crunch on growth, also contributed to weaker-than-projected debt dynamics in Greece. Fund-supported programs initialized in 2010-11 aimed at fiscal consolidation and structural reforms to reverse the unfavorable debt dynamics, but in at least one case, economic activity fell and the debt burden rose more than projected. Public debt in some programs is projected to remain high for a number of years.

8. **A caveat to the above findings is that the analysis of recent programs relies in part on projected outcomes**. Values of macroeconomic variables for 2011 and later are

[10] The finding that social spending was largely safeguarded in GRA-supported programs pertains to programs started during 2002-11. Over the longer period 1985-2009, social spending in GRA-supported programs rose faster than in non-program countries.

[11] Effects of PRGT-supported programs on social spending evaluated in a sample covering the period 1985-2009 (see Section V).

projections.[12] As Appendix III shows, however, on average the path of variables does not change dramatically when projections are excluded. In particular, differences between averages including and excluding projections are generally limited and vary in sign (in some cases indicating more favorable outcomes, in others less favorable ones). Further, BP2 finds no evidence of bias in macroeconomic projections during the sample period. Thus, inclusion of projections is unlikely to change the overall assessment of the effects of Fund-supported programs. This being said, it is certainly possible that the outcomes for recent programs will surprise in one or the other direction, particularly as concerns programs in countries that are still strongly affected by the global financial crisis. A full assessment of ongoing programs such as those in euro area will thus have to follow at a future point in time.

9. **The paper is structured as follows**. Section II discusses the outcomes of GRA-supported programs. Section III does the same for PRGT-supported programs. Section IV investigates fiscal and external accommodation in recent crisis programs. Section V studies the impact of programs on social spending and social outcomes.

II. Outcomes of GRA-Supported Programs

10. **The sample of GRA-supported programs during 2002-11 comprises 67 programs in 44 countries**, beginning with the March 2002 SBA for Uruguay and ending with the September 2011 SBA for Serbia (see BP4, Appendix 12).[13] Of these, slightly more than half (37 programs) were categorized as "crisis programs" on account of having started on or after September 15, 2008.

11. **The analysis defines pre-program, program, and post-program periods annually and assumes that programs affect most variables already in the year of program start**. With period t denoting the year of program start, for GRA-supported programs the pre-program period comprises years t-2 and t-1, the program period years t to t+2, and the post program period years t+3 and t+4.[14] A difficulty results from the fact that programs can start at any time in the year and new economic policies take some time to be implemented and show effect. As a result, the effect of a program on slow-moving variables might be small in the year of program start. GDP growth could well be such a variable. Against this

[12] As previously mentioned, most data used in this paper were taken from the September 2011 release of the World Economic Outlook. Projections for 2011 are unlikely to be subject to large revisions since they incorporate observations for the months January – August 2011. Projections for 2012 and later could be revised more substantially.

[13] One program was omitted due to data issues: the 2002 EFF for Serbia and Montenegro.

[14] While program length varies, assuming uniform pre-program, program, and post-program periods is an acceptable approximation that enables analysis in identical time units (years), thereby facilitating comparison among programs.

background, the analysis will consider alternative assumptions about the time at which programs start to affect growth (in the year of program start or only in the following year).[15]

A. Descriptive Analysis

12. **On average, programs that started during 2002-11 saw improvements in key macroeconomic variables** (Figure 1).[16] Prior to seeking Fund assistance, the typical (or average) program country experienced a sharp growth slowdown and some increase in unemployment; increasing inflation in the high single digits; fiscal deterioration and a rising debt burden; as well as deterioration of the current account.[17] Once countries started to receive Fund support, however, these trends reversed. Growth generally rebounded, unemployment and inflation declined gradually, fiscal balances improved with social spending largely safeguarded, the debt burden fell, and the current account improved. Reserve coverage also improved.[18, 19]

13. **Programs that were preceded by deep recessions typically saw a quick growth rebound in the presence of gradual fiscal consolidation**. As in other cases, growth in these programs rebounded already in the second program year (t+1) and approached the program

[15] Annual growth rates are subject to lagged and base effects. For example, in the full sample of GRA-supported programs, WEO growth projections made before program initialization predict more than three quarters of the typical growth decline in the year t of program start. The projections are based on policies in effect at the time of the projection and therefore do not reflect policy changes due to the program. The remaining one quarter of any growth decline could also be due to negative shocks prior to the start of the program, possibly in combination with policy weaknesses. Also, if programs start on average in the middle of the year, any effects of associated policy changes on growth in this year must per force be very limited given that policies take time to be implemented and affect growth, and given the limited weight of the second half of the year in the calculation of annual average growth rates.

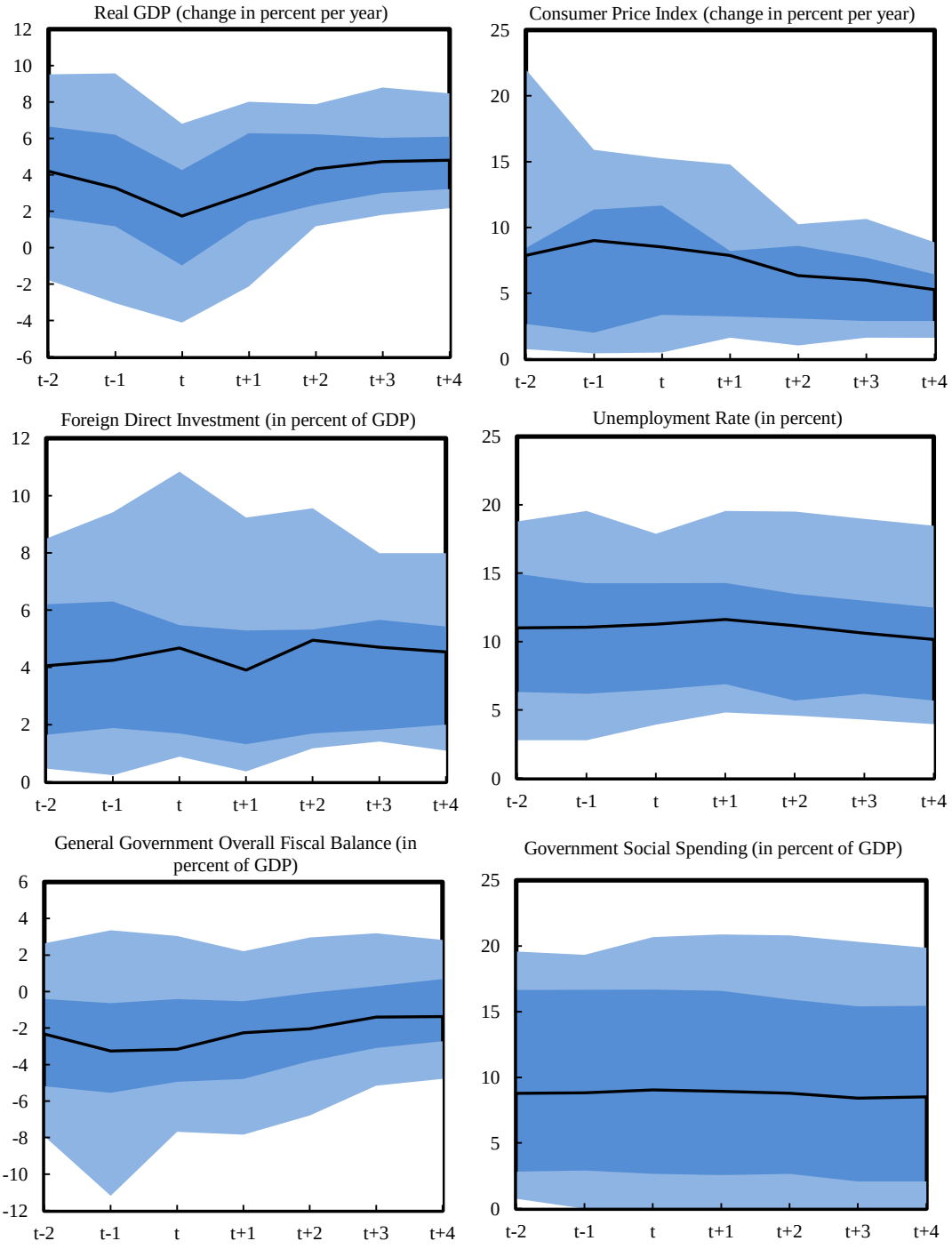
[16] In the spirit of providing an initial overview, this section focuses on performance in terms of absolute levels of macroeconomic indicators. More nuanced analysis is presented in the following sections.

[17] There is substantial diversity in conditions at program start, including on growth, inflation, unemployment, and reserves, with about a quarter of the programs with reserves at a precariously low levels (at below three months of imports) and about a quarter with apparently comfortable levels of reserves (more than six months of imports). In addition, there are a few countries with very large initial government debt and a few countries with very high current account deficits.

[18] Here social spending is the WEO series on social benefits (series code CGES) and consists of social security benefits, social assistance benefits, and employer social benefits.

[19] Reserves include Fund credit. Reserves increase, albeit more gradually, during and after the program period also when Fund credit is excluded.

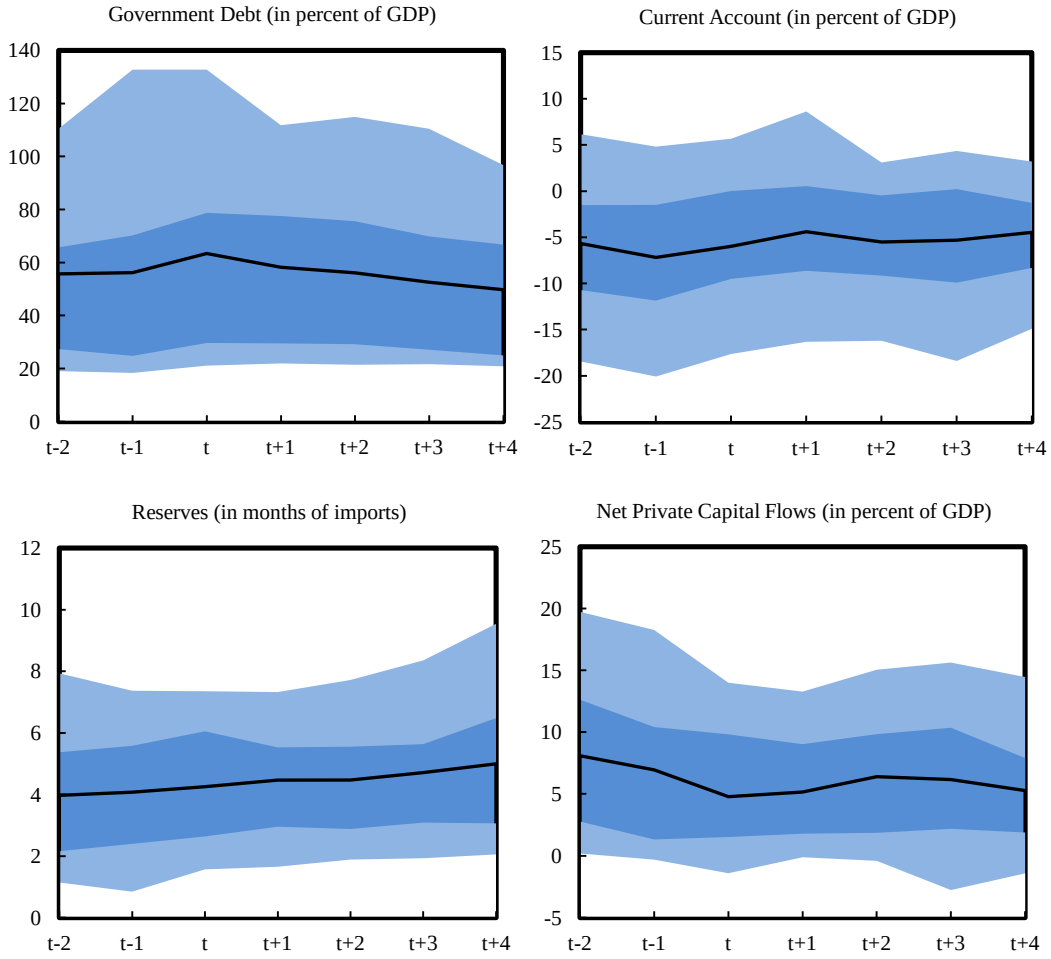
Figure 1. Macroeconomic Outcomes of GRA-Supported Programs, 2002-11 [1]



Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

Figure 1. Macroeconomic Outcomes of GRA-Supported Programs, 2002-11 [1] (Continued)



Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

country average by the end of the post-program period.[20] Unemployment increased initially but typically started to decline already during the program period. Most countries in this group also saw gradual fiscal consolidation, typically starting in the second program year (t+1). As in other programs, social spending was largely protected. Debt levels typically rose throughout the program and post-program periods but in most cases eventually stabilized at below 60 percent of GDP.

14. **On average, developments in GRA-supported programs during the global crisis were more pronounced than those in the overall sample**, with longer-term challenges expected to remain in some programs (Figure 2). Prior to program start, crisis program countries faced an even sharper growth slowdown on average than countries that had a program at other times during 2002-11. They also showed substantially weaker fiscal and current account balances, in combination with quickly growing government debt. Many of them also witnessed a sharp decline in private capital inflows, the hallmark of capital account crises.[21] After program start, however, on average growth recovered quickly, inflation fell, fiscal balances improved while social spending was largely safeguarded, reserves increased, and current account balances improved. However, debt ratios stabilized at a high level, and private capital inflows continued to decline overall, suggesting that important longer-term challenges remain at least in some countries. Compared to the full sample, the assessment of post-program outcomes for recent crisis programs relies more on projected outcomes, suggesting a need for caution.

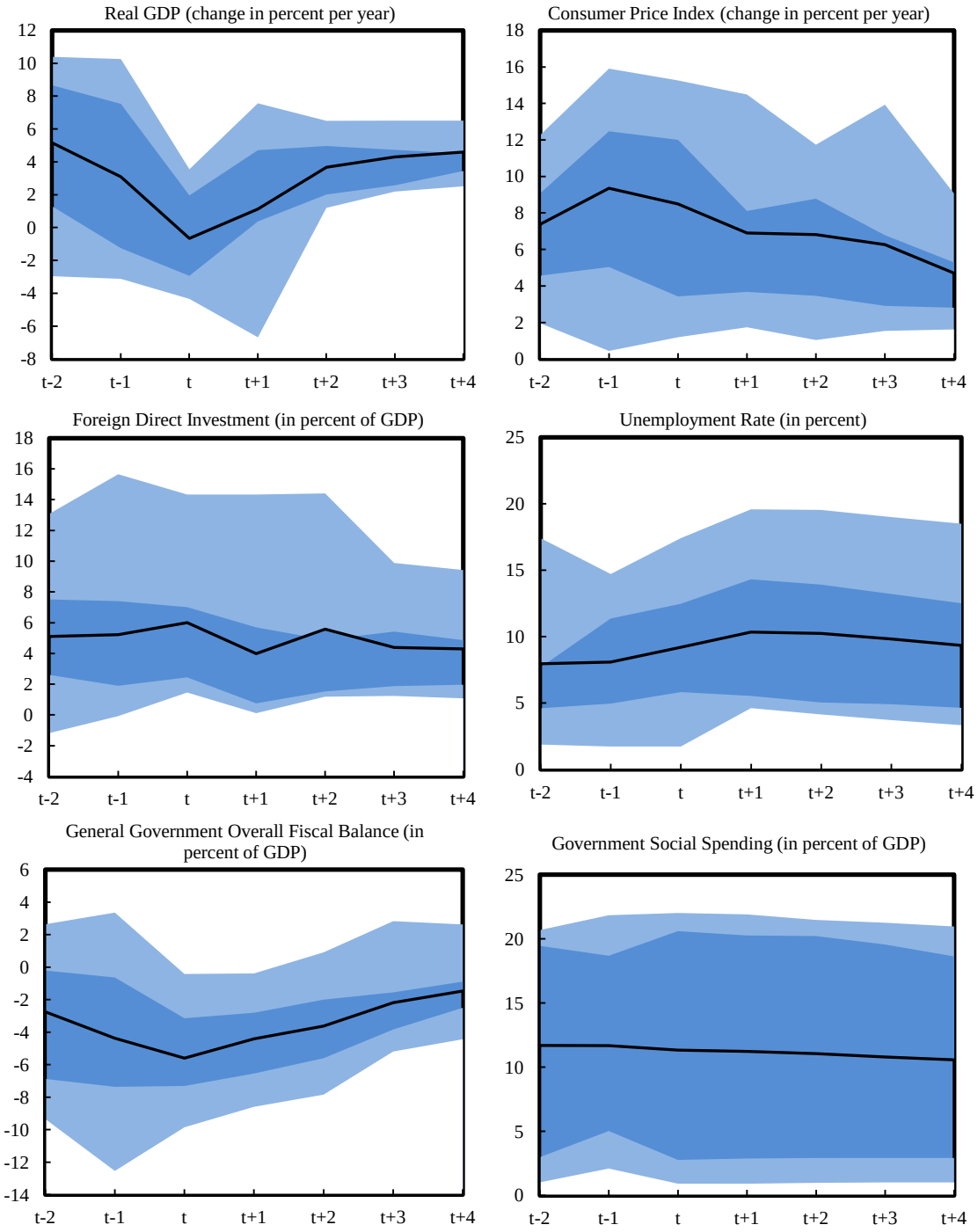
15. **Closer inspection reveals that developments among crisis programs vary widely.** In a chronological distinction, developments in programs that started before late 2009 ("wave 1") were generally favorable (with some limitations) while developments in programs that started later ("wave 2") are more challenging.[22] This difference reflects in part more difficult initial conditions in wave 2 program countries. For example, in many wave 2 program countries, the crisis created or exacerbated challenges to fiscal sustainability. In a

[20] Programs with the lowest growth rates at time t (in the bottom quartile) are: Antigua and Barbuda (2010), Armenia (2009), Bosnia and Herzegovina (2009), Costa Rica (2009), Dominica (2002), El Salvador (2009), Greece (2010), Jamaica (2010), Latvia (2008), Maldives (2009), Mongolia (2009), Portugal (2011, projected), Romania (2009), Serbia, Republic of (2009), Seychelles (2008) and Uruguay (2002). In addition, Iceland (2008) and Ireland (2010) saw strong growth declines either before or immediately after program initialization.

[21] Capital account crises are characterized by sharp reversals of capital inflows that can result in large and sudden current account adjustment with pervasive macroeconomic consequences. See e.g., Ghosh and others (2002) for a detailed discussion of past capital account crises.

[22] In line with work done in the context of the Crisis Program Reviews, the emerging and advanced economies were divided chronologically into two groups: the 20 "wave 1" countries seeking Fund assistance during the peak of the crisis (2008-mid 2009): Armenia, Belarus, Bosnia and Herzegovina, Colombia, Costa Rica, El Salvador, Georgia, Guatemala, Hungary, Iceland, Latvia, Mexico, Mongolia, Pakistan, Poland, Romania, Serbia, Seychelles, Sri Lanka, and Ukraine; and the 13 "wave 2" countries seeking assistance from late 2009 on: Angola, Antigua & Barbuda, Dominican Republic, Greece, Honduras, Iraq, Ireland, Jamaica, Kosovo, Macedonia, Maldives, Portugal, and St. Kitts and Nevis.

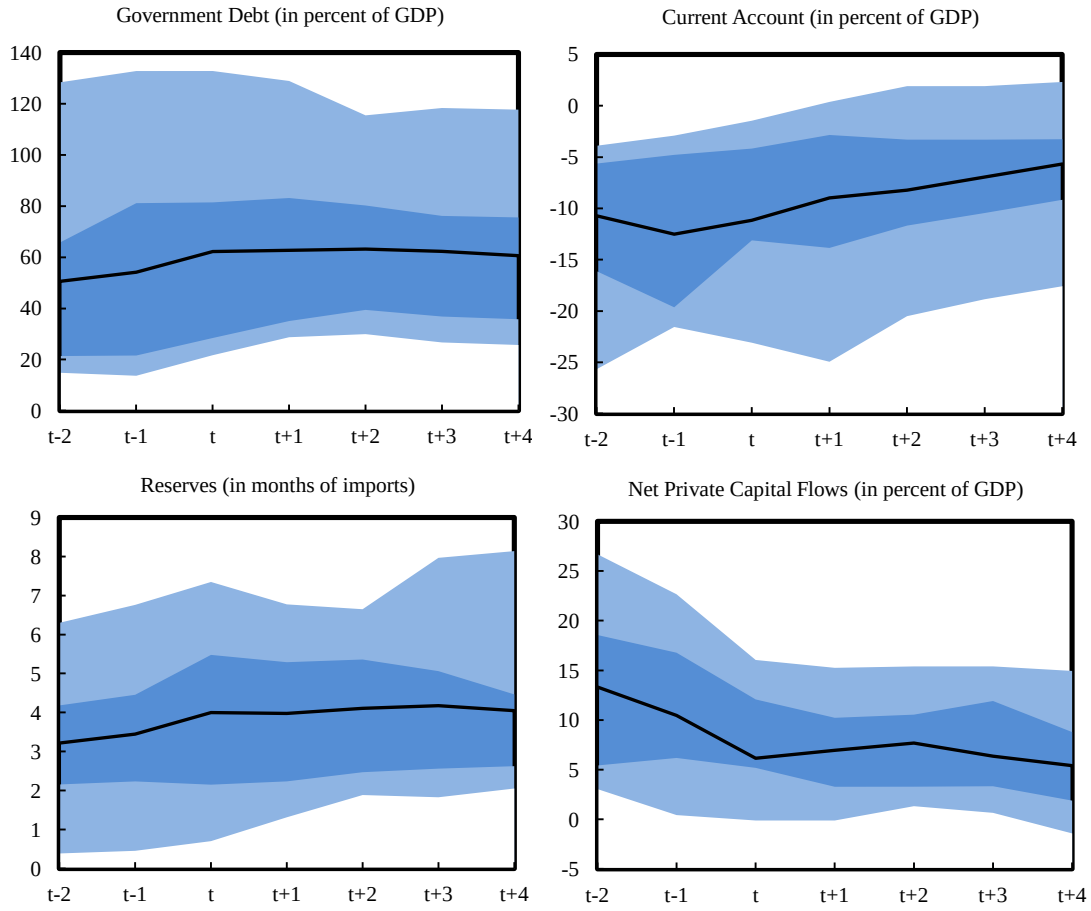
Figure 2. Macroeconomic Outcomes of GRA Supported Crisis Programs, 2008-11 [1]



Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

Figure 2. Macroeconomic Outcomes of GRA-Supported Crisis Programs, 2008-11 [1] (Continued)



Source: WEO October 2011, IMF

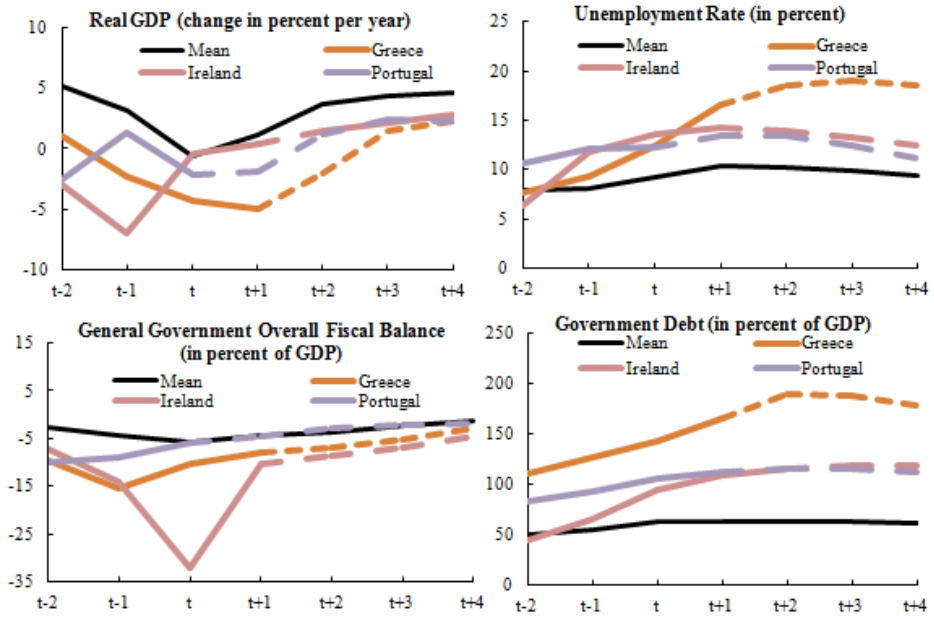
[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

geographical distinction focusing on Europe, the euro area program countries (Greece, Ireland and Portugal) are expected to see growth below the GRA-supported program country average and elevated unemployment for some time (Figure 3).[23] In some cases, such low growth reflects the need to strengthen competitiveness through internal devaluation (as members of a currency union, euro area countries do not have recourse to the exchange rate

[23] Comparison of macroeconomic performance in advanced program countries with the GRA-supported program country average should be mindful of the fact that the average reflects mainly emerging market economies, which in recent years have seen generally strong growth.

instrument). Due in part to slow growth, public debt in euro area countries is expected to remain well above the program country average for a number of years.[24]

Figure 3. Growth, Unemployment and Fiscal Outcomes in Selected Countries



Note: Dashed line indicates projections (2011 forward)

B. Threshold Analysis

16. **To evaluate whether programs achieved appropriate stabilization, outcomes of programs were judged against a set of static thresholds**. Three key macroeconomic outcomes—growth, inflation, and fiscal balances—were assessed against thresholds deemed to indicate a satisfactory macroeconomic equilibrium: growth above 3 percent per year, fiscal deficits below 5 percent of GDP, and inflation below 10 percent per year.[25] While this analysis provides an initial overview of program success, it has shortcomings. In particular, the chosen levels of the static thresholds are open to debate, and they neglect country and program specific circumstances. Also, there is no assessment of external equilibrium,

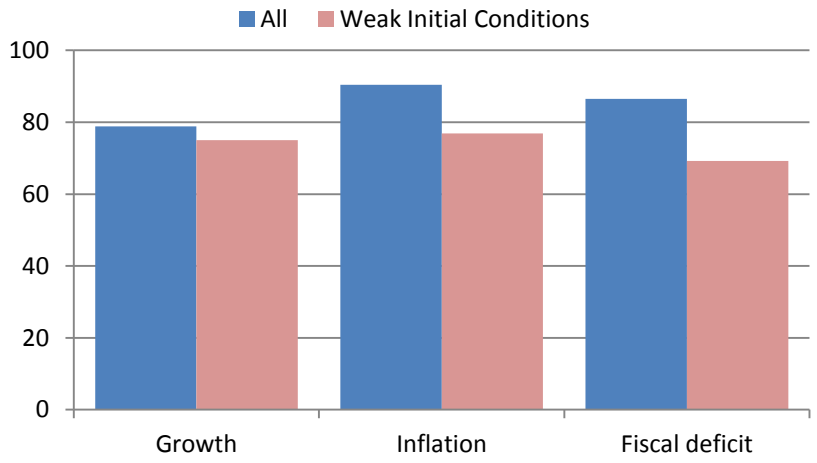
[24] As previously mentioned, this paper does not attempt to provide a full assessment of ongoing programs such as those in the euro area.

[25] While these one-size-fits-all thresholds are admittedly inadequate to judge outcomes in any one particular country, they nevertheless are useful as a first-pass assessment of program success. The growth threshold was set at 3 percent as this implies positive per capita income growth in most countries. The fiscal threshold was set at -5 percent of GDP because such a level would likely not jeopardize sustainability in a typical emerging market country experiencing, say, 3 percent real GDP growth and moderate inflation, commencing from a sustainable debt position. The inflation threshold was set at 10 percent to reflect the finding that inflation in excess of about 10 percent hinders growth in developing countries (see, e.g., Espinoza, Leon and Prasad (forthcoming)). For advanced markets, a lower threshold would probably be preferable.

reflecting the difficulty of determining a meaningful uniform threshold for a large number of countries.

17. **Growth, inflation, and fiscal outcomes typically outperformed the thresholds**. By the third year after program initialization, growth exceeded 3 percent, inflation was below 10 percent, and the fiscal deficit was below 5 percent of GDP in a large majority of program countries (Figure 4).

Figure 4. GRA-Supported Programs: Outcomes Better than Threshold Values Three Years After Program Start
(In Percent of Programs)



18. **Program countries with specific pre-existing weaknesses generally saw significant improvement in their performance against thresholds**. A country is defined as having a pre-existing weakness in one of the three indicators if it was among the weakest quartile of program countries in the year before program initiation.[26] Outcomes for program countries with such weaknesses also usually exceeded the static thresholds. While the shares of these countries reaching or exceeding the threshold values are slightly smaller than in the full sample, shares in the 70 – 80 percent range nevertheless imply significant improvement. This is confirmed by an analysis of the adjustment path (Appendix IV), which finds that by the third year after program start most programs with pre-existing weaknesses performed almost as well as program countries without such weaknesses.

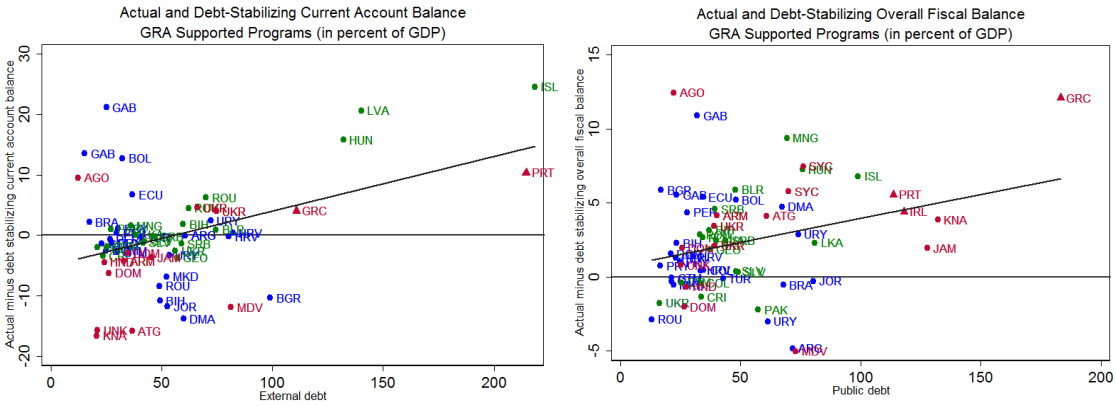
C. Debt Dynamics Analysis

19. **A less static way to assess adjustment considers whether programs left (or are projected to leave) countries with stable or declining debt burdens**. This approach takes

[26] For GRA-supported programs during 2002-11 the criteria are: growth below 1.2 percent, inflation above 10.8 percent, and fiscal balance weaker than -6.2 percent of GDP.

into account that fiscal and external balances in fast-growing countries can be weaker than in slow-growing ones without necessarily jeopardizing debt sustainability. Figure 5 depicts the results. The left-hand side of the Figure shows public and private external debt in the post-program period (average of periods t+3 and t+4) on the horizontal axis, and the difference between the actual and the debt-stabilizing current account balance in the post-program period on the vertical axis. The right-hand side does the same for fiscal debt and the actual and debt-stabilizing fiscal balances. Data are WEO observations (or, for 2011 and later, WEO projections) except for medium-term growth, which was uniformly assumed to be equal to that observed during the ten years preceding the program. Such longer-run backward-looking growth performance is likely a good indicator of future growth potential. Programs lying above the horizontal line intersecting at zero reduce their debt burdens over time, as their current account or fiscal balance is higher than needed to stabilize debt in relation to GDP in light of projected growth.[27] Programs lying below the horizontal line see their debt burdens rise. A positive slope of the regression line reflects faster debt reduction at higher levels of debt.

Figure 5. Debt Dynamics in GRA-Supported Programs [1]



Sources: Fund, MONA and WEO databases; and Fund staff estimates.

[1] Blue denotes non-crisis programs, green denotes wave 1 crisis programs, and red denotes wave 2 crisis programs. Euro area countries denoted with a triangle, non-euro area countries denoted with a circle. The Iraq programs were dropped due to data availability. The Ireland program is not displayed in the current account charts, because it is an outlier (Coordinates: 944; 82).

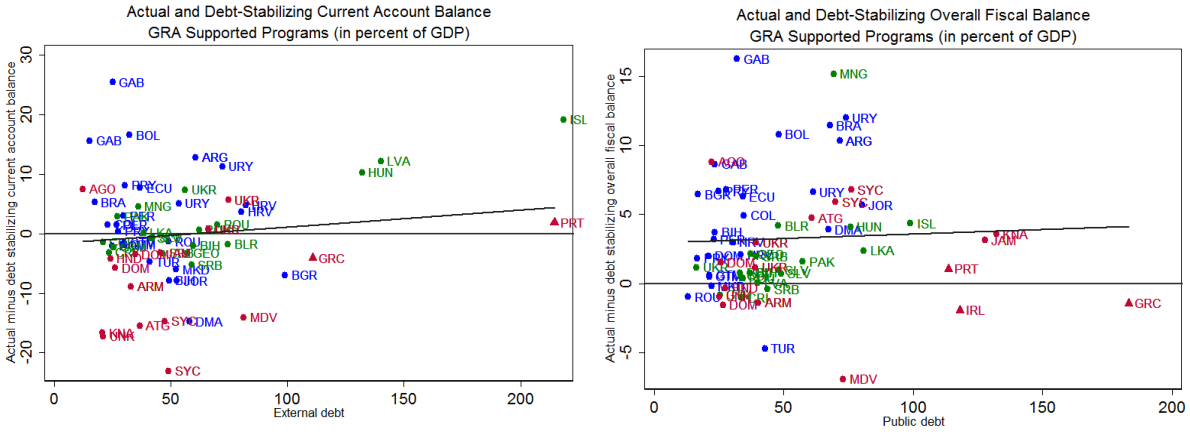
20. **Findings are mixed but suggest that programs generally aim at helping countries reduce high levels of debt over time**. Assuming as stated that medium-term growth equals that observed during the ten years preceding the program, it appears that most programs for

[27] Following Escolano (2010), the debt-stabilizing balances are computed as $-d*g/(1+g)$, where d is the post-program public and private external debt stock or the public debt stock (in percent of GDP); and g is the growth rate of the U.S. dollar value of GDP (in percent per year). Using nominal GDP growth in local currency terms for public debt analysis instead does not change the overall picture for GRA-supported programs and improves it for PRGT-supported programs (with the slope turning positive, mainly owing to large depreciations against the U.S. dollar in a few countries with high public debt).

countries with high debt (exceeding 100 percent of GDP) aim to put countries on track to reduce their debt (these programs lie above the horizontal axis at zero). Further, as the upward sloping regression lines in Figure 5 indicate, programs aimed at having more highly indebted countries reduce their debt quicker than other countries. In addition to macroeconomic policies focused on stabilizing and reducing debt, debt restructuring was part of the program strategy in several countries.[28]

21. **However, results are sensitive to growth assumptions**. The assumption that countries will grow as fast as during the ten years preceding their programs may be optimistic in some cases. This may be true in particular of recent crisis programs countries because financial crises raise the risk of a sustained period of lower growth. Varying the growth assumption by assuming medium-term growth to equal that achieved during (or projected for) the immediate post- program leads to a deterioration of debt dynamics in a number of countries with high debt (Figure 6). This is the case in particular for the euro area programs.[29] This finding highlights the importance of strengthening growth in these countries over the medium term.[30]

Figure 6. Debt Dynamics in GRA-Supported Programs Based on Post-Program GDP Growth [1]



[1] Post-program growth rates are defined as the average of growth between t+3 and t+4. The Iraq programs were excluded to ensure consistency with Figure 5. The Ireland program is not displayed in the current account chart because it is an outlier (Coordinates: 944; 31).

[28] This was the case in Antigua and Barbuda, Dominica, Jamaica, Maldives, Seychelles and St. Kitts and Nevis. Further, in March 2012 (and therefore outside of the period under examination in this review) private creditors agreed to write down 75 percent of their Greek government bond holdings.

[29] Note, however, that Figures 5 and 6 do not reflect the March 2012 agreement to write down privately held Greek government bonds.

[30] At program initiation, all programs need to strive for debt sustainability. The analysis presented here does not question the extent to which programs do this. Rather, it aims to shed light onto the transitional dynamics in the post-program period and the associated challenges.

D. Comparator Analysis

22. **The effects of Fund-supported programs can best be determined with reference to a counterfactual.** The counterfactual should capture what would have been the path of key variables in countries that benefited from Fund-supported programs had they not had programs. Constructing such a counterfactual is a difficult challenge.

23. **This paper attempts to determine the counterfactual by defining "control groups" of countries**. These are groups of non-program countries with similar characteristics and in similar circumstances to program countries, where similarity is defined as having a similar probability to request and obtain a Fund-supported program.[31] For program and non-program countries alike, this propensity was estimated econometrically. On this basis, for each initialization of a Fund-supported program in any country in any given year, a baseline control group of countries was established by choosing those five non-program countries whose probability of requesting a program in that year was as close as possible to the probability that the program country in question would request a program. Several alternative control groups were assembled as well, including some that do not rely on estimations of the probability of requesting a program. An example for this is a control group that contains non-program countries with a similar pre-program growth decline as seen in program countries. Appendix V provides detail.

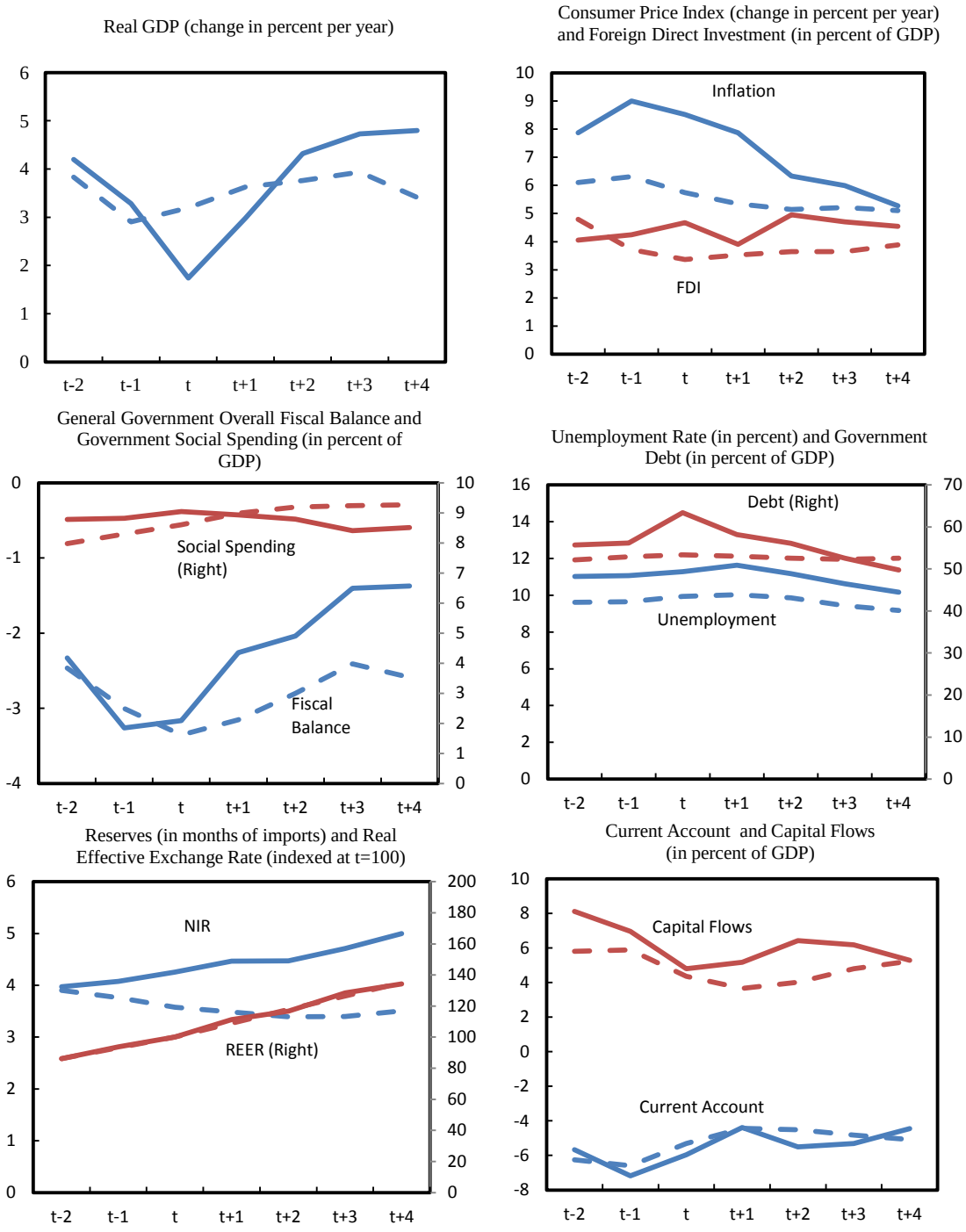
24. **The control group approach has strengths and weaknesses, and its results should be viewed with caution**. Among its strengths are the facts that it is fairly straightforward and allows comparisons between any number of variables of interest. A weakness is the implicit assumption that for countries with similar estimated probabilities for requesting a program, the request decision is not correlated with any variable omitted from the estimation of the propensity that might influence the future path of variables of interest. This is obviously a rather strong assumption.

25. **The approach suggests that programs helped countries lower inflation, fiscal deficits and debt, and strengthen reserves, while growth effects are uncertain** (Figure 7). In particular:

- **Growth, capital flows, and inflation**. If programs affected growth only from the first year after program start (t+1), they had a substantial positive effect on output. Compared to baseline control group countries, program countries saw a substantially

[31] From here on, the expression "requesting a program" is used to mean "requesting and obtaining a program." Also, a country is classified as a "program country" if it was in a program arrangement with the Fund at some point during the year. Thus, a given country can be a program country one year and a non-program country in another year. To avoid contaminating control group observations with program-related observations, this made it necessary to define fairly long time windows around programs during which countries could not serve as control group countries.

Figure 7. Comparative Macroeconomic Outcomes of GRA-Supported Programs, 2002-11 [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines control group country averages. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

stronger growth acceleration starting in t+1, and growth exceeded that in non-program countries by the end of the program period. This good growth performance may have been helped in part by larger capital inflows than in control group countries.[32] Quite differently, however, if programs affected growth already in the year of program start, the strong growth decline in this year turns the above positive growth effect into an overall negative one. Pre-program inflation was higher and disinflation in program countries proceeded faster than in control group countries but retained a moderate pace, and ended at about the same mid-single digits level of inflation as in control group countries. Both the moderate pace of disinflation and the avoidance of very low inflation rates likely helped avoid unnecessary output costs of stabilization.

- **Fiscal balances and debt**. Fiscal balances in program countries improved substantially faster than in non-program countries. Despite the strong fiscal improvement under programs, social spending remained broadly unchanged as a share of GDP during the program period. The fiscal improvement during the program therefore did not rely on cuts in social spending, contrary to frequent criticism. In line with better overall fiscal performance and higher growth, debt ratios in program countries first stabilized and then fell to below the level in non-program countries.

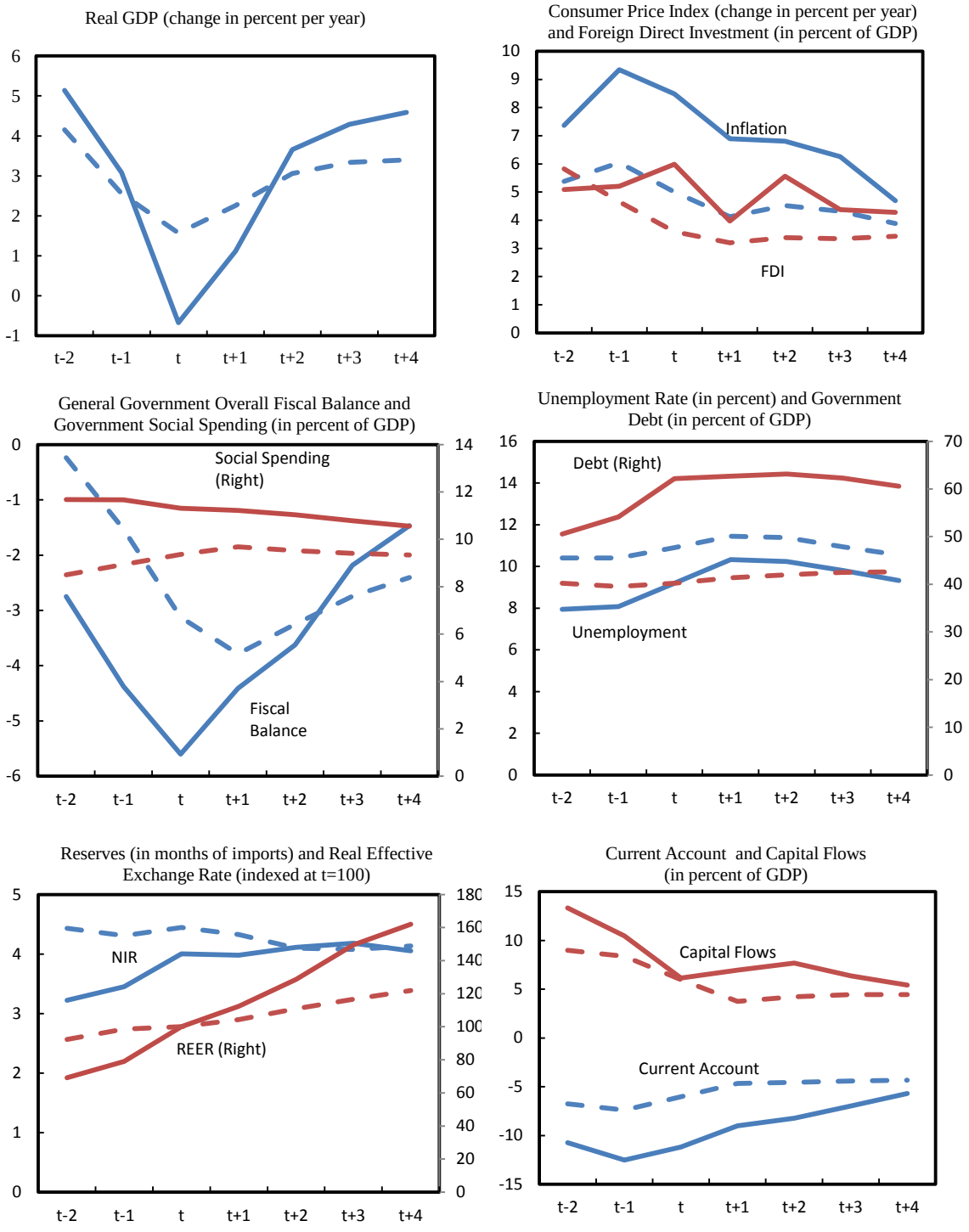
- **Current account, reserves, and exchange rates**. Current account balances in countries under programs improved at a similar average pace as in control group countries. Reserves coverage increased substantially in program countries, compared to a gradual decline in non-program countries, suggesting that programs help build buffers against future external shocks. Program effects on real effective exchange rates are small.

26. **Variations in the control group methodologies have little impact on the above findings** (Appendix V). For example, variation of the number of control group countries considered in the context of the probability matching procedure makes little difference.

27. **Findings for programs started during the recent global economic crisis are similar to those for the full sample of programs** (Figure 8). The main difference appears to be that current account improvement in crisis program countries was somewhat faster than in control group countries.

[32] While the better recovery of growth in program countries could possibly reflect a return to longer-term growth trends that might have happened even in the absence of a program, comparison with the control group compiled on the basis of a similar pre-program growth decline suggests otherwise: growth in program countries recovers somewhat more quickly than in this alternative control group as well (Appendix V, Figure 4).

Figure 8. Comparative Macroeconomic Outcomes of GRA-Supported Crisis Programs, 2008-11 [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines control group country averages. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

E. Successor Program Analysis

28. **The relatively low share of programs that were followed by successor programs, suggests that the majority of programs were successful**. Only about one in four GRA-supported programs were followed by another program within one year of expiry of the initial program, suggesting that most or all of the remaining three quarters of programs successfully resolved the issues they were meant to address.

29. **This conclusion is supported by the fact that successor programs typically further consolidated gains made under initial programs**. Thus, after most initial programs had achieved improvements in growth, inflation, current account balances and fiscal balances, the majority of successor programs achieved further progress on growth and fiscal balances (Table 1). Almost half of successor programs also succeeded in lower inflation further. This being said, many successor programs were unable to extend previous gains on external balances.

Table 1. Back-to-Back GRA-Supported Programs [1]

	Growth			Inflation			Current Account Balance			Overall Fiscal Balance		
	Begin Initial Prog.	End Initial/ Begin Successor	End Successor Prog.	Begin Initial Prog.	End Initial/ Begin Successor	End Successor Prog.	Begin Initial Prog.	End Initial/ Begin Successor	End Successor Prog.	Begin Initial Prog.	End Initial/ Begin Successor	End Successor Prog.
2005 Colombia	2.5	4.6	6.7	6.2	4.9	5.4	-1.1	-1.1	-2.9	-3.3	-0.2	-1.0
2005 Dominican Republic	5.6	8.9	8.1	5.1	4.1	6.0	-3.2	-1.4	-5.3	-2.2	-0.5	0.7
2009 Dominican Republic	8.1	3.4	5.4	6.0	1.4	5.9	-5.3	-5.0	-8.3	0.7	-3.5	-1.6
2010 El Salvador	2.4	0.7	3.0	7.0	1.2	3.7	-7.6	-2.1	-3.6	-2.6	-4.4	-2.4
2007 Iraq	-0.7	1.5	4.1	31.5	26.9	-2.8	6.2	12.5	-26.6	6.5	12.4	-21.8
2010 Iraq	6.0	0.8	11.8	42.7	5.0	4.9	19.0	-6.2	-0.7	15.5	-10.8	3.2
2006 Paraguay	3.8	4.2	5.7	13.3	9.2	9.7	2.3	1.4	-1.8	0.5	1.0	3.0
2007 Peru	4.9	8.5	0.9	3.6	1.8	2.9	0.0	1.4	0.2	-1.1	3.2	-2.1
2011 Romania	7.1	1.5	4.2	7.6	5.9	3.0	-11.6	-5.0	-5.2	-4.8	-4.4	-2.9
2011 Serbia	-3.6	2.0	4.4	7.8	10.7	3.7	-7.1	-7.7	-8.7	-3.7	-3.8	-2.5
2009 Seychelles	-1.3	0.7	4.9	31.5	27.7	2.6	-48.9	-40.0	-32.2	5.8	3.0	3.1
2010 Ukraine	7.6	4.1	4.8	12.1	9.0	8.0	-3.7	-1.9	-3.8	-2.0	-5.8	-2.5
2005 Uruguay	-7.3	6.6	7.1	13.1	4.6	7.8	2.9	0.2	-0.9	-3.7	-0.5	0.0
Average	2.7	4.1	5.0	10.3	7.3	5.3	-7.6	-5.6	-6.6	-1.5	-1.4	-0.8

Sources: MONA and IMF World Economic Outlook.

[1] Red (green) coloring depicts deterioration (improvement) compared to the column directly to the left. Table includes all 2002-11 GRA programs followed by a successor program within one calendar year of expiry of the initial program. Begin initial program is the year before the start of the initial program. End Initial/Begin Successor is the year the successor program started. End successor program is taken as two years after the start of the successor program. Excludes Iraq (2007) and Iraq (2010) because the country exibited large commodity-related and post-conflict fluctuations.

III. Outcomes of PRGT-Supported Programs

30. **The sample comprises 83 programs in 54 LICs**, beginning with the March 2002 PRGF-supported program for Cote d'Ivoire and ending with the June 2011 ECF-supported program for the Kyrgyz Republic (see BP4, Appendix 12). One third of the sample (28 programs) were categorized as "crisis programs" on account of having started on or after September 15, 2008. As in section II, the analysis assumes that programs affect growth in either the year of program start or the following year, and all other variables in the year of program start. The program period is taken to last one year longer than for the GRA analysis given the longer average duration of PRGT-supported programs. Thus, for PRGT-supported

programs the pre-program period comprises years t-2 and t-1, the program period years t to t+3, and the post program period years t+4 and t+5.

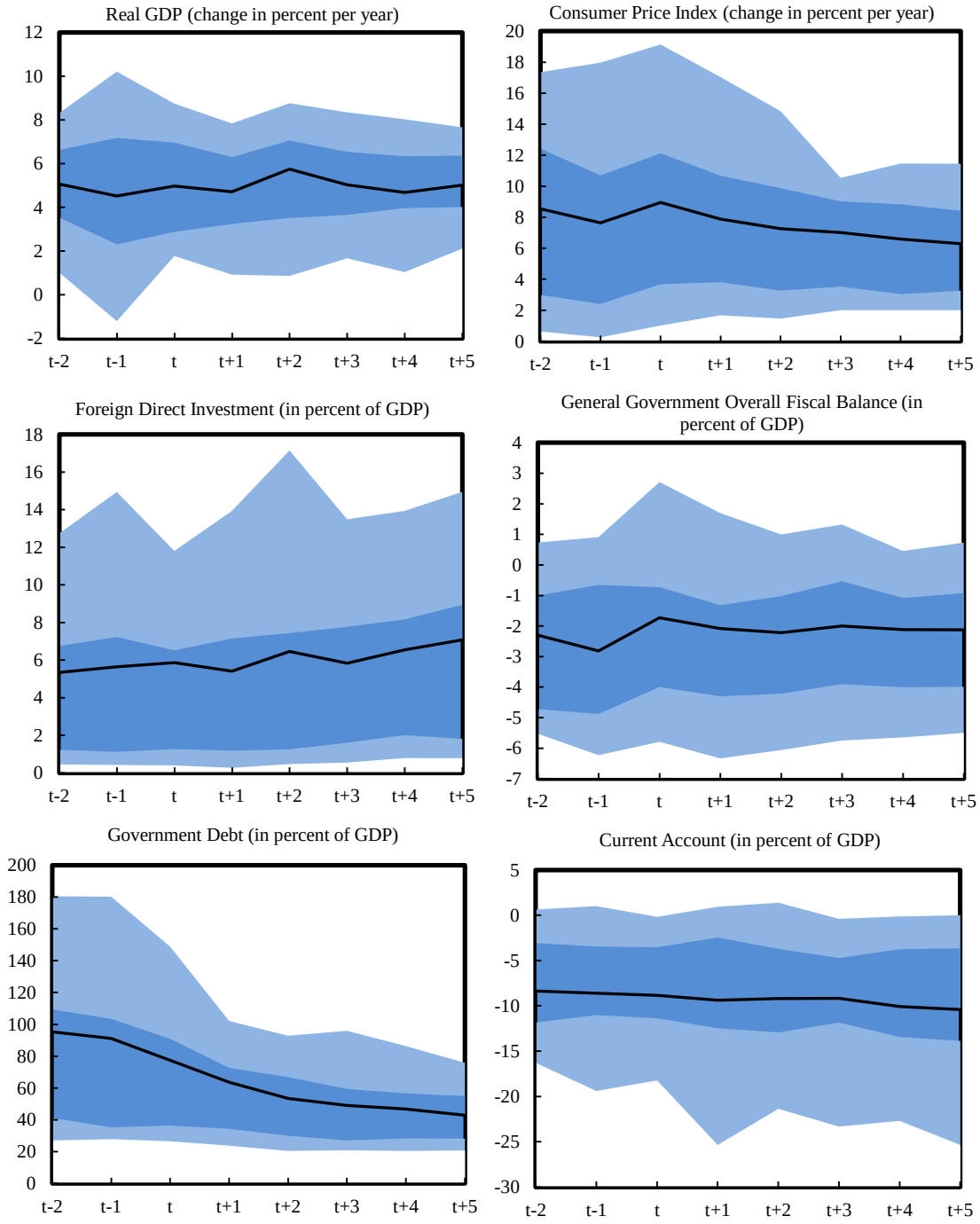
31. **The assessment of outcomes needs to consider the varied goals of PRGT-supported programs**. Unlike most GRA-supported programs, which have short-term stabilization as their primary goal, most PRGT-supported programs are PRGF/ECFs aimed at addressing long-term balance of payments problems while supporting countries' growth and development objectives. One might therefore expect to see a more gradual adjustment in PRGT-supported programs. For example, in the case of PSIs, countries have already achieved a degree of stabilization, and further fiscal and current account adjustment may not be desirable. Indeed, in such countries an increase in the fiscal and current account deficits may often be possible given fairly low debt burdens, and may be necessary to support a higher level of public and private investment to accelerate growth.

32. **The analysis below is consistent with encouraging findings of recent and associated research on the effects of PRGT-supported programs**. Fund research (IMF 2009a, replicated in section V) suggests that LICs with longer-term program engagement over the past two decades saw significant improvement in growth and other macro aggregates. This finding was recently replicated also for the subgroup of fragile states (IMF 2011). Other work suggests that most LIC programs provided room for a counter-cyclical fiscal response during the recent global crisis, with spending continuing to rise in 2009, the height of the crisis impact in LICs. In fact, many LIC programs maintained social and infrastructure expenditure in absolute terms, changing the structure of spending in favor of these items during the crisis (IMF 2009b and 2010). Finally, BP2 assesses the extent to which LIC programs during 2006-11 have been successful in meeting their goals. Goals were identified as projections at program start for growth, inflation, fiscal and current account balances, and reserves. As is the case for GRA-supported programs, initial projections of LIC programs do not show optimistic bias, suggesting that on the whole these programs met their macroeconomic objectives well.

A. Descriptive Analysis

33. **With the exception of a decline in debt levels, key variables do not show clear trends in PRGT-supported programs during and immediately after programs** (Figure 9). Prior to program start, LICs tended to see a generally less pronounced deterioration in their key macroeconomic variables than the emerging market and advanced countries that request Fund support. In particular, while LICs experienced a slight pre-program deterioration in growth and fiscal balances, they saw little pre-program change in the current account or reserves. Following program start, and perhaps mirroring the milder pre-program deterioration in economic conditions, the path of a number of key variables continues to be less pronounced than in GRA-supported programs. There is a slight upward

Figure 9. Macroeconomic Outcomes of PRGT-Supported Programs, 2002-11 [1, 2]

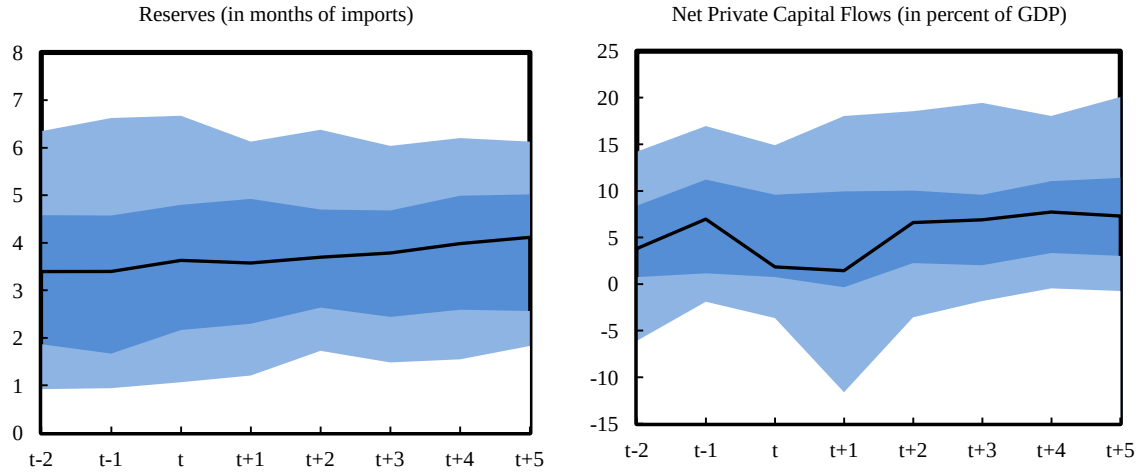


Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively

[2] The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average.

Figure 9. Macroeconomic Outcomes of PRGT-Supported Programs, 2002-11 [1, 2] (Continued)



Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively

[2] The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average.

trend in growth, a gradual increase in FDI and a recovery in private capital flows following an initial fall, a fairly gradual disinflation to the mid-single digits on average, and a moderate initial fiscal consolidation that offsets the previous deterioration. Reserves increase gradually, helping to rebuild buffers, while current accounts remained in a fairly high deficit.[33] The only pronounced trend is a drop in government debt ratios, thanks in part to Highly Indebted Poor Countries (HIPC) and Multilateral Debt Relief Initiative (MDRI) debt relief. Outcomes vary substantially across PRGT-supported programs and compared to GRA-supported programs, PRGT-supported program outcomes include more extreme observations.

34. **The lack of clear trends in key variables within the span of a typical program reflects the fact that many LICs have received sustained Fund support**. About 60 percent of LICs had a Fund-supported program during at least half of the period 2002-11, reflecting the fact that many LICs face longer-term balance of payments needs. LICs thus tend to have programs not only when they are in unusual difficulties but also in calmer times, when the Fund's role is to support an increase in investment and growth. As a result, a universal trend towards reduced current account and fiscal deficits cannot be assumed in the medium term. Previous analysis suggests that over longer time spans, countries with Fund-supported programs see larger improvements in economic performance than others (IMF 2009a).

[33] Unemployment data for LICs tend to be weak and available only for a limited number of countries, and are therefore not shown here. Social spending in LICs is analyzed in section V.

35. **Actual and projected outcomes for PRGT-supported programs initiated in the recent crisis suggest that program-supported LICs came through the crisis fairly well** (Figure 10). While on average initial growth was weaker, inflation higher and fiscal and current account deficits larger than in the larger period 2002-11, after program initiation growth strengthened, inflation fell, and fiscal and external balances remained fairly stable, and international reserves increased. These trends may reflect the fact that some of the PRGT-supported crisis programs were closer in nature to GRA-supported programs in that they aimed at helping countries resolve temporary difficulties caused in this case by an external shock (the global crisis). Similar to the full sample, average debt ratios continued to fall thanks largely to debt relief.

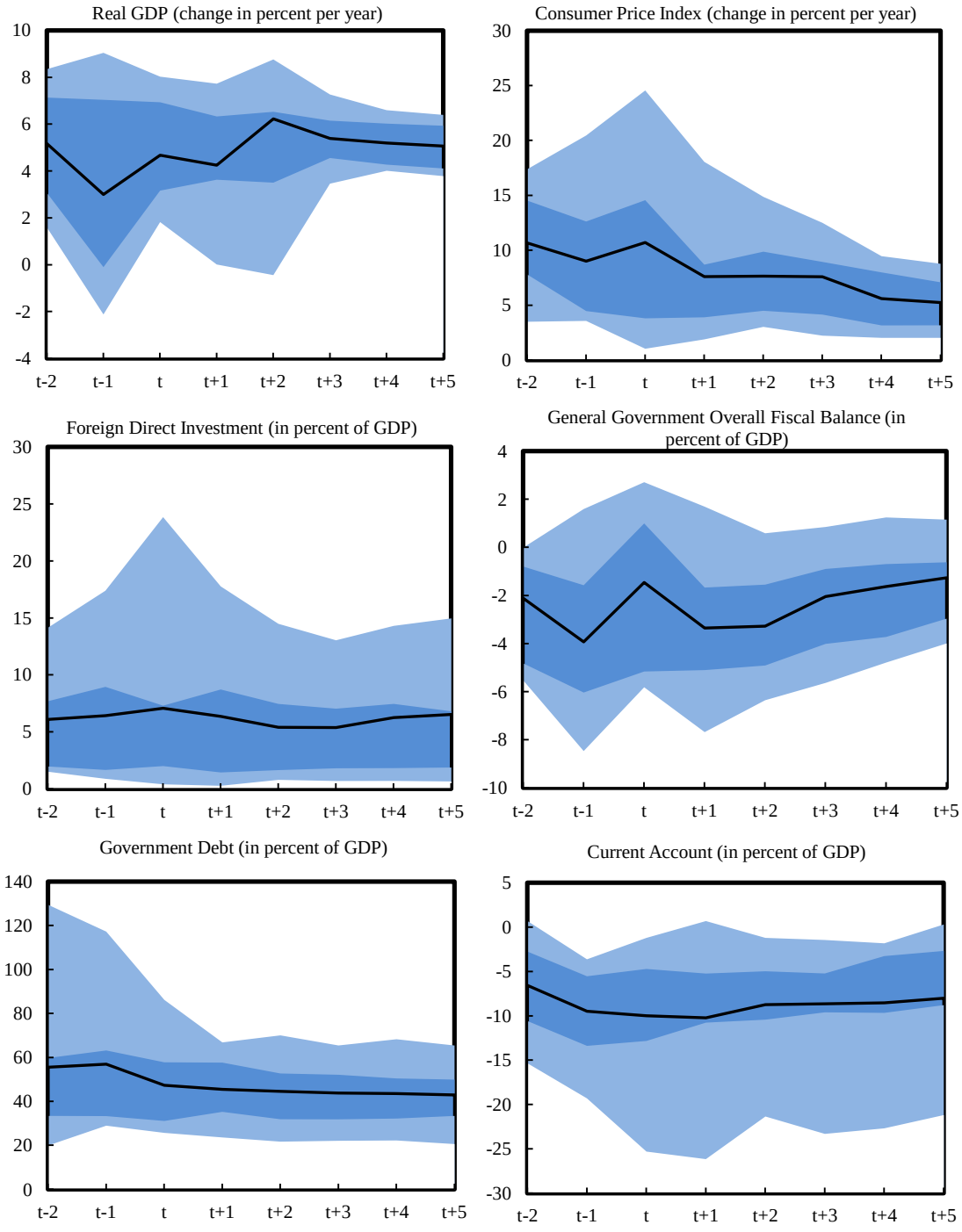
B. Threshold Analysis

36. **Growth, inflation, and fiscal outcomes outperformed thresholds in most cases**. By the fourth year after program initialization, fiscal deficits were below 5 percent of GDP, inflation below 10 percent, and growth above 3 percent in most countries (Figure 11).[34] These results are similar to those achieved by GRA-supported programs, and are encouraging given that levels may matter as much as changes during the program for many of these variables. Further, most program countries with pre-existing weaknesses in growth, inflation, and fiscal accounts performed well against corresponding thresholds, suggesting successful adjustment.[35] This is confirmed by an analysis of the adjustment path (Appendix IV).

[34] As before in the case of GRA-supported programs, the growth threshold was set at 3 percent as this implies positive per capita income growth in most countries; the fiscal threshold was set at -5 percent of GDP because such a level would likely not jeopardize sustainability in a typical low-income country experiencing, say, 3 percent real GDP growth and moderate inflation, commencing from a sustainable debt position; and the inflation threshold was set at 10 percent to reflect the finding that inflation in excess of about 10 percent hinders growth in developing countries (see Espinoza, Leon and Prasad (forthcoming)). Identical thresholds for GRA- and PRGT-supported programs facilitate comparison between these two kinds of programs and reflect the fact that the macroeconomic performance of PRGT-eligible countries was fairly similar in some respects to that of other countries during the sample period. Median annual real GDP growth during 2002-11was 5.0 percent in LICs and 4.2 percent in emerging and advanced countries excluding the G8; fiscal deficits were 2.4 percent of GDP in LICs and 1.8 percent in the other countries; and inflation was 6.7 percent per year in LICs and 3.9 percent in the other countries.

[35] Pre-existing weaknesses are again defined as conditions in the year before program start in the worst quartile of program cases. For PRGT-supported programs during 2002-11 the criteria are: growth below 2.4 percent per year, inflation above 10.1 percent, and fiscal balance weaker than -5.0 percent of GDP.

Figure 10. Macroeconomic Outcomes of PRGT-Supported Crisis Programs, 2008-11 [1, 2]

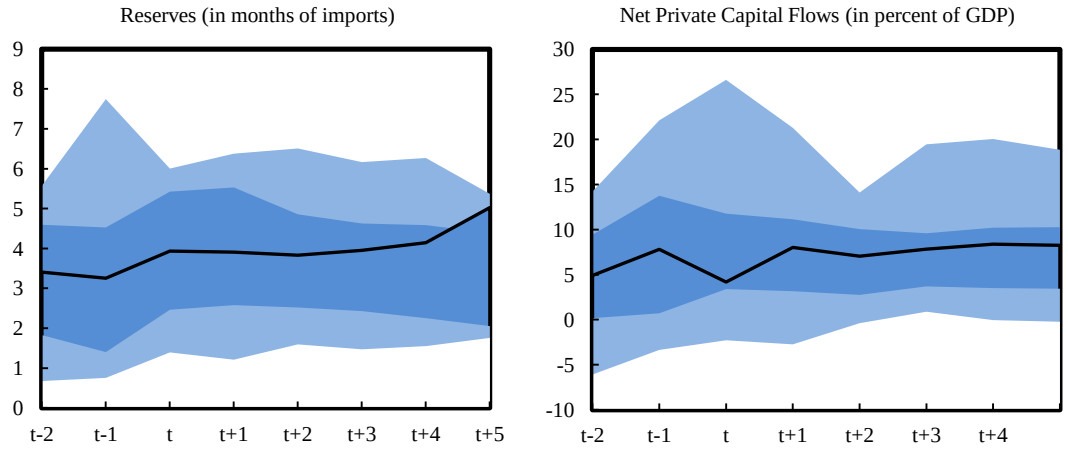


Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively

[2] The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average. The temporary improvement in fiscal balances in year t reflects a rebound of fiscal revenue in many recent crisis programs in 2010. The rebound was brought on by strong energy and other commodity prices and by the recovery in LICs from the global crisis more generally.

Figure 10. Macroeconomic Outcomes of PRGT-Supported Crisis Programs, 2008-11 [1, 2] (Continued)

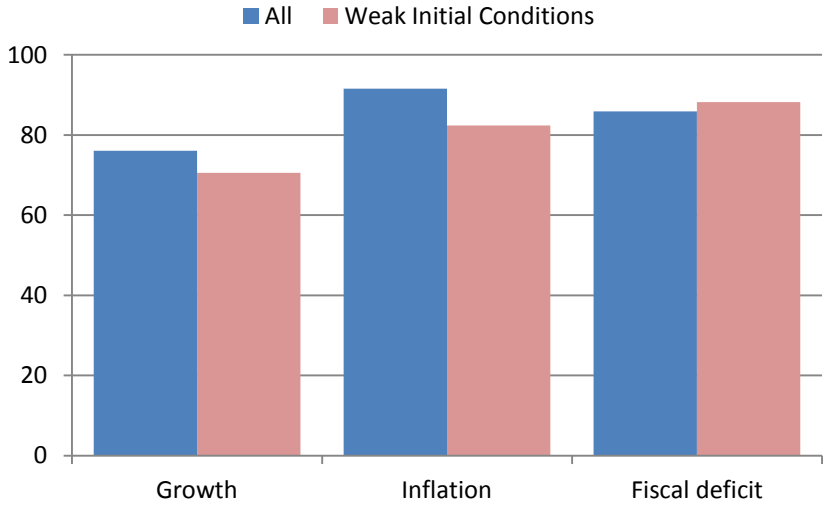


Source: WEO October 2011, IMF

[1] The solid black line indicates program country averages, dark blue indicates the 25 and 75 percentiles and the light blue indicates the 10 and 90 percentiles, respectively

[2] The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average.

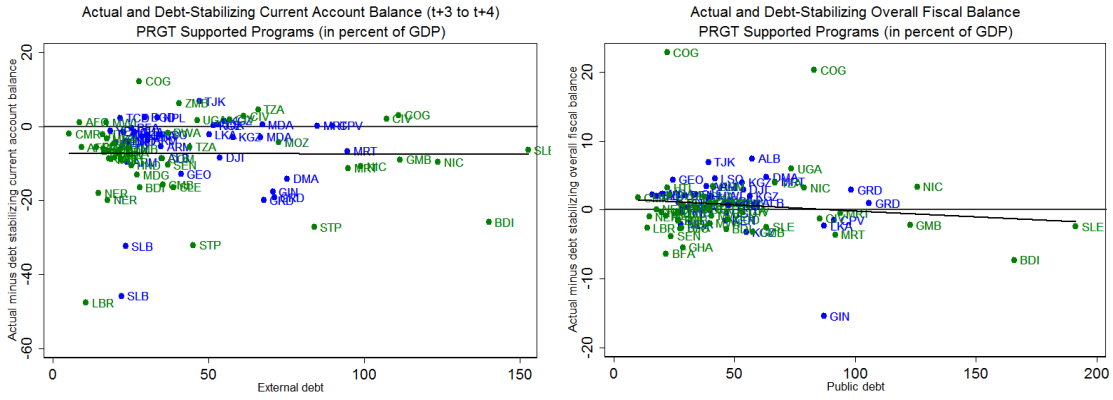
Figure 11. PRGT-Supported Crisis Programs: Outcomes Better than Threshold Values Four Years after Program Start
(In Percent of Programs)



C. Debt Dynamics Analysis

37. **Improvements in debt sustainability in PRGT-eligible countries relied in part on debt relief through the HIPC and MDRI initiatives** (Figures 12 and 13). Close to 60 percent of the countries with a PRGT-supported program saw their debt ratios drop thanks to the HIPC and MDRI initiatives. Given such widespread debt relief and its likely anticipation, it is perhaps not surprising that a substantial number of PRGT-supported programs initiated during 2002-11 did not call on countries to reduce their external and public debt in the medium term through fiscal and/or external adjustment (programs shown below the horizontal axes at zero in Figures 12 and 13).[36] The finding may also reflect efforts by a number of LICs to scale up fiscal spending temporarily to remove infrastructure bottlenecks. Similar to findings on GRA-supported programs, results are sensitive to medium-term growth assumptions.

Figure 12. Debt Dynamics in PRGT-Supported Programs [1,2]



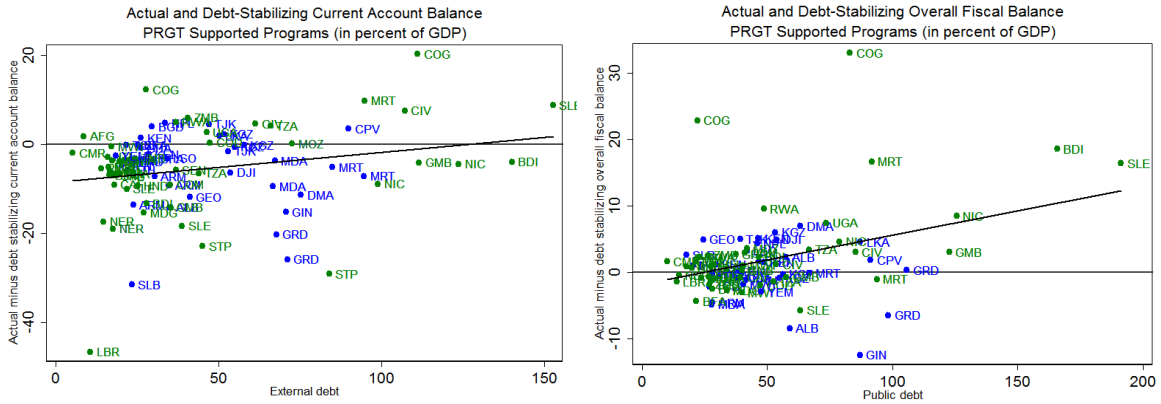
Sources: IMF, MONA and WEO databases; and IMF staff estimates.

[1] Computed using the same methodology as for GRA-supported programs.

[2] Green denotes countries which received debt relief under the HIPC initiative during the sample period.

[36] The data includes program observations both before and after debt relief. A number of the countries with very high initial debt ratios (including post-conflict countries such as Burundi and Sierra Leone) saw their debt decline in the context of a follow-up arrangement.

Figure 13. Debt Dynamics in PRGT-Supported Programs Based on Post-Program GDP Growth [1,2]



Sources: IMF, MONA and WEO databases; and IMF staff estimates.

[1] Computed using the same methodology as for GRA-supported programs.

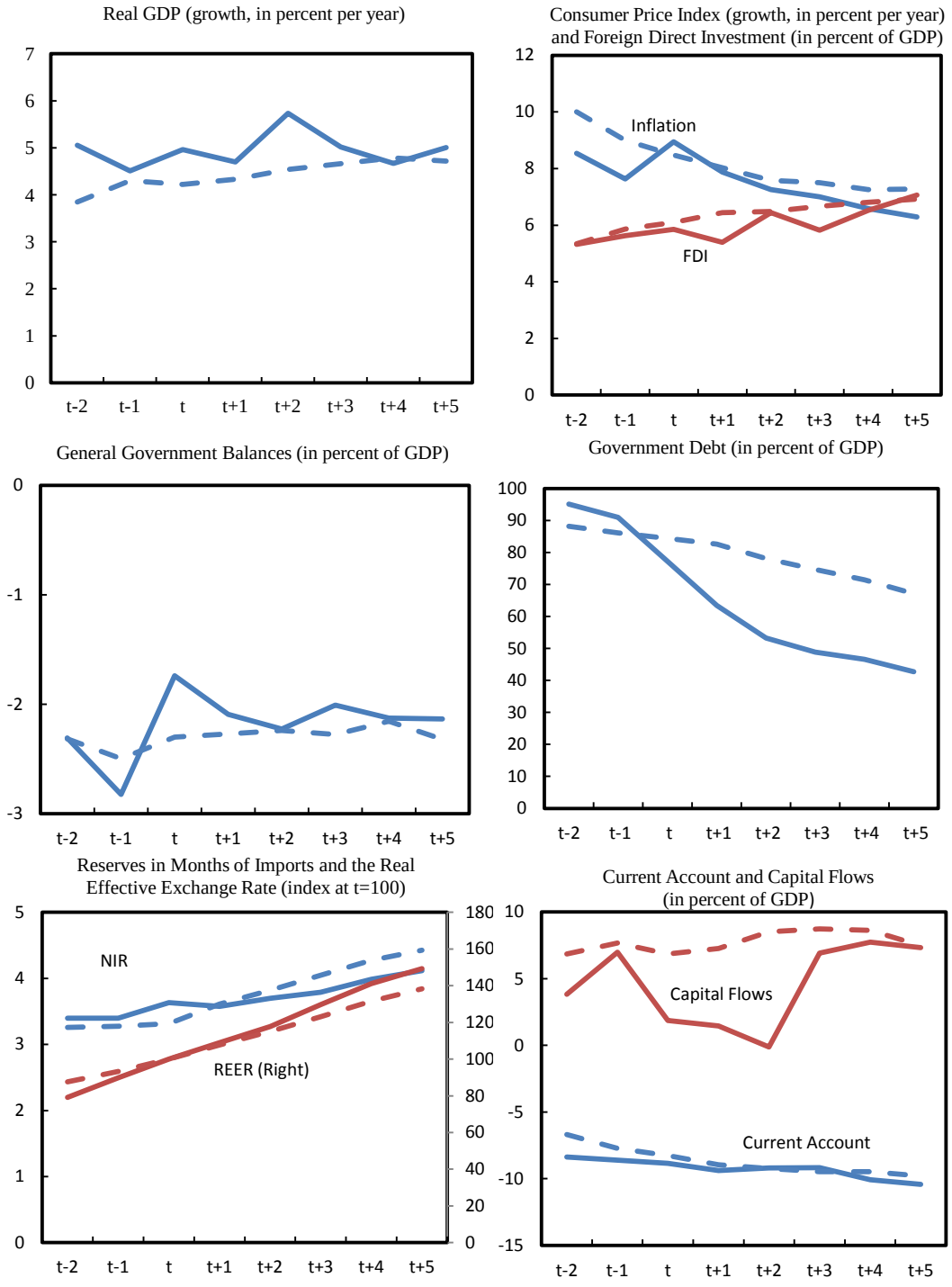
[2] Green denotes countries which received debt relief under the HIPC initiative during the sample period.

D. Comparator Analysis

38. **The control group method of analysis is less suitable for PRGT-supported programs**. Given that a large number of LICs have had at least periodic Fund involvement and that having a program makes countries ineligible in this analysis to serve as non-program control group countries for several years, only very few countries are available to construct a counterfactual. This limits the applicability of the control group approach to PRGT-supported programs. In combination with likely larger-than-average susceptibility of LICs to shocks, this makes assessing the effects of PRGT-supported programs more difficult. To provide some context, nevertheless, comparisons are made to all non-program LICs.

39. **Comparison to all non-program LICs suggests that countries under PRGT-supported programs performed as well as countries that did not seek Fund support**, both in the full sample and in the shorter crisis period sample (Figures 14 and 15). While the paths of some macroeconomic variables are less smooth in program countries than in non-program countries, improvements over the entire program and post-program period are generally as strong as in non-program countries. Capital inflows fall temporarily in program countries, but they recover towards the end of the program period. The strongly declining debt burden again comes out as the clearest short-term gain from programs.

Figure 14. Comparative Macroeconomic Outcomes of PRGT-Supported Programs 2002-11 [1]

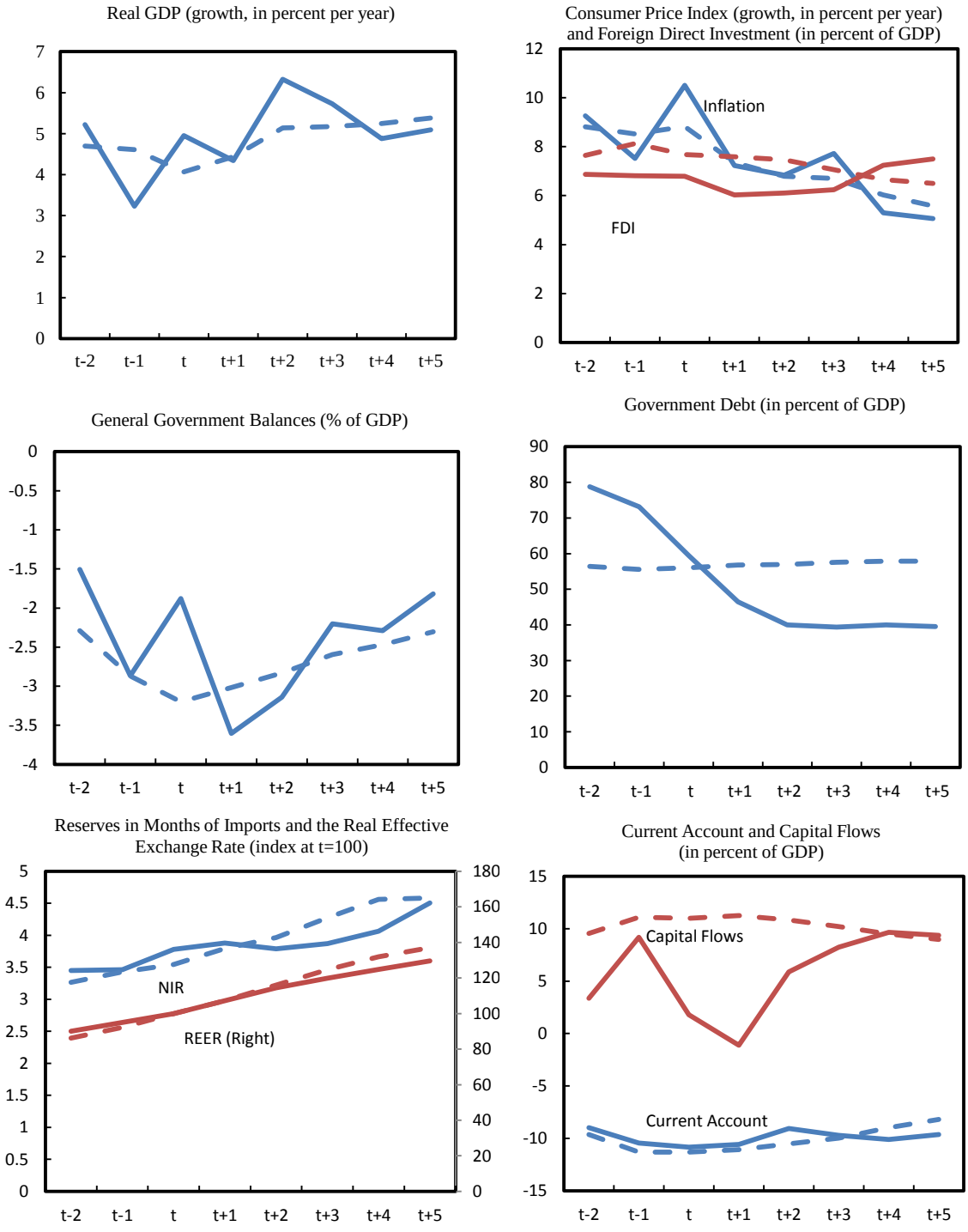


Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines control group country averages.

Note: The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average.

Figure 15. Comparative Macroeconomic Outcomes of PRGT-Supported Crisis Programs 2008-11 [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines control group country averages.

Note: The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average. The temporary improvement in fiscal balances in year t reflects a rebound of fiscal revenue in many recent crisis programs in 2010. The rebound was brought on by strong energy and other commodity prices and by the recovery in LICs from the global crisis more generally.

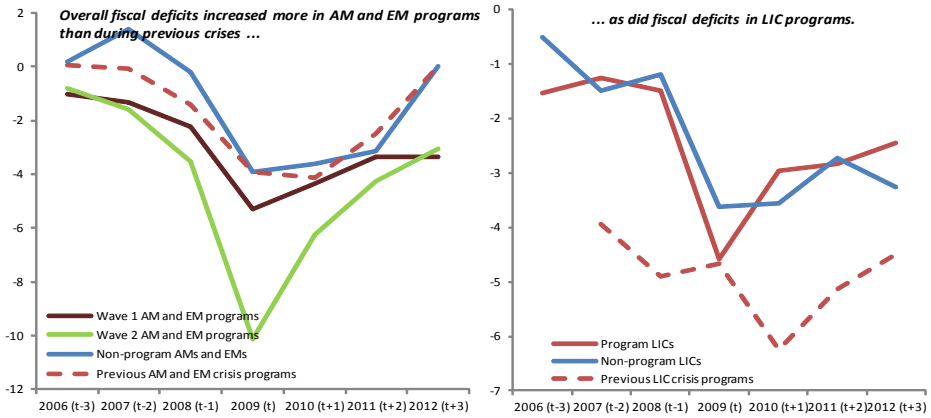
IV. Fiscal and External Accommodation in Recent Crisis Programs

40. **This section considers whether Fund-supported programs in the recent crisis provided for larger fiscal and external accommodation than in previous crises**, and whether this may have helped countries get through the crisis better by limiting output losses. Given the complex feedback relationships between fiscal and external balances on the one hand and growth and debt on the other hand, the analysis can show association only, not causation. The section also explores the extent to which the Fund helped fill countries' financing needs.

A. Accommodation, Growth, and Debt

41. **When the crisis hit, many programs provided substantial fiscal accommodation** (Figure 16). In particular, "wave 1" advanced market (AM) and emerging market (EM) country programs reduced the growth of primary spending only gradually, in contrast to earlier crises when spending was cut swiftly and deeply.[37] As a result, these countries accepted substantial temporary fiscal deterioration, providing stimulus at a time of weak foreign demand. LICs, too, accommodated the crisis by allowing their fiscal deficits to increase temporarily. This increase in LICs' fiscal deficits reflects in part the protection of social and infrastructure expenditure in LIC programs. Overall, these developments led to a larger fiscal deterioration in AMs, EMs and LICs in 2009 than during past crisis years.[38]

Figure 16. Fiscal Balances in Recent and Past Crisis Programs [1]
(Median, in Percent of GDP)



Source: WEO and staff estimates.
For LICs, t-3 is missing due to data constraints.
[1] For programs started during the recent global crisis, the horizontal axis indicates calendar years 2006-12. For previous crisis programs, the axis indicates years t-3 – t+3, with t denoting the year of the largest impact of the respective crises on growth. Year t was aligned with 2009, the year when the recent global crisis had the largest growth impact in most recent programs.

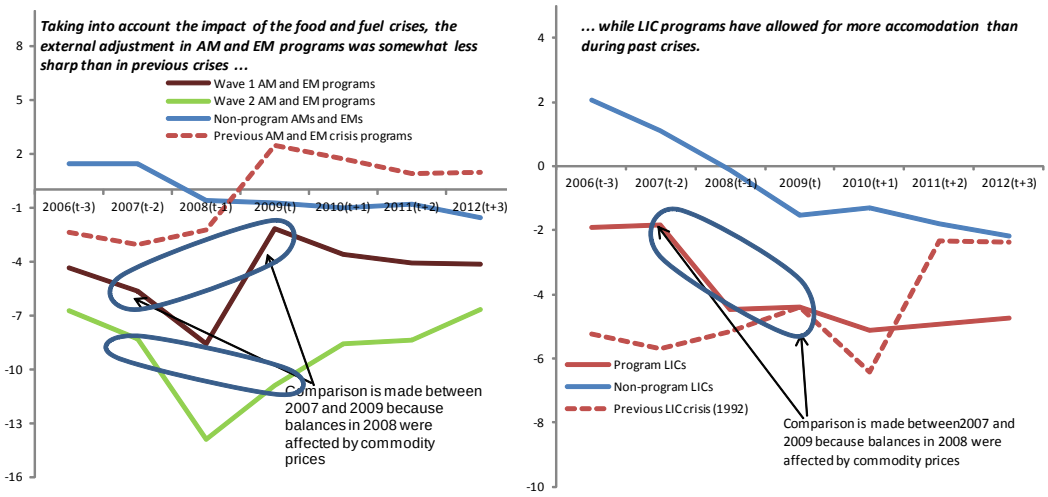
[37] In keeping with earlier analysis (IMF 2009c), AM and EM previous crisis programs are identified on a country-by-country basis as capital account crises programs: Mexico (1995), Indonesia (1998), Korea (1998), Philippines (1998), Thailand (1998), Brazil (1998), Russia (1998), Turkey (2001), Argentina (2002), and Uruguay (2002). The years shown in parentheses are those of the lowest GDP growth rate in these country crises.

[38] Also in line with earlier analysis (IMF 2010), for LICs previous crisis programs are all LIC programs in effect in the year of lowest average growth for LICs in the last two decades (1992).

42. **This being said, some recent programs, notably those in the euro area, comprise ambitious fiscal consolidation**. In several wave 2 programs, fiscal deficits were cut sharply starting in 2010. Particularly in euro area countries, fiscal consolidation paired with growth-enhancing structural reforms aimed at reversing unfavorable debt dynamics. However, in at least one case, growth fell more than expected and debt ratios evolved less favorably than hoped. Macroeconomic and fiscal data revisions, including upward revisions of the 2009 fiscal deficit and debt stock, and the impact of a credit crunch on growth, also contributed to weaker-than-projected debt dynamics in Greece. Going forward, generating growth will be key for stabilizing debt. It remains to be seen to which extent and how fast planned structural reforms will help achieve this growth.

43. **Similar to providing fiscal accommodation, many programs allowed for substantial external accommodation** (Figure 17). A comparison of current account balances in 2009 and 2007 shows that in the recent crisis, program AMs and EMs tended to show somewhat smaller current account adjustment than during previous crises. Current account adjustment in LICs proceeded more gradually than in the past as well.[39]

Figure 17. Current Account Balances in Recent and Past Crisis Programs [1]
(Median, in Percent of GDP)

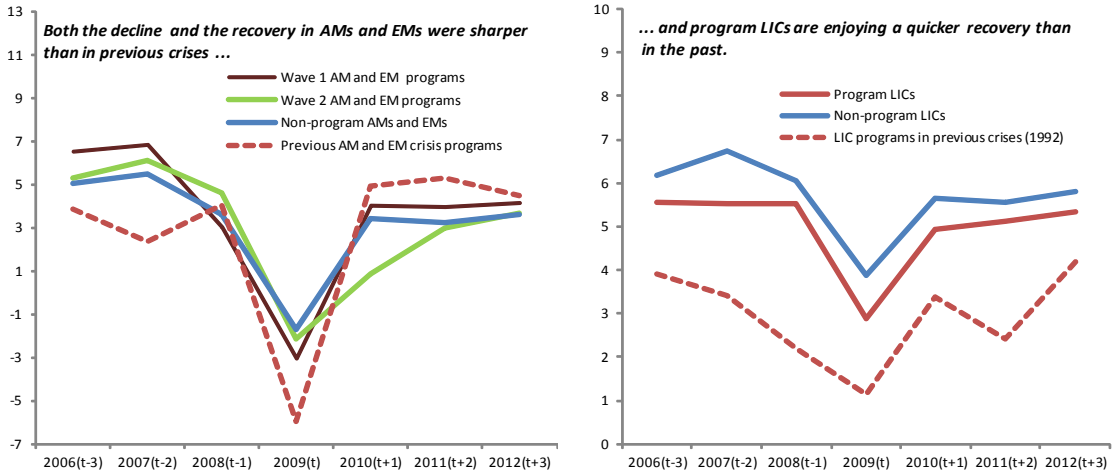


Source: WEO and staff estimates.
[1] For programs started during the recent global crisis, the horizontal axis indicates calendar years 2006-12. For previous crisis programs, the axis indicates years t-3 – t+3, with t denoting the year of the largest impact of the respective crises on growth. Year t was aligned with 2009, the year when the recent global crisis had the largest growth impact in most recent programs.

[39] Comparison is made between 2009 and 2007 because external balances in 2008 were affected by temporary sharp changes in commodity prices (IMF 2009d).

44. **So far the evidence suggests that the overall greater fiscal and external accommodation than in the past may have helped minimize the growth impact of the recent crisis** (Figure 18). In program AMs and EMs the growth decline was less pronounced than in previous crises. In LICs the growth decline, while similar to that seen in previous crises, started from a higher pre-crisis level. Thus, in LICs growth remained higher than in past crises. Further, most program countries have recovered well, making for an overall smaller and less painful growth impact than in the past. Again, developments are less favorable in wave 2 countries, particularly in euro area programs, where recovery from the crisis has been noticeably slower, with growth in 2012 projected to remain substantially below pre-crisis levels.

Figure 18. GDP Growth in Recent and Past Crisis Programs [1]
(Median, in Percent per year)

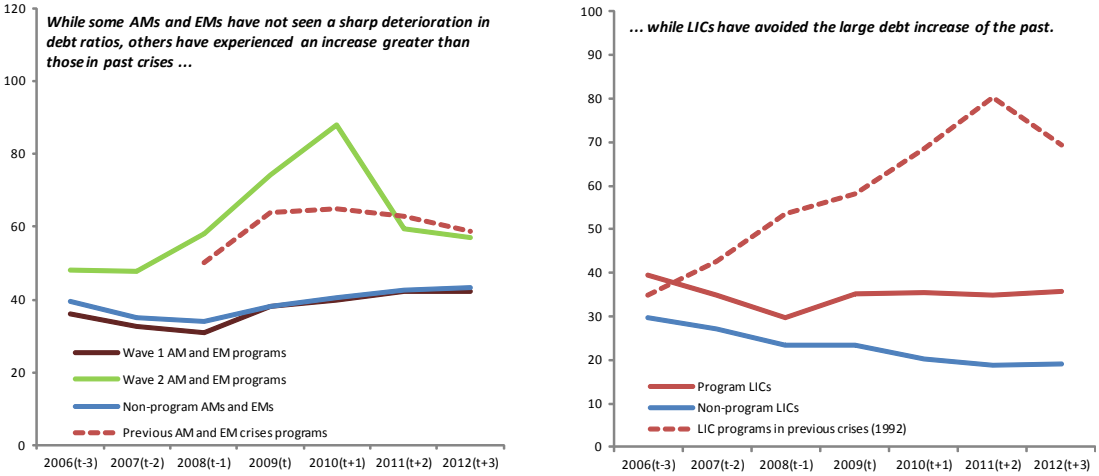


Source: WEO and staff estimates

[1] For programs started during the recent global crisis, the horizontal axis indicates calendar years 2006-12. For previous crisis programs, the axis indicates years t-3 – t+3, with t denoting the year of the largest impact of the respective crises on growth. Year t was aligned with 2009, the year when the recent global crisis had the largest growth impact in most recent programs.

45. **The evolution of government debt appears manageable in most crisis program countries where a solid recovery of growth was achieved, with some exceptions** (Figure 19). In AM and EM program countries, debt developments are mixed. Debt loads have not increased much and have started to stabilize in wave 1 countries. By contrast, debt ratios have grown substantially in wave 2 countries, similar to developments seen in past crises. Debt ratios have been surging particularly in the euro area program countries. More positively, in program LICs, even after stripping out the impact of debt relief, debt ratios increased only little and have since stabilized.

Figure 19. Debt in Recent and Past Crisis Programs [1]
(Median, in Percent of GDP)



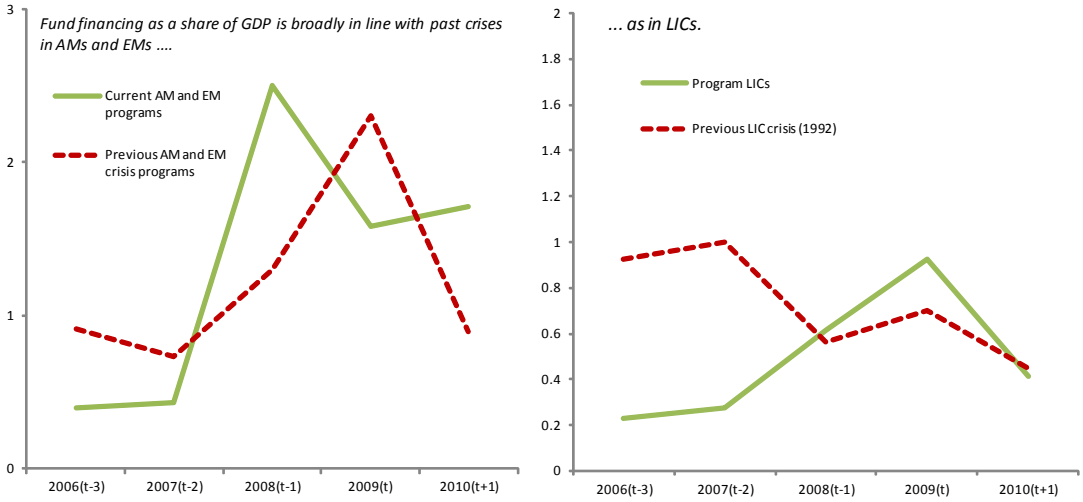
Source: WEO and staff estimates
Sample for previous AM/EM crisis programs is 6.
[1] For programs started during the recent global crisis, the horizontal axis indicates calendar years 2006-12. For previous crisis programs, the axis indicates years t-3 – t+3, with t denoting the year of the largest impact of the respective crises on growth. Year t was aligned with 2009, the year when the recent global crisis had the largest growth impact in most recent programs.

46. **Thus overall, greater accommodation in many crisis programs appears to have contributed to better outcomes, although causation cannot be shown**. Fiscal and external accommodation in both EM and LIC programs was greater this time around than in the past; the growth impact in many program AMs and EMs was smaller than in the past while in program LICs the growth decline was similar to that seen in previous crises; and despite greater policy accommodation, debt dynamics are favorable in many countries. In wave 2 AMs and EMs, particularly in euro area countries, the situation is more challenging.

B. Financing of Accommodation

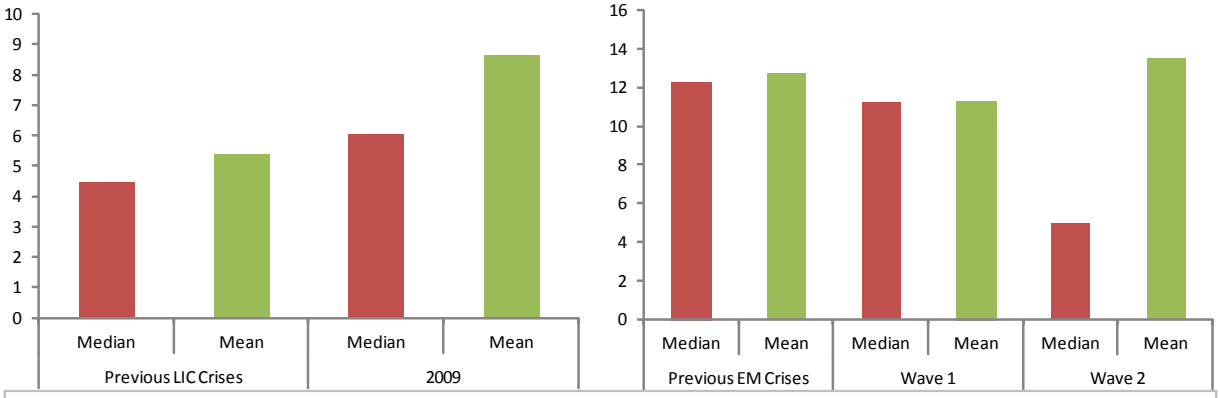
47. **The Fund contributed substantial parts of the financing necessary for external accommodation**. Although the number of countries seeking Fund assistance grew rapidly during the recent crisis period, leading to a significant increase in both GRA and PRGT lending volumes, median disbursements in relation to GDP were broadly comparable to those provided during previous crises (Figure 20). In relation to LICs' financing needs, however, Fund disbursements tended to be somewhat greater than in past crises (Figure 21). There was, however, substantial variation between programs. For example, in recent European programs, the Fund provided more than a half of commitments for some EMs, while providing a third or less for AMs (Table 2).

Figure 20. Fund Financing in Recent and Past Crisis Programs [1]
(Median in Disbursements, in Percent of GDP)



Source: Staff estimates
[1] For programs started during the recent global crisis, the horizontal axis indicates calendar years 2006-12. For previous crisis programs, the axis indicates years t-3 – t+3, with t denoting the year of the largest impact of the respective crises on growth. Year t was aligned with 2009, the year when the recent global crisis had the largest growth impact in most recent programs.

Figure 21. Fund Financing as Percentage of External Financing Need [1]
(Average, first two years of program)



Source: WEO, IMF
[1] External financing need calculated as current account deficit plus amortization. Excludes data points where financing needs were negative according to this methodology, or where Fund financing exceeds 100 percent of need.

Table 2. Burden Sharing for Selected European Countries under Fund-Supported Programs
(Share of Commitments, in Percent)

	IMF	WB	EU[5]	Other
Latvia[1]	23.7	5.6	69.3	1.4
Hungary[1]	60.9	5.2	33.9	0.0
Romania[2, 3]	68.9	4.2	26.9	0.0
Iceland[1]	44.5	0.0	40.7	14.7
Greece[4]	27.3	0.0	72.7	0.0
Ireland[2]	25.9	0.0	53.3	20.7
Portugal[2]	33.9	0.0	66.1	0.0
Average	40.7	2.2	51.9	5.3

Source: Staff estimates.
[1, 2, 4] Commitments in 2009, 2010 and 2011, respectively, using year-average exchange rates.
[3] Includes follow-up arrangement with the IMF in 2011.
[5] Includes bilateral loans from EU countries.

48. **The reform of the GRA and PRGT lending facilities in 2009 enabled the Fund to scale up its financing to hard-hit countries.**[40] The reforms allowed lending to AMs and EMs to be about 35 percent higher than it would have been otherwise. This estimate relies on a counterfactual and should be viewed with caution (Appendix VI provides detail). An estimate for the impact on lending to LICs is difficult to determine and not available. Suffice it to say that the reform helped lending to LICs to increase from an average of SDR 440 million in the five years up to 2008 to SDR 2.5 billion in 2009.

V. Social Spending and Social Outcomes[41]

49. **Poverty reduction and the protection of social spending are important elements of Fund-supported programs, particularly programs for LICs**. Poverty reduction became a core Fund objective with the introduction of the PRGF in 1999. The adoption of the MDRI in 2005 for HIPCs further reinforced this goal. The goal of the MDRI is to provide additional resources to help HIPCs reach the Millennium Development Goals, which are focused on poverty reduction and human development. Finally, since 2009 indicative social targets—

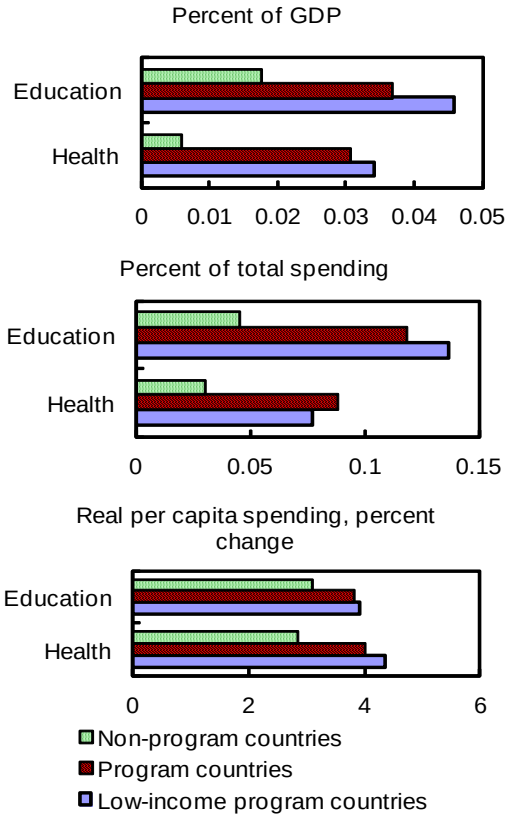
[40] The reforms are presented in IMF (2009e, f).

[41] This section is based in part on Clements, Gupta, and Nozaki (2011). In a departure from the analysis in rest of the paper, the sample studied in this section covers the period 1985–2009. Due to severe data limitations, different parts of the section use different indicators of health and education outcomes.

specifically, floors on priority spending—are to be integrated into LIC programs.[42] The protection of social spending is an important goal of programs for other countries as well.

50. **During 1985-2009, social spending increased at a faster pace in countries with programs, particularly in LICs, than in non-program countries** (Figure 22).[43] Over a 10-year horizon, for example, these increases translated into a cumulative rise in education and health spending of 0.4 and 0.3 percentage points of GDP, respectively. In LICs, the effect of programs are particularly pronounced: in LIC program countries, per capita education and health spending rose at about 4 percent per annum, compared to about 2½ percent in LICs without programs.

Figure 22. Median Annual Change in Social Spending, 1985-2009



Source: Fund staff calculations.

[42] See IMF (2009 f).

[43] See Clements, Gupta, and Nozaki (2011). This result is consistent with earlier studies, e.g., Independent Evaluation Office of the International Monetary Fund (2003) and Center for Global Development (2007). The result is also consistent with the finding of section II that GRA-supported programs started during 2002-11 largely protected social spending.

51. **Econometric analysis confirms that programs have had a positive and significant effect on social spending in LICs**, controlling for other determinants of social spending such as macroeconomic conditions, demographics, and income levels (Table 3).[44] The results suggest that in the first year, Fund-supported programs raise education and health spending by 0.22 percent of GDP and 0.27 percent of GDP, respectively, in LICs. This is higher than the average annual increase in spending in program countries reported in the figure, which does not control for the effects of other factors on spending. Moreover, the estimated relationship suggests that the effect of programs is realized over time. A 5-year consecutive period of Fund-supported programs would raise education and health spending by 0.6–0.7 percent of GDP, respectively, by the third year after the program started, and by 0.8–1 percent of GDP by the fifth year. Programs also have a statistically significant effect on the share of social spending: education and health spending rise as a share of total government outlays by about 1 and ½ percent in the first year, respectively. The econometric evidence does not show a significant (positive or negative) effect of Fund-supported programs on social spending outside of LICs.

Table 3. Long-Term Effects of Fund-Supported Programs on Social Spending, 1985-2009 [1]

	Year 1	Year 3	Year 5
	(in percent of GDP)		
Education Spending	0.22	0.57	0.82
Health Spending	0.27	0.69	0.98

Source: Fund staff calculations

[1] Indicated an increase in social spending (relative to the pre-program period) if a country has a consecutive period of Fund-supported programs

52. **Regression analysis also suggests a positive link between social spending and selected social indicators in developing countries**.[45]Simple cross-country regression analysis using averages over 2004-08 finds that higher education spending is positively associated with improvements in school enrollment rates, and higher health spending with lower child mortality, controlling for income levels (Table 4). Studies for earlier periods also find such positive links.[46]

[44] See Clements, Gupta, and Nozaki (2011).

[45] Country coverage: all developing countries (including emerging market countries) for which data are available.

[46] See Gupta, Verhoeven and Tiongson (2002), and Baldacci and others (2008).

Table 4. Relationship Between Social Spending and Social Outcomes, 1985-2009 [1]

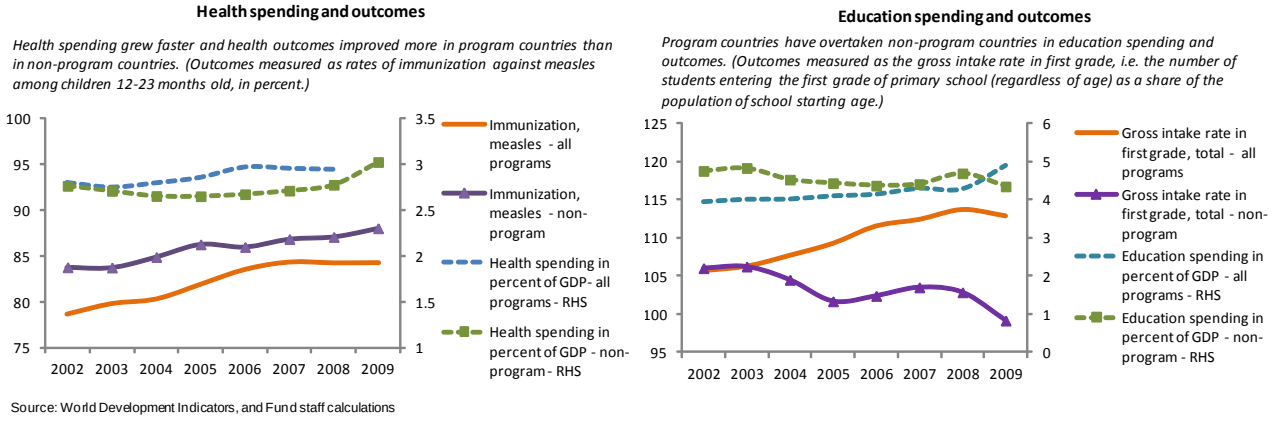
	Dependent Variable: Gross secondary enrollment rate	Dependent Variable: Under-5 mortality rate (per 1000)
Education spending (percent of GDP)	1.333**	
	(0.672)	
Health spending (percent of GDP)		-5.927***
		(1.878)
GDP per capita (PPP GDP, in log)	21.11***	-36.17***
	(1.266)	(3.133)
Constant	-116.3***	379.0***
	(10.38)	(26.42)
Number of obs.	117	139
R-squared	0.698	0.589

Source: Fund staff calculations.

[1] All variables are average for 2004-08. ***/** indicate significance levels of 99 percent and 95 percent, respectively.

53. **Together with the finding that social spending increased faster in program countries, this suggests that programs have helped improve social outcomes**. In fact, since 2002, social outcome indicators in developing countries have improved at least as fast under Fund-supported programs as in non-program countries (Figure 23). This finding, too, mirrors the results of earlier research on the evolution of social outcome indicators in Fund-supported programs.[47]

Figure 23. Health and Education Spending and Outcomes, 2002-09



Source: World Development Indicators, and Fund staff calculations

[47] Gupta, Verhoeven and Tiongson (2002), and Baldacci and others (2008).

54. **However, the link between social spending and outcomes is complex**. Fund staff studies show that social spending remains pro-rich in many developing countries, and World Bank studies point to a pervasive lack of proper incentives for social services providers.[48] These factors may explain the fact that the link varies across countries. For example, Burkina Faso experienced improvements in education outcome indicators as spending increased in contrast, Uganda saw a substantial improvement in education outcome indicators in recent years despite stagnant social spending in percent of GDP or in U.S. dollars per capita, possibly reflecting a better allocation of resources and the emergence of private education services providers (Figure 24).

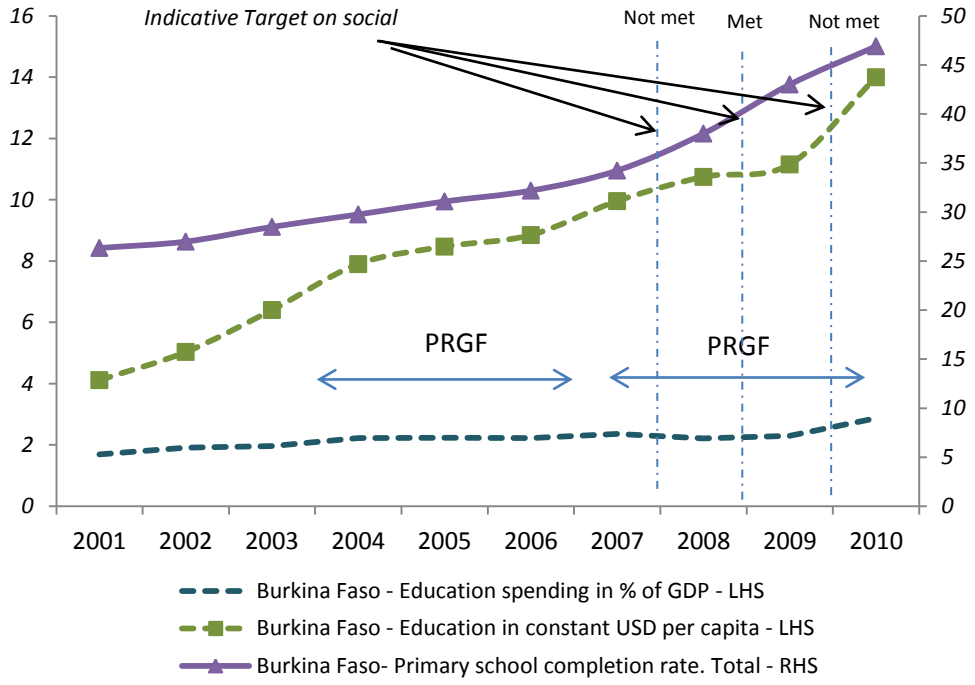
55. **Efforts to improve the efficiency and targeting of social spending are needed to ensure even faster improvements in social outcomes.** Improvements in public expenditure management, which can help ensure that funds are spent as intended, can contribute in this regard.

[48] See Davoodi, Tiongson, and Asawanuchit (2010).

Figure 24. Social Spending and Social Outcomes in Burkina Faso and Uganda, 2001-10

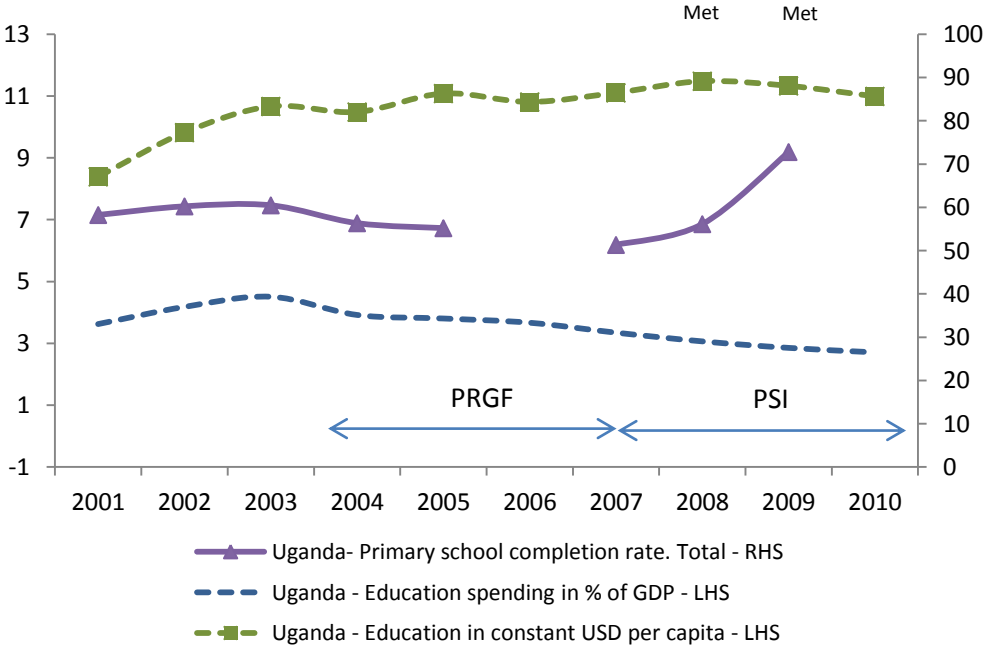
Burkina Faso

Education spending increased mostly during the second PRGF, and the primary school completion rate improved.



Uganda

Education spending was stagnant. However, the primary school completion rate improved significantly under the PSI, possibly reflecting a better allocation of resources and the ermergence of the private sector.



Appendix I. Previous Studies on Outcomes in Fund-Supported Programs

56. **Large and evolving literature**. Numerous studies have examined the macroeconomic outcomes of Fund-supported programs.[49] Methods used in these studies have evolved over time from fairly simple before/after comparisons of outcomes to more recent studies using increasingly sophisticated econometric methods. In particular, a number of recent studies have used econometric methods to attempt to control for selection—the observation that some countries are more likely than others to request financing from the Fund—in measuring outcomes. Outcome variables of interest are most often GDP growth, inflation, the fiscal balance, and the current account balance, with growth usually being seen as the most important variable.[50]

57. **Inconclusive early studies**. Ghosh et al. (2005) reviewed early studies of outcomes effects. These studies generally used either simple comparison techniques or regression methods. Simple comparison methods evaluate outcomes in two ways; the first analyzed program countries before and after, while the second analyzed outcomes in program countries relative to a control group of countries without programs. Some early studies also employed regression based methods to account for selection bias (see below) and country heterogeneity. Based on their review, Ghosh et al. concluded that these early studies generally found mixed effects on growth, with some studies finding statistically significant positive effects in the short-term or soon after programs ended and others finding statistically significant negative effects. The early studies also generally found that balance of payments outcomes improved and inflation declined during programs.

58. **Recent focus on selection**. While the issue of selection into Fund-supported programs was recognized early on (see Goldstein and Montiel (1986)) and addressed in a number of early studies, recent research has made progress in accounting for selection when measuring outcomes. Selection can take many forms. For example, it is plausible that countries in difficult economic situations (experiencing for example declining growth, worsening current account balances, and/or lower capital inflows) are more likely to enter Fund-supported programs. Simple comparisons that do not account for this type of selection would find results that are biased towards poor outcomes. Alternatively, it could be that countries enter Fund-supported programs because of political economy factors, such as the political or economic proximity to countries with more decision making power at the Fund or domestic political factors.[51] Recognizing the importance of selection, several recent studies estimated selection equations to determine what factors led countries to participate in a Fund-supported programs. Among

[49] A comprehensive review of this large body of literature is outside the scope of this paper. For more recent reviews of the literature, see Ghosh et al. (2005), Dreher (2006), and Steinwand and Stone (2008).

[50] Other studies have focused on catalytic effects of programs (see Eichengreen et al. (2006) and Mody and Saravia (2003)).

[51] Vreeland (2003) and Steinwand and Stone (2008) discuss possible political economy factors for participation in Fund-supported programs in more detail.

macroeconomic variables, the studies generally find that a country requests a Fund-supported program after experiencing a severe decline in growth and/or a strong deterioration in the balance of payments.[52] Among political economy variables, studies generally found that political proximity to the United States and major European countries, as well as domestic political factors, matter for the decision to enter Fund -supported programs.

59. **Recent studies have used different methods to account for selection**.

- **Instrumental variables**: In an influential study, Barro and Lee (2005) used an instrumental variable approach to measure outcomes of 156 programs during 1970-2000. In the first selection step on program participation, they found growth of GDP per capita and the level of net international reserves in relation to imports to be statistically significant explanatory macroeconomic variables of program participation. They also observed that a number of political economy variables, including political proximity to the United States and major European countries as indicated by intensity of bilateral trade (and to a lesser extent an indicator of UN voting patterns) to be significant. Using these significant variables as instruments in the second step, Barro and Lee concluded that Fund-supported programs depressed growth and had no statistically significant impact on investment, inflation, or government consumption.

- **Heckman selection**: Several recent studies with a political economy focus used versions of the Heckman selection model to estimate outcome effects. This literature argues that selection into Fund-supported programs is largely determined by (unobserved) political factors and often separates the decisions of governments and the Fund to enter into programs. Przeworski and Vreeland (2000) measured outcomes in 226 programs during 1951-1990. They found that participation was determined by the need for a loan following an economic crisis and domestic political factors (the need to impose discipline on policies from outside). They also observed that Fund-supported programs lowered growth. Other studies found similar effects using more recent data (see for example Easterly (2005); Dreher (2006) and Vreeland (2003)). More recently, Bas and Stone (2011) argued that there was adverse selection into Fund-supported programs with countries that were most likely interested in participating the least likely to have good growth outcomes. Accounting for adverse selection, they noted positive effects of Fund-supported programs on growth.

- **Matching**: Some recent studies used matching methods to construct control groups and to assess outcomes. The focus in these studies was on possible selection bias stemming from observable macroeconomic factors. Hutchison (2004) measured outcomes using different matching methods during 1975-1997 and found positive effects on growth when Fund-supported programs were compared with the appropriate controls. Hardoy (2003) used matching methods and data for 1970-1990 and observed no effect on

[52] This result was confirmed also by studies that investigated the determinants of program participation only (see for example Cerutti (2007); Dreher and Walter (2006); and Evrensel and Kim (2006)).

growth. Atoyan and Conway (2005) investigated the outcomes of 95 programs during 1993-2002 using both instrumental variable and matching methods. In the selection step on program participation, they found statistically significant effects for GDP growth and change in growth, the current account balance, and previous program participation. On outcomes, they noted that programs improved fiscal and current account balances as well as growth. Furthermore, they found similar results using different methods to measure outcomes.

60. **Selection matters, but impact on outcomes remains inconclusive**. The wide range of results from recent academic studies re-enforces the conclusion that the impact of Fund-supported programs on macroeconomic outcomes is not well understood despite recent efforts to account for selection. Results appear sensitive to the specification of the selection process. Diversity in results may also be driven by different sample periods used (with a number of studies relying on data that pre-dates the sample period in this paper) and the type of programs included in the sample.

Appendix II. Conclusions from Previous Reviews of Conditionality

61. **Over the past two decades, two RoCs have studied the outcomes of Fund-supported programs** (Appendix II, Table 1). The 1995 review (EBS/94/84) studied the outcomes of SBA and EFF Fund-supported programs for first time users, distinguishing between programs based on the existence and nature of nominal anchors. The 2004 Review investigated the outcomes of both GRA and PRGT-supported programs, distinguishing between current account focused programs and capital account focused programs (IMF, 2004). Programs for countries in transition from central planning to market based economies were analyzed separately. Neither of these reviews attempted to establish a counterfactual. Their results therefore have a narrative nature and are not fully comparable to the ones in this 2011 RoC conditionality or in the other literature.

62. **For GRA-supported programs, both the 1995 and the 2004 RoCs observed a drop in real GDP growth subsequent to program initialization followed by a recovery**.[53] The 1995 review found that growth recovered quickly, and exceeded pre-program levels within two years, while the 2004 review found that growth recovered to pre-program levels only after three years. The reviews noted little impact of programs on inflation. Further, they found a temporary improvement in the general government fiscal balance at the time of program initialization, followed soon thereafter by a fiscal deterioration. Mirroring its findings of a sluggish recovery of growth, the 2004 review found that the fiscal balance returned to pre-program levels only at time t+3. Finally, both reviews observed an increase in net international reserves and an improvement in the current account balance.

63. **For PRGT-supported programs, the 2004 RoC found a positive effect on growth and inflation that was sustained throughout the program period**. The review also noted that fiscal and current account balances weakened during programs, possibly reflecting the program-induced inflow of foreign financing. Nevertheless, supported by a finding of a positive effect of programs on reserves, the review concluded that PRGT-supported programs helped put the balance of payments on a sustainable path.

[53] To ensure comparability with the present review, the findings of the 1995 and 2004 reviews presented here concern programs for countries that did not have a nominal anchor (1995 review) and were not transition countries (2004 review).

Appendix II, Table 1: Descriptive Statistics for GRA Supported Programs

2004-2005 Review of Conditionality

	t-3	t-2	t-1	t	t+1	t+2	t+3
Real GDP Growth (in percent of GDP)	4.5	3	2	1.5	1.5	1	3
Inflation (CPI growth)	13.5	12	10	10.5	11	10	10
Net International Reserves (in months of imports)	3.7	4	3.9	4.2	4.5	4.7	4.7
Real Exchange Rate	0.93	-2.78	-4.76	3.00	1.94	12.38	
Current Account Balance (in percent of GDP)	-2	-3.5	-3	0.5	0.75	0	-0.5
Overall Government Balance (in percent of GDP)	-2.5	-4	-3	-2	-4	-4.5	-3
Broad Money Growth	20	16	11	12	11	11	13

1995 Review of Conditionality [1]

	t-3	t-2	t-1	t	t+1	t+2	t+3
Real GDP Growth (in percent of GDP)			0.6	-0.5	1.9	3.3	
Inflation (CPI growth)			52.4	46.6	48.6		
Net International Reserves (in months of imports)			2.6	3.3	4		
Real Exchange Rate			-8.7	14.1	12.6		
Current Account Balance (in percent of GDP)			-7.2	-4.2	-5.2		
Overall Government Balance (in percent of GDP)			-8.8	-4.1	-5.3		
Broad Money Growth			63.3	83.5	102.2		

[1] Without Nominal Anchor

Appendix II, Table 2: Descriptive Statistics for PRGT Supported Programs

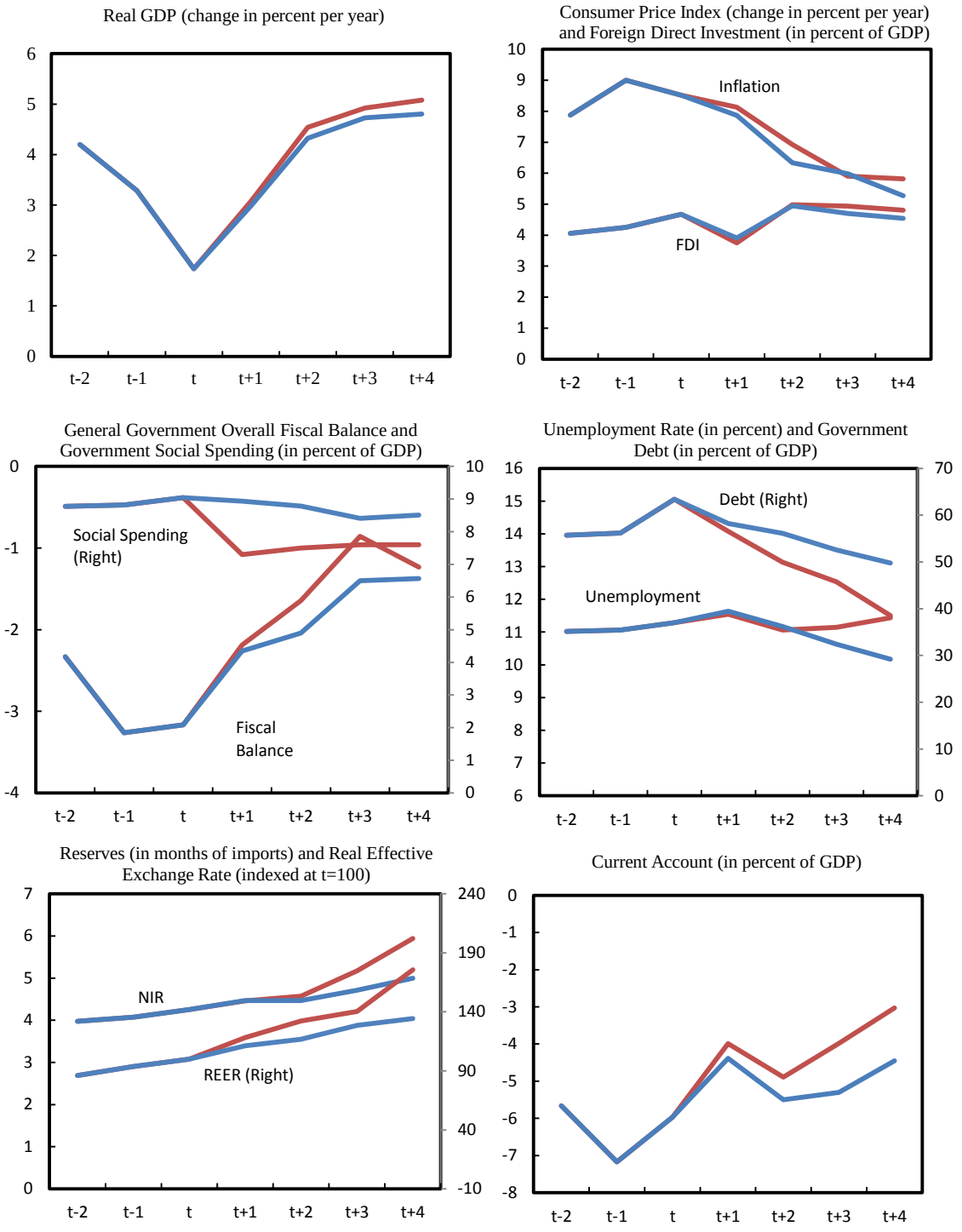
2004-2005 Review of Conditionality

	t-3	t-2	t-1	t	t+1	t+2	t+3
Real GDP Growth (in percent of GDP)	1.75	2.25	3.5	4	3.75	4	4
Inflation (CPI growth)	23	20	15	10	7	6	5
Net International Reserves (in months of imports)	2.5	2.6	2.75	3	3.5	4	4.25
Real Exchange Rate	-1.04	2.11	3.09	-1.00	0.00	-1.01	
Current Account Balance (in percent of GDP)	-8.25	-7.5	-8.25	-8.5	-9.25	-9.25	-8
Overall Government Balance (in percent of GDP)	-4.25	-4.25	-4	-3.75	-4	-4.5	-4.5
Broad Money Growth	23	20	15	14	15	11	13

Appendix III. Paths of Macroeconomic Variables with and without Projections

The graphs below show that the inclusion of projections of macroeconomic variables in ongoing programs is unlikely to affect the analysis of the results of Fund-supported programs by much. Blue lines show averages including projections while red lines show variable averages excluding projections. Note that (i) the differences between the two sets of lines are generally of moderate size; and (ii) outcome including projections are slightly more favorable in some cases and slightly less favorable in other cases.

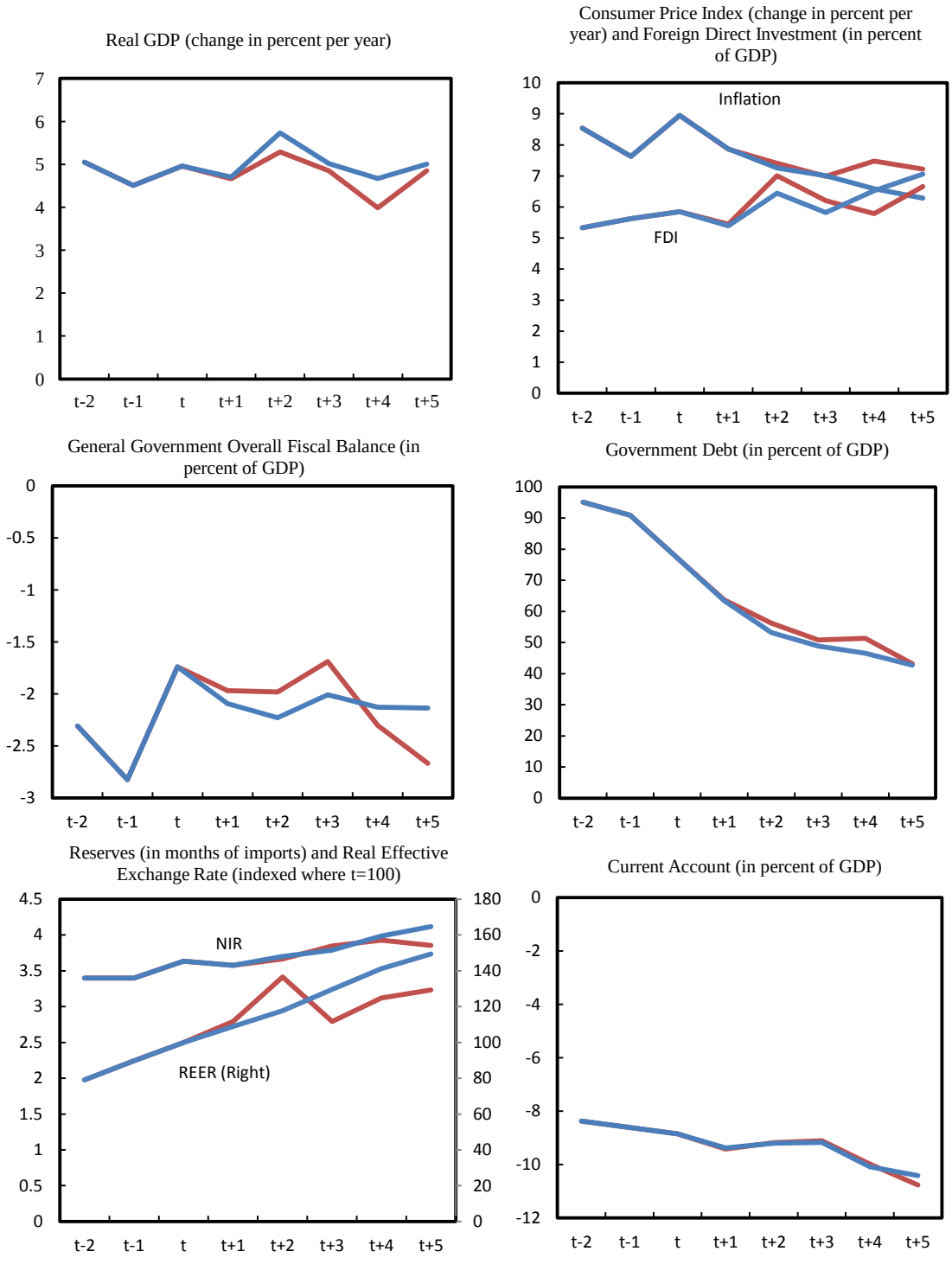
Appendix III, Figure 1. Macroeconomic Outcomes of GRA Supported Programs, 2002-11 [1]



Source: WEO October 2011, IMF

[1] Blue lines indicate program country averages with forecasts beyond 2011, red lines indicate program country averages without forecasts. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

Appendix III, Figure 2. Macroeconomic Outcomes of PRGT Supported Programs, 2002-11 [1, 2]



Source: WEO October 2011, IMF

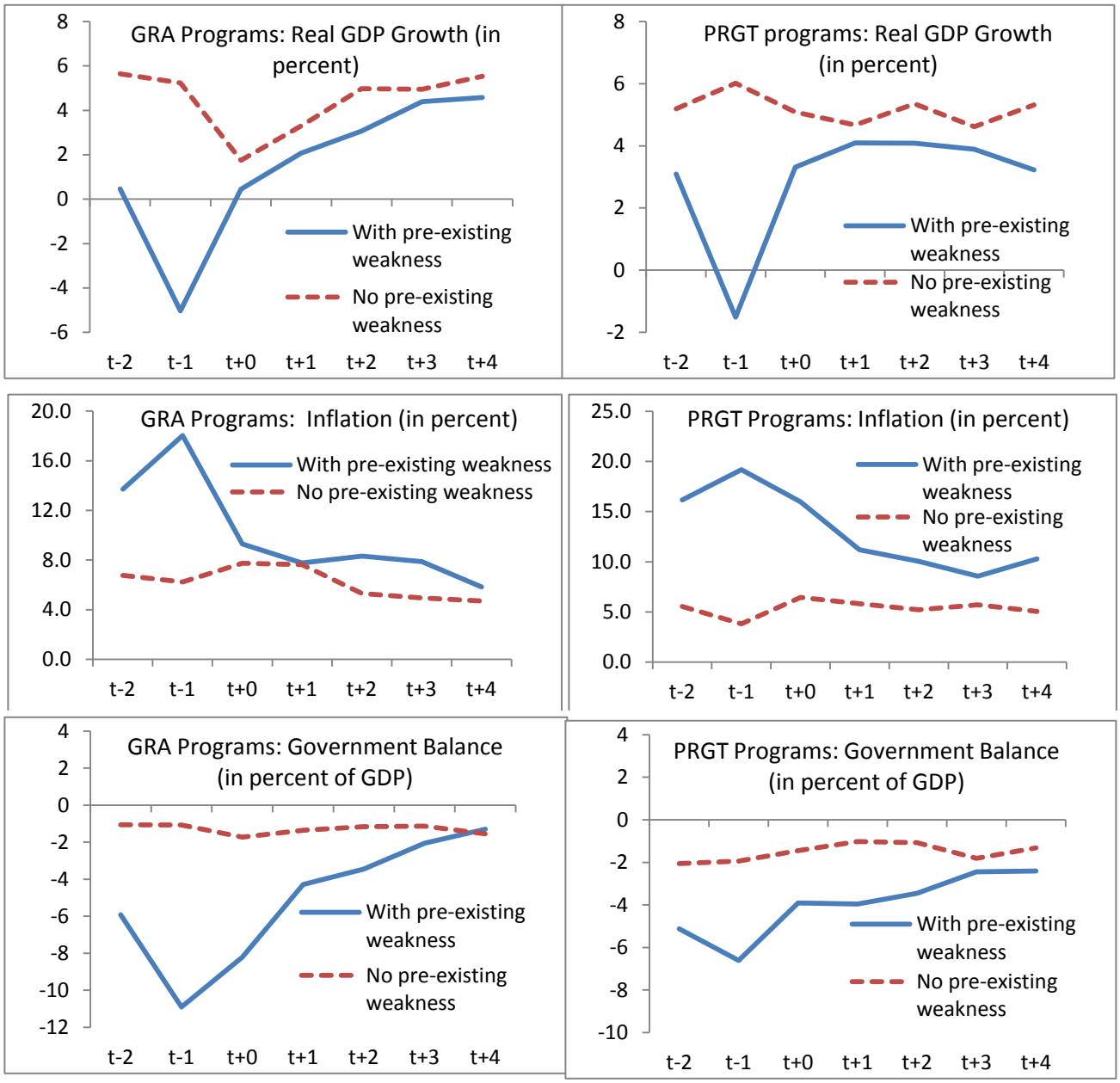
[1] Blue lines indicate program country averages with forecasts beyond 2011, red lines indicate program country averages without forecasts. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

[2] The General Government Balance does not include observations when either the HIPC or MDRI debt relief programs were completed. These observations are classified as missing in the computation of the average.

Appendix IV. Macroeconomic Adjustment in Programs with Pre-Existing Weaknesses

The graphs below shows that by the third year after program start, programs countries with pre-existing weaknesses (low growth, high inflation, or high fiscal deficits) performed almost as well as program countries without such weaknesses.

Appendix IV, Figure 1. Macroeconomic Adjustment in Programs with Pre-Existing Weaknesses [1]



Sources: MONA and IMF World Economic Outlook.

[1] A pre-existing weakness is defined as a value in the worst quartile of program countries at t-1

Appendix V. The Methodology of Control Group Comparisons

64. **This paper uses control groups of countries to measure the impact of Fund-supported programs on macroeconomic outcomes.** To determine the impact of programs, one would ideally want to know what macroeconomic outcomes program countries would have achieved had they not had a program. While this counterfactual cannot be known, outcomes in non-program countries with similar characteristics and in similar economic conditions as program countries provide a good second best point of reference. These countries, therefore, can constitute a suitable control group of countries.[54]

65. **Assembling control groups of countries and comparing outcomes involves four steps**. In a first step, a filter was applied to determine which countries can serve as control group countries for programs started in any given year during 2002-11. Clearly, countries that never had a program qualify for this. Countries that had a program at some point also qualify as long as there is no overlap between their program and the program for which they are to serve as control group country. In addition, there must be no overlap between a larger period that also includes the pre-program period and the post-program period, as these periods likely reflect unsustainable policies and lagged program effects. These requirements create fairly long time windows around programs during which countries cannot be used for the control group. Further, only non-PRGT eligible countries excluding members of the G7 were allowed to enter the control group for GRA-supported programs. In a second step, for each member country, the probability of requesting a Fund-supported program in any given year was estimated using a set of explanatory variables (see below).[55] In a third step, for each initialization of a program in any country in any year, a control group of countries was established by choosing those five non-program countries whose probability of requesting a program in the same year was as close as possible to the probability for each program country. This procedure is known as "nearest neighbor propensity score matching." In a fourth and final step, average macroeconomic outcomes in program countries were compared with average outcomes in control group countries.[56]

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[54] This approach of comparing outcomes in program countries with outcomes in a control group of countries with similar characteristics and in similar economic conditions is chosen in a number of academic papers, for example in Atoyan and Conway (2005) and Hutchison (2004). While the control group approach may not fully account for all sources of selection bias (in particular, possible bias related to adverse selection based on unobservable country characteristics), the approach does account for bias stemming from the fact that countries tend to enter Fund-supported programs under adverse economic conditions. To the extent that selection bias persists, it likely leads to underestimating the benefits of programs.

[55] As noted in the main text, "requesting a program" is used to mean "requesting and obtaining a program."

[56] Some non-program countries may appear in the control groups of several program countries and thereby influence the average outcomes of control group countries to a larger extent than other countries. But it is unclear to what extent this is a drawback.

66. **The probability of requesting a Fund-supported program was estimated using a panel probit model**:

$$\Pr\left(y_{i,t} = 1 | xi, t \;\right) = \Phi(\alpha + \beta' x_{i,t})$$

where $y_{i,t}$ is a binary variable equal to one at time *t* when a country *i* starts a Fund-supported program and zero otherwise; $x_{i,t}$ is a vector of variables reflecting country characteristics and economic conditions; and α and β are coefficients to be estimated. Maximum likelihood estimation was carried out, using WEO data at annual frequency for the period 2000-11 (including to take account of lags of up to two periods).[57] On the basis of the regression results, the probability of requesting a program was computed for each year and for both program and non-program countries.

67. **A general-to specific-estimation strategy was pursued**, starting with a large set of political economy and macroeconomic variables, including those used by Barro and Lee (2005).[58] Following a step-by-step process of eliminating statistically insignificant variables the following variables were found to be significant for GRA-supported programs (Table):[59]

- Lagged real GDP growth and lagged log of GDP per capita.
- Lagged inflation (both t-1 and t-2).
- Lagged ratio of foreign direct investment to GDP.
- Lagged change in ratio of external debt to GDP.
- Lagged ratio of the current account balance to GDP.
- Region dummies.

[57] The model was estimated using a population averaged panel probit method. The estimation results are broadly robust to using alternative methods, including a random effects probit, a standard probit allowing for within country correlation in the error term and a standard probit.

[58] Economic variables include (both the first and second lagged values): inflation, net international reserves (in months of imports), log GDP per capita, log GDP, FDI (as percent of GDP), real GDP growth, government debt (as percent of GDP), government overall balance (as percent of GDP), external debt (as a percentage of GDP), current account balance (as a percent of GDP), trade volume with the United States (as percent of GDP), trade volume with France, Germany, and the United Kingdom (as percent of GDP), and a dummy for the presence of a fixed exchange rate regime. Political economy variables include voting pattern overlap with the United States in the UN General Assembly, voting pattern overlap with France, Germany, and the United Kingdom in the UN General Assembly, the total percentage of economists from the member country, Fund quota share, outstanding Fund credit as a percentage of the total quota, foreign bank claims from the United States (as a percentage of GDP), foreign bank claims from France, Germany, and the United Kingdom (as a percentage of GDP), direct foreign aid from the United States (as a percentage of GDP), direct foreign aid from France, Germany, and the United Kingdom (as a percentage of GDP), and dummies for a currency union and OECD membership.

[59] As a further robustness check each eliminated control was added one at a time back into the baseline specification. In a model with region dummies, none of the previously eliminated controls were statistically significant and therefore were not included in the final specification. The final specification also has the highest overall statistical significance (as measured by the Pearson's Chi Squared test) and accuracy (as measured by the p-error, which equals the difference between the predicted mean probability and the sample mean probability).

68. **All variables enter with the expected signs** (Appendix V, Table 1). For example, lower growth and FDI inflows, higher inflation, external debt, and current account deficits are linked to a higher probability that a country will request and obtain a Fund-supported program. Also, countries with higher GDP per capita are less likely to request and obtain a program during the sample period. The lower probability of countries in the Asia-Pacific region to enter Fund-supported programs may reflect lingering stigma effects from the late 1990s Asian crisis (not shown).

Appendix V, Table 1. Probit Estimation for the Probability of Requesting a GRA-Supported Program [1]

Dependent Variable: Dummy Denoting Initialization of a Fund Supported Program

Explanatory Variables	**Estimated Coefficient**
Real GDP Growth$_{(t-1)}$	-0.18***
ln(nominal GDP per capita)$_{(t-1)}$	-0.03***
Inflation$_{(t-1)}$	0.20**
Inflation$_{(t-2)}$	-0.16**
FDI/GDP$_{(t-1)}$	-0.15**
External Debt/GDP$_{(t-1)}$	0.01**
Current account/GDP$_{(t-1)}$	-0.18**
Region Dummies	Yes
Constant	2.23***
X^2	42.52
P Actual (percent)	4.4%
P Predicted (percent)	2.7%
P Error (percent) 2/	-1.7%

[1] Marginal effects reported. For example, if real GDP is higher by 1 percentage point, the probability of initializing a GRA program is lower by 0.18 percentage points.

[2] A measure for the accuracy of the probit model.

Stars denote statistical significance at * (10%) ** (5%) and *** (1%) respectively.

69. **Results were found to be fairly robust to alternative control group specifications**. The alternative control groups are:

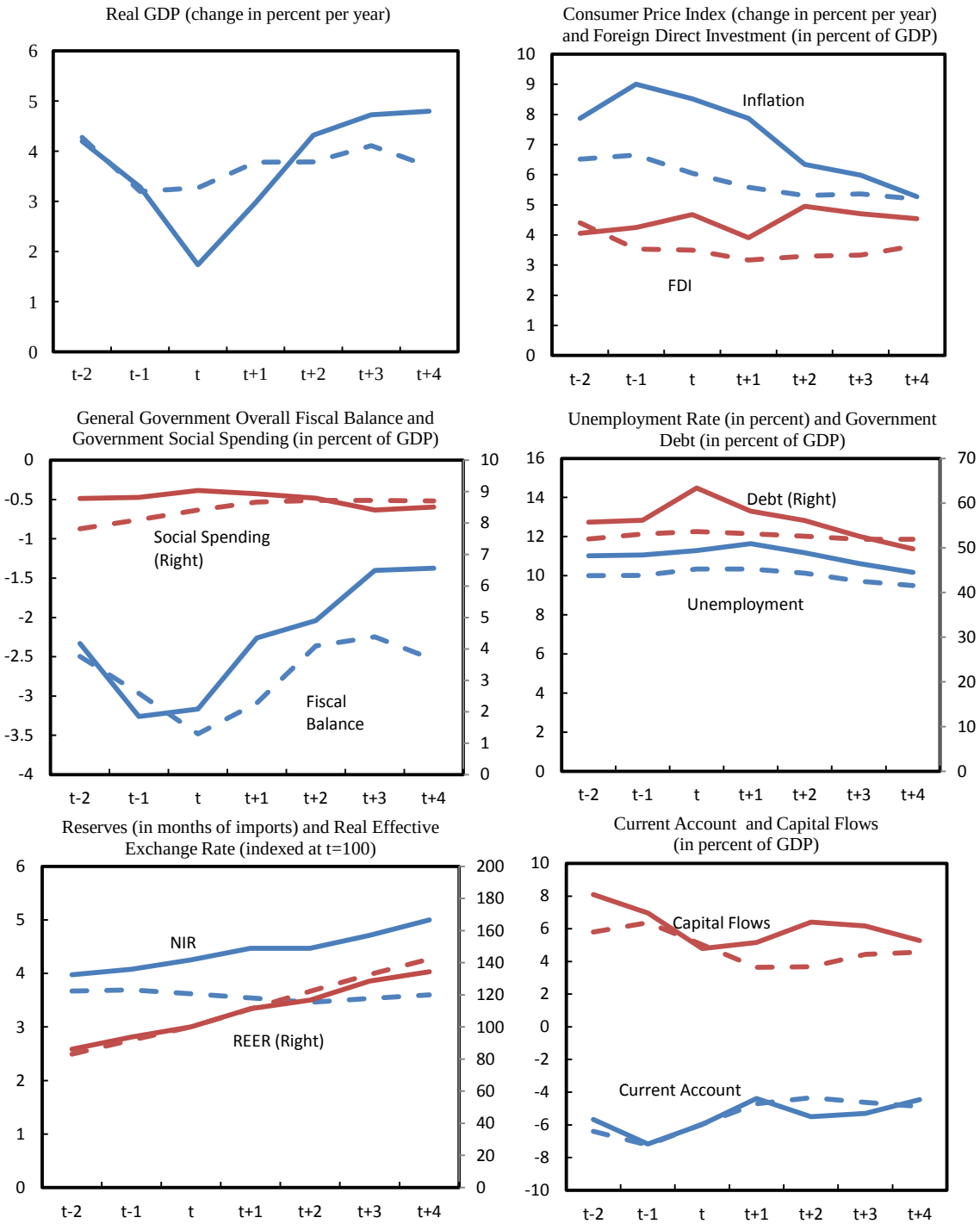
- *Different number of control group countries:* The three non-program countries with the closest propensities of requesting a Fund-supported program in the same year as the program country in question, to ensure results do not depend on control group size (Appendix V, Figure 1).

- *Wider time-window:* The five non-program countries with the closest propensities of requesting a Fund-supported program in a time window of plus and minus two years around the year of program start in the program country, to assess whether results are robust to differences in time-varying global economic conditions (Appendix V, Figure 2).

- *Different probability cut-off:* All non-program countries with above-average probabilities of requesting a Fund-supported program in the same year as the program country in question, to ensure results are not unduly affected by including countries with a fairly low propensity (Appendix V, Figure 3).

70. **The control group methodology chosen here has some weaknesses, and results should be interpreted with care**. One weakness is that matching methods tend to require fairly large datasets, and the dataset used here, containing only 67 GRA-supported programs, may satisfy this requirement only to a limited extent. Another weakness is potential omitted variable bias. While the methodology interprets as purely random the fact that a country with a given estimated propensity to request a program did indeed request one while another country with the same propensity did not, this difference might be due to unobserved factors. Also, similarity between countries with the same estimated propensity may be limited by the fact that the same estimated propensity can be reached in different ways. For example, one country might have reached a certain propensity mainly through low growth, while another country might have reached it mainly through a large current account deficit. To mitigate somewhat the risk that this second weakness influences results and allow for better comparison of growth paths, an additional alternative control group was established, which includes all non-program countries with a similar growth decline as the one experienced by the program country in question. Specifically, this control group includes all non-program countries that experienced a cumulative growth decline of at least two percent during the two years leading up to the program start in the program country in question (Appendix V, Figure 4).

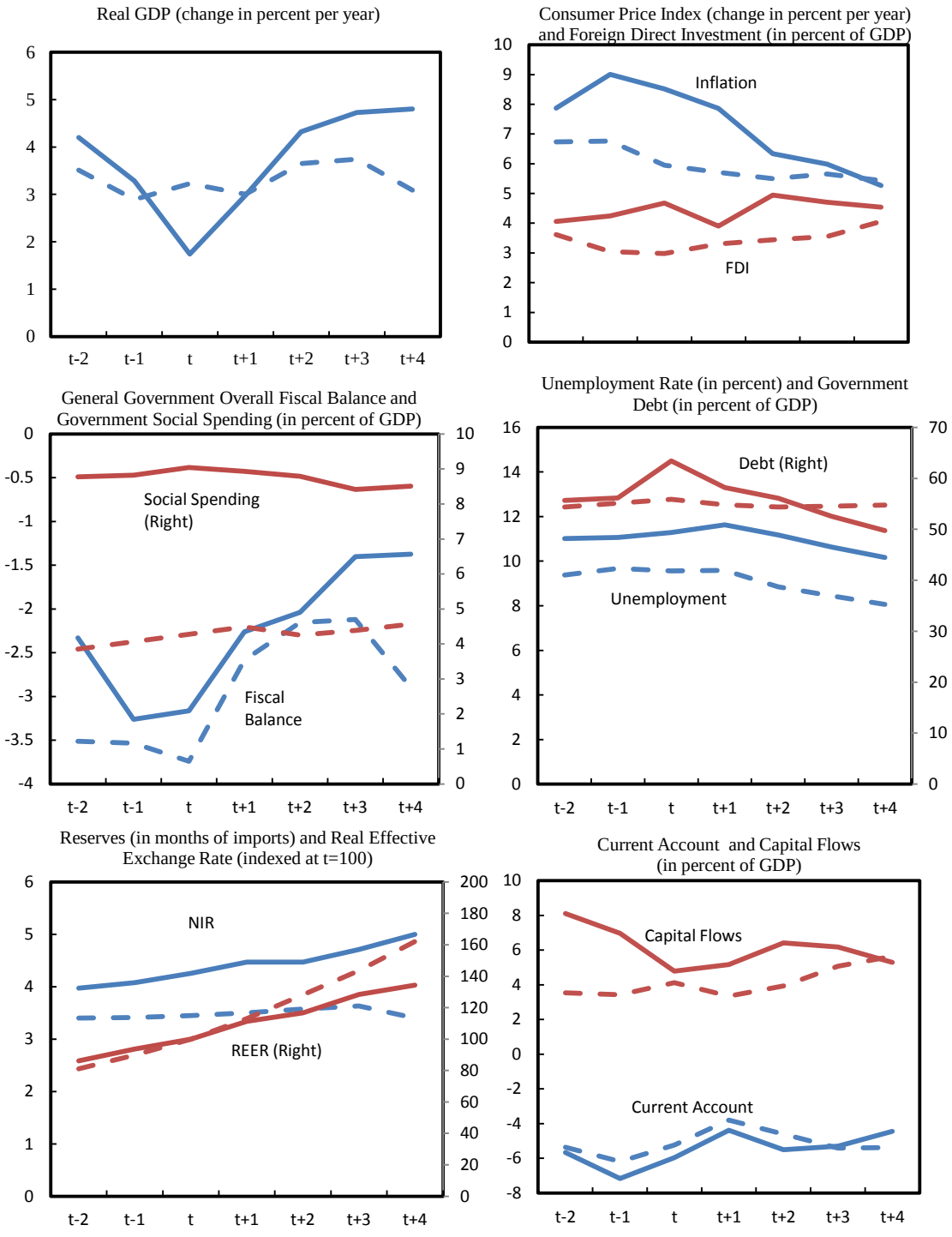
Appendix V, Figure 1. Macroeconomic Outcomes of GRA Supported Programs, 2002-11; 3 Nearest Neighbor Match [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines for control group country averages. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

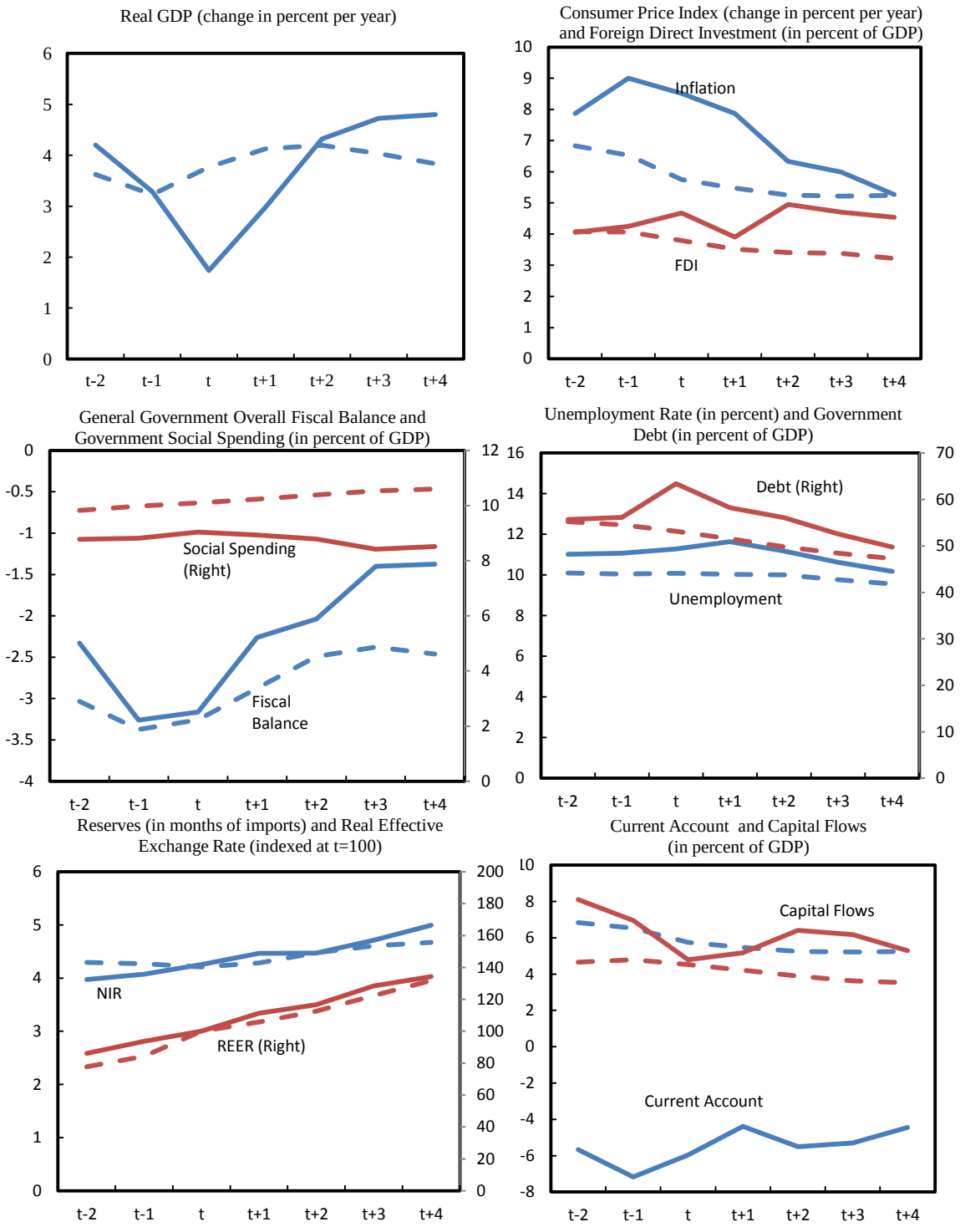
Appendix V, Figure 2. Macroeconomic Outcomes of GRA Supported Programs, 2002-11; Wider Time Window [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines for control group country averages. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

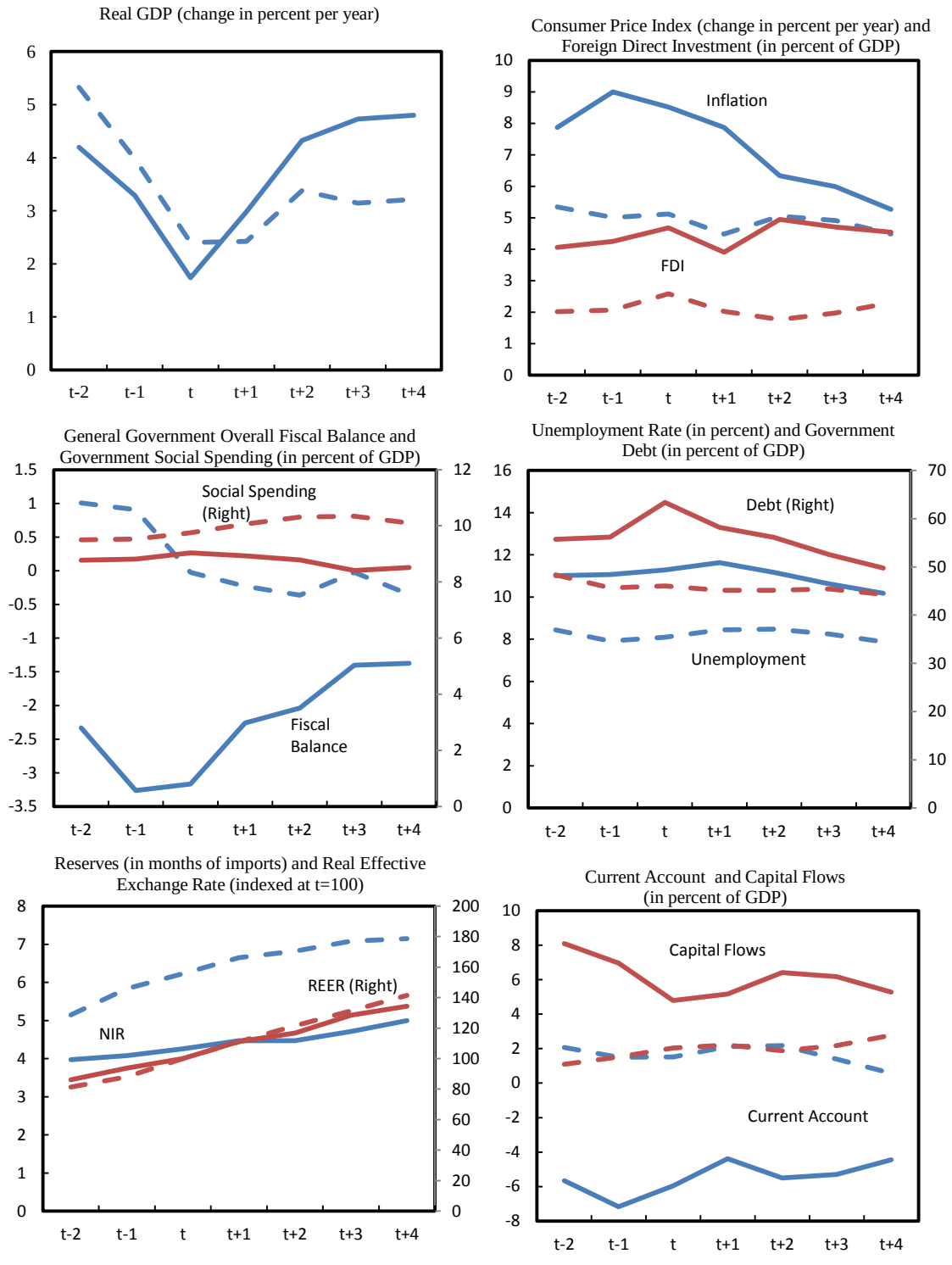
Appendix V, Figure 3. Macroeconomic Outcomes of GRA Supported Programs, 2002-11; Above Average Propensity [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines for control group country averages. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

Appendix V, Figure 4. Macroeconomic Outcomes of GRA Supported Programs, 2002-11; Same Year Growth Decline [1]



Source: WEO October 2011, IMF

[1] Solid lines indicate program country averages, dashed lines for control group country averages. Data availability for government social spending and unemployment is limited to 64 and 78 percent of the sample, respectively.

Appendix VI. Impact of the 2009 Reform of Fund Facilities on Fund Lending

The impact of the reform for GRA-supported programs was calculated as follows (Appendix Table IV.1):

- Countries that had normal access (up to the normal cumulative access limit of 600 percent of quota) would have had access at the pre-reform normal cumulative access limit (300 percent of quota).

- Countries that had exceptional access (no limit) would have had the same access unless they had limited access to capital markets, in which case they would have obtained access at the pre-reform normal access limit.

- Countries with precautionary access would have had the same access.

Appendix VI, Table 1. Access to GRA Resources in Programs Initiated after the Reform of Access Policies [1]

		In percent of Quota			In percent of GDP		
Country	Type of arrangement	Pre-reform normal access limit	Access level post-reform	Access levels above pre-reform limits	Pre-reform normal access limit	Access level post-reform	Access levels above pre-reform limits
	(1)	(2)	(3)	(4) = (3)-(2)	(5)	(6)	(7) = (6)-(5)
Normal Access							
Angola	SBA	300	300	0	1.5	1.5	0.0
Antigua and Barbuda	SBA	300	600	300	5.6	11.2	5.6
Armenia	SBA	300	580	280	4.7	9.1	4.4
Belarus	SBA	300	587	287	3.2	6.3	3.1
Bosnia and Herzegovina	SBA	300	600	300	9.2	18.4	9.2
Dominican Republic	SBA	300	500	200	2.0	3.4	1.3
Jamaica	SBA	300	300	0	9.4	9.4	0.0
Kosovo	SBA	300	158	0	4.8	2.5	0.0
Maldives	SBA	300	600	300	2.0	4.1	2.0
Mongolia	SBA	300	300	0	3.7	3.7	0.0
Seychelles	SBA	300	225	0	4.6	3.5	0.0
St. Kitts and Nevis	SBA	300	585	285	7.8	15.2	7.4
Sri Lanka	SBA	300	400	100	3.9	5.2	1.3
Serbia	SBA	300	560	260	5.3	9.8	4.6
Serbia	SBA	300	200	0	5.3	3.5	0.0
Precautionary							
Costa Rica	SBA	no limit	300	0	no limit	2.2	0
El Salvador	SBA	no limit	300	0	no limit	3.7	0
Guatemala	SBA	no limit	300	0	no limit	2.4	0
Iraq	SBA	no limit	200	0	no limit	4.4	0
Romania	SBA	no limit	300	0	no limit	2.9	0
Exceptional Access							
Greece	SBA	no limit	3212	0	no limit	13.2	0
Ireland	EFF	no limit	1548	0	no limit	9.6	0
Portugal	EFF	no limit	2306	0	no limit	13.5	0
Romania	SBA	300	1111	811	2.9	10.8	7.9
Ukraine	SBA	no limit	729	0	no limit	11.5	0
Average		300	672	125	4.7	7.2	1.9

[1] As of end-September 2011

References

Atoyan, R. and P. Conway, 2005, "Evaluating the Impact of IMF Programs: A Comparison of Matching and Instrumental-Variables Estimation," *The Review of International Organizations*, Vol. 1 (2), pp. 99-124.

Barro, R. and J. W. Lee, 2005, "IMF Programs: Who is Chosen and What are the Effects?" *Journal of Monetary Economics*, Vol. 52 (7), pp. 1245-69.

Baldacci, E., B. Clements, S. Gupta, and Q. Cui, 2008, "Social Spending, Human Capital, and Growth in Developing Countries," *World Development*, Vol. 36, pp. 1317-41.

Bas, M. and R. Stone., 2011, *If Life Sends you Lemons: Adverse Selection and Growth under IMF Programs*, http://www.rochester.edu/College/PSC/stone/working_papers/IMFGrowth3.pdf

Cavallo, E. and J. Frankel, 2008, "Does Openness to Trade Make Countries More Vulnerable to Sudden Stops, or Less? Using Gravity to Establish Causality," *Journal of International Money and Finance*, Vol. 27 (8), pp. 1430-52.

Center for Global Development, 2007, "*Report of the Working Group on IMF Programs and Health Spending: Does the IMF Constrain Health Spending in Poor Countries? Evidence and an Agenda for Action*" (Washington: Center for Global Development).

Cerutti, E., 2007, *IMF Drawing Programs: Participation Determinants and Forecasting*, IMF Working Paper No. 07/152 (Washington: International Monetary Fund).

Clements, B., S. Gupta, and M. Nozaki, 2011, *What Happens to Social Spending in IMF-Supported Programs?* IMF Staff Discussion Note No. 11/15.

Conners, T., 1979, *The Apparent Effects of Recent IMF Stabilization Programs*, International Finance Discussion Paper No. 135 (Washington: Board of Governors of the Federal Reserve System), http://www.federalreserve.gov/pubs/ifdp/1979/135/ifdp135.pdf.

Conway, P., 1994, "IMF Lending Programs: Participation and Impact," *Journal of Development Economics*, Vol. 45 (2), pp. 365-91.

———, 2003, *Endogenous IMF Conditionality: Theoretical and Empirical Implications*, www.unc.edu/~pconway/dload/ec_conway.pdf.

Davoodi, H., E. Tiongson, and S. Asawanuchit, 2010, "Benefit Incidence of Public Education and Health Spending Worldwide: Evidence from a New Database," *Poverty And Public Policy*, Vol. 2, p. 5-52.

Dicks-Mireaux, L., M. Mecagni, and S. Schadler, 2000, "Evaluating the Effect of IMF Lending to Low-Income Countries," *Journal of Development Economics*, Vol. 61 (2), pp. 495-526.

Dreher, A., 2006, "IMF and Economic Growth: The Effects of Programs, Loans, and Compliance with Conditionality," *World Development*, Vol. 34 (5), pp. 769-88.

———, and S. Walter, 2010, *Does the IMF help or hurt? The effect of IMF programs on the likelihood and outcome of currency crises*, KOF Working Paper No. 08-186, http://www.kof.ethz.ch/publications/science/pdf/wp_186.pdf.

Donovan, D., 1981, "Real Responses Associated with Exchange-Rate Action in Selected Upper Credit Tranche Stabilization Programs," *IMF Staff Papers*, Vol. 28, pp. 698-727 (Washington: International Monetary Fund).

———**,**1982, "Macroeconomic Performance and Adjustment under Fund-Supported Programs: The Experience of the Seventies," *IMF Staff Papers*, Vol. 29, pp. 171-203 (Washington: International Monetary Fund).

Easterly, W., 2005, "What Did Structural Adjustment Adjust: The Association of Policies and Growth with Repeated IMF and World Bank Adjustment Loans," *Journal of Development Economics*, Vol. 76 (1), pp. 1-22.

Eichengreen, B., K. Kletzer and A. Mody, 2006. "The IMF in a World of Private Capital Markets," *Journal of Banking & Finance*, Vol. 30(5), pp. 1335-1357.

Escolano, J., 2010, *A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates*, Technical Notes and Manuals, Fiscal Affairs Department (Washington: International Monetary Fund).

Espinoza, R., H. Leon, and A. Prasad (forthcoming), "When Should We Worry about Inflation?" *World Bank Economic Review* (Washington: The World Bank).

Evrensel and Kim, 2006, "Macroeconomic Policies and Participation in IMF Programs," *Economic Systems*, Vol. 30 (3), pp. 264-281.

Ghosh, A., T. Lane, M. Schulze-Ghattas, A. Bulir, J. Hamann, and A. Mourmouras, 2002, *IMF-Supported Programs in Capital Account Crises*, IMF Occasional Paper 210 (Washington: International Monetary Fund).

Goldstein, M. and P. Montiel, 1986, "Evaluating Fund Stabilization Programs with Multi-Country Data: Some Methodological Pitfalls," *IMF Staff Papers*, Vol. 33 (2), pp. 304-44 (Washington: International Monetary Fund).

Gupta and others, 2000, *Social Issues in IMF-Supported Programs*, IMF Occasional Paper 191 (Washington: International Monetary Fund).

Gupta, S., M. Verhoeven and E. Tiongson, 2002, "The Effectiveness of Government Spending on Education and Health Care in Developing and Transition Economies," *European Journal of Political Economy*, Vol. 18, pp. 717-37.

Gylfason, T., 1987, *Credit Policy and Economic Activity in Developing Countries with IMF Stabilization Programs*, Princeton Study in International Finance 60.

Hardoy, I., 2003, *Effect of IMF Programmes on Growth: A Reappraisal Using the Method of Matching*, paper presented at the European Economic Association, Stockholm, August 20-24, 2003.

Hutchison, M., 2004, *Selection Bias and Output Costs in IMF Programs*, EPRU Working Paper 04-15, http://www.econ.ku.dk/epru/files/wp/wp-04-15.pdf.

IMF, 2004, *Fund-supported Programs: Objectives and Outcomes*, (Washington: International Monetary Fund), http://www.imf.org/external/np/pdr/2004/eng/object.htm.

———, 2009a, *The Fund's Facilities and Financing Framework for Low-Income Countries—Supplementary Information* (Washington: International Monetary Fund), http://www.imf.org/external/np/pp/eng/2009/031309.pdf.

———, 2009b, *Creating Policy Space—Responsive Design and Streamlined Conditionality in Recent Low-Income Country Programs* (Washington: International Monetary Fund), http://www.imf.org/external/np/pp/eng/2009/091009a.pdf

———, 2009c, *Review of Recent Crisis Programs* (Washington: International Monetary Fund), http://www.imf.org/external/np/pp/eng/2009/091409.pdf

———, 2009d, *The Implications of the Global Financial Crisis for Low-Income Countries* (Washington: International Monetary Fund), http://www.imf.org/external/pubs/ft/books/2009/globalfin/globalfin.pdf

———, 2009e, *GRA Lending Toolkit and Conditionality-Reform Proposals* (Washington: International Monetary Fund), http://www.imf.org/external/np/pp/eng/2009/031309a.pdf

———, 2009f, *A New Architecture of Facilities for Low-Income Countries* (Washington: International Monetary Fund), www.imf.org/external/np/pp/eng/2009/062609.pdf.

———, 2010, *Emerging from the Global Crisis: Macroeconomic Challenges Facing Low-Income Countries* (Washington: International Monetary Fund), http://www.imf.org/external/np/pp/eng/2010/100510.pdf

———, 2011, *Macroeconomic and Operational Challenges in Countries in Fragile Situations* (Washington: International Monetary Fund), www.imf.org/external/np/pp/eng/2011/061511a.pdf

Independent Evaluation Office *of* the International Monetary Fund, 2003, *Evaluation Report: Fiscal Adjustment in IMF-Supported Programs* (Washington: International Monetary Fund).

Khan, M., 1990, "The Macroeconomic Effects of Fund-Supported Adjustment Programs," *IMF Staff Papers*, Vol. 37 (2), pp. 195-231 (Washington: International Monetary Fund).

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

———, and S. Sharma, 1993, "IMF Conditionality and Country Ownership of Adjustment Programs," *The World Bank Research Observer*, Vol. 18 (2), pp. 227-48.

Killick, T., 1984, *The Quest for Economic Stabilization: The IMF and the Third World*, (New York, NY: St. Martin's).

———, M. Malik, and M. Manuel, 1992, "What Can We Know About the Effects of IMF Programmes?" *World Economy*, Vol. 15, pp. 575-97.

Loxley, J., 1984, *The IMF and the Poorest Countries*, Ottawa, Canada: North-South Institute.

Marchesi, S., 2003, "Adoption of an IMF Programme and Debt Rescheduling: An Empirical Analysis," *Journal of Development Economics*, Vol. 70, pp. 403-23.

Mauro, P. (editor), 2011, *Chipping away at Public Debt: Sources of Failure and Keys to Success in Fiscal Adjustment* (London: J. Wiley and Sons, Inc.)

Mody, A. and D. Saravia, 2003. *Catalyzing Capital Flows: Do IMF-Supported Programs Work as Commitment Devices?* IMF Working Papers 03/100 (Washington: International Monetary Fund).

Pastor, M., 1987, "The Effects of IMF Programs in the Third World: Debate and Evidence from Latin America," *World Development,* Vol. 15 (2), 249-262.

Przeworski, J. A. and J. Vreeland, 2000, "The Effect of IMF Programs on Economic Growth," *Journal of Development Economics*, Vol. 62 (2), pp. 215-76.

Schadler, S., F. Rozwadowski, S. Tiwari, and D. Robinson, 1993, *Economic Adjustment in Low-Income Countries—Experience under the Enhanced Structural Adjustment Facility*, IMF Occasional Paper No. 106 (Washington: International Monetary Fund).

Steinwand, M. and R. Stone, 2008, "The International Monetary Fund: A Review of Recent Evidence," *Review of International Organizations*, Vol. 3 (2), pp. 123-49.

Vreeland, J., 2003, *The IMF and Economic Development* (New York: Cambridge University Press).

Zulu, J., and S. Nsouli, 1985, *Adjustment Programs in Africa: the Recent Experience*, IMF Occasional Paper 34 (Washington: International Monetary Fund).