

GAO

Report to the Chairman, Committee on
Financial Services, House of
Representatives

November 2009

INTERNATIONAL MONETARY FUND

Lending Programs Allow for Negotiations and Are Consistent with Economic Literature



GAO

Accountability * Integrity * Reliability



Highlights of [GAO-10-44](#), a report to the Chairman, Committee on Financial Services, House of Representatives

Why GAO Did This Study

The International Monetary Fund (IMF) has significantly increased its total committed lending to countries from about \$3.5 billion in August 2008 to about \$170.4 billion in August 2009, as countries have been severely affected by the global economic crisis. IMF-supported programs are intended to help countries overcome balance-of-payments problems, stabilize their economies, and restore sustainable economic growth. Critics have long-standing concerns that the IMF has an overly austere approach to macroeconomic policy that does not sufficiently heed country viewpoints. To help address these concerns, the IMF recently stated that it has changed its policies, including by increasing its flexibility.

GAO was asked to examine (1) the process for designing an IMF-supported program, (2) the IMF-supported programs in four recipient countries, and (3) the extent to which the findings of empirical economic studies are consistent with the IMF's macroeconomic policies. GAO analyzed IMF and recipient country documents; interviewed U.S., IMF, and foreign government officials, conducting fieldwork in four relatively large recipient countries; and analyzed published or widely cited empirical studies.

GAO received written comments from the Department of the Treasury, noting its concurrence with the report's conclusions.

[View GAO-10-44 or key components.](#)
For more information, contact Thomas Melito at (202) 512-9601 or melitot@gao.gov.

INTERNATIONAL MONETARY FUND

Lending Programs Allow for Negotiations and Are Consistent with Economic Literature

What GAO Found

Designing an IMF-supported lending program involves a complex, iterative process based on projections for key macroeconomic variables; discussions between IMF staff and country officials regarding program goals, policies, and trade-offs; use of economic judgment; and IMF Executive Board approval. An IMF-supported program is intended to help countries achieve their objectives in the context of macroeconomic stability. Programs in low-income countries are broadly geared toward increasing economic growth and reducing poverty, and generally strive for low inflation and sustainable levels of debt. In middle- and high-income countries, programs generally aim to stem capital outflows, restore confidence, and stabilize the exchange rate by, for example, setting targets for budget deficits and international reserves. Trade-offs among the different combinations of objectives and policies allow for negotiations between the IMF staff and country officials, reflecting what is technically feasible and politically acceptable.

IMF-supported programs in the four countries GAO reviewed—Liberia, Zambia, Hungary, and Iceland—include different sets of objectives, targets, and conditions that reflect country circumstances, based on negotiations between the IMF staff and country officials. In postconflict Liberia, the program focuses on rebuilding capacity and contains a target for maintaining a balanced budget with no borrowing. In Zambia—a country negatively affected by the recent economic crisis—the IMF-supported program is designed to increase economic growth, reduce poverty, and improve governance. Hungary, which faced a rising risk of default, has a program that focuses on restoring investor confidence while reducing debt and expenditures. A banking and currency collapse in Iceland precipitated the IMF-supported program, which contains some controversial approaches to monetary policy and banking reform. All four countries are making progress but face challenges in implementing conditions or achieving targets in their IMF-supported programs.

The macroeconomic policies in IMF-supported programs are broadly consistent with the findings of the empirical literature GAO reviewed, although this literature lacks precise guidance for setting policy targets. For low-income countries, empirical evidence generally suggests inflation is detrimental to economic growth after it exceeds a critical threshold, which is broadly consistent with the inflation targets included in the IMF-supported programs we reviewed. For middle- and high-income countries, the literature identified specific policy weaknesses in advance of crises, including high inflation, high public indebtedness, and low international reserves. These weaknesses are consistent with the policies upon which the IMF focuses in the 13 programs in middle- to high-income countries GAO reviewed.

Contents

Letter		1
	Results in Brief	4
	Background	7
	Designing an IMF-Supported Program Is a Complex Process That Allows for Negotiated Trade-offs Among Objectives and Policies	11
	Four IMF-Supported Programs Were Negotiated Based on Countries' Circumstances	16
	Macroeconomic Policies in IMF-Supported Programs Are Broadly Consistent with Findings of Academic Literature	39
	Agency Comments	52
Appendix I	Scope and Methodology	53
Appendix II	Countries Approved to Receive IMF Financial Arrangements as of August 31, 2009	56
Appendix III	Comments from the Department of the Treasury	58
Appendix IV	GAO Contact and Staff Acknowledgments	59
Bibliography	Empirical Studies Reviewed in the Inflation-Growth Literature	60
Bibliography	Empirical Studies Reviewed in the Crisis “Early Warning System” Literature	62
Tables		
	Table 1: Number of Countries and Total Agreed-Upon Amounts of IMF Funding by Type of IMF Lending Arrangements, as of August 2008 and August 2009	10

Table 2: Context, Circumstances, and Objectives of Four Current IMF-Supported Programs	17
Table 3: Inflation Targets in IMF-Supported Programs for 31 Low-Income Countries, as of July 2009	43
Table 4: Indicators of Crisis Vulnerability from the Academic Literature	49
Table 5: Countries Committed to IMF Financial Arrangements as of August 31, 2009	56

Figures

Figure 1: Elements of an IMF-Supported Program	12
Figure 2: Liberia's Country Background	18
Figure 3: Elements of Liberia's IMF-Supported Program	20
Figure 4: Zambia's Country Background	23
Figure 5: Elements of Zambia's IMF-Supported Program	25
Figure 6: Hungary's Country Background	28
Figure 7: Elements of Hungary's IMF-Supported Program	30
Figure 8: Iceland's Country Background	33
Figure 9: Elements of Iceland's IMF-Supported Program	35
Figure 10: Relationship between Inflation and Economic Growth in Low-Income Countries as Described in Empirical Literature	41
Figure 11: Inflation Targets in IMF-Supported Programs Are within the Estimates from Nine Studies	45

Abbreviations

EFF	Extended Fund Facility
ESF	Exogenous Shocks Facility
FCL	Flexible Credit Line
G-20	Group of Twenty
GDP	Gross Domestic Product
HFSA	Hungarian Financial Supervisory Authority
HIPC	Heavily Indebted Poor Countries
IMF	International Monetary Fund
NGO	nongovernmental organization
NTSR	noise-to-signal ratio
PRGF	Poverty Reduction and Growth Facility
QPC	quantitative performance criteria
SBA	Stand-By Arrangement
SDR	special drawing rights
SPC	structural performance criteria
Treasury	U.S. Department of the Treasury

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



United States Government Accountability Office
Washington, DC 20548

November 12, 2009

The Honorable Barney Frank
Chairman
Committee on Financial Services
House of Representatives

Dear Mr. Chairman:

In response to the deepening global economic crisis, the International Monetary Fund (IMF) has dramatically increased its lending to member countries—from a total commitment under IMF-supported programs of about \$3.5 billion as of August 2008 to a record level of about \$170.4 billion as of August 2009.¹ Much of this new lending has gone to middle- and high-income countries, facing balance-of-payments crises or risking default on their external debt payments, to address their short-term financing needs.² About two dozen low-income countries had longer-term IMF-supported programs focused on increasing economic growth and reducing poverty, as of August 2009. To help ensure that the IMF continues to have sufficient resources to meet the increased demand, in April 2009, the Group of Twenty (G-20) world leaders endorsed measures to make \$1 trillion available through the IMF.³ The \$1 trillion includes the tripling of the IMF's lending capacity to \$750 billion, and an agreement to back the IMF in effectively creating an additional \$250 billion by issuing special drawing rights (SDR).⁴ As part of these increased resources, Congress had

¹For the purposes of this report, lending includes arrangements and amounts that the IMF has committed to lend to recipient countries. The recipient countries may not have drawn these committed amounts. Unless otherwise noted, we use the August 31, 2009, U.S. dollar to SDR exchange rate of 1.56606 to convert IMF-reported SDR values to 2009 U.S. dollars throughout the report. The currency value of the SDR is determined daily by the IMF by summing the values in U.S. dollars, based on market exchange rates, of a basket of four major currencies—the euro, Japanese yen, pound sterling, and U.S. dollar.

²Balance-of-payments problems occur when countries have difficulty obtaining the financial resources needed to meet their payments to nonresidents.

³The G-20 is an organization of Finance Ministers and Central Bank Governors representing industrialized and developing economies.

⁴SDR is an international reserve asset created by the IMF in 1969 as a supplement to existing reserve assets, or quasi-currency that borrowing nations can draw upon if needed.

appropriated, in June 2009, additional funds for the IMF, including making available up to about \$117.5 billion for loans to the IMF.⁵

The IMF, after holding discussions and reaching agreement with country authorities, provides member countries with financing that they have not been able to obtain in private capital markets.⁶ IMF-supported lending programs are intended to help countries overcome balance-of-payments problems, stabilize their economies, and restore sustainable economic growth. To help achieve these objectives, IMF-supported programs identify key macroeconomic targets, such as economic growth rates, using a macroeconomic framework.⁷ These programs also establish conditions, the economic and financial policy requirements to which recipient countries agree to receive IMF funding. Furthermore, IMF-supported programs may involve financing from other, often larger, creditors that link their funding to recipients' performance on program conditions.

Critics have long-standing concerns that the IMF has an overly austere approach to macroeconomic policy that does not sufficiently heed country viewpoints, sacrificing potential economic growth and poverty reduction in order to lower a country's inflation rate and government deficit. For example, in October 2007, over 120 nongovernmental organizations (NGO) expressed their concerns to the IMF that its unnecessarily restrictive policies may undermine low-income countries' ability to increase social spending. During the 1997-1998 Asian financial crisis, as well as more recently, some NGOs also criticized the IMF for imposing spending reductions and tight monetary policy on middle-income countries that exacerbated already severe economic stress. To help address these concerns, the IMF stated that it has changed its policies in part to increase

⁵Supplemental Appropriations Act, 2009, Pub. L. No. 111-32, June 24, 2009. The legislation made available the dollar equivalent of up to 75 billion SDRs, but also included that if the United States agrees to an expansion of its credit arrangement in an amount less than the dollar equivalent of 75 billion SDRs, any amount over the United States' agreement shall not be available until further appropriated. According to the Department of the Treasury, there is an understanding between the Department of the Treasury and the U.S. Congress, which is supported by the administration's public statements, that the United States would only commit up to \$100 billion.

⁶Agreement on an IMF-supported program requires the IMF Executive Board's approval. This board comprises 24 Executive Directors who are appointed or elected by member countries or by groups of member countries.

⁷We use the word target to mean a goal or objective of an IMF-supported program, rather than a formal target or program requirement.

flexibility; however, countries in crisis often have to undertake difficult reforms and cut government spending to achieve macroeconomic stability. Researchers studied these contentious issues, including the relationship between inflation and economic growth, and between macroeconomic policy and crises.

In response to your request, we examined (1) the process for designing an IMF-supported program, (2) the IMF-supported programs in four selected recipient countries, and (3) the extent to which the findings of empirical economic studies are consistent with the IMF's macroeconomic policies.

To address these objectives, we focused our review on IMF-supported programs that provide countries with financial assistance. We reviewed and analyzed IMF documents and data, including the IMF Articles of Agreement; country requests for IMF-supported programs (letters of intent⁸); IMF consultation reports and assessments of country progress under IMF-supported programs (including IMF's Article IV consultation reports⁹); program design papers; strategy papers; policy documents; and IMF's Independent Evaluation Office reports. Using the letters of intent and consultation reports, we determined inflation goals in the 31 IMF-supported programs in low-income countries and macroeconomic policy requirements in 13 IMF-supported programs in middle- and high-income countries as of July 2009. We also met with officials representing the IMF, U.S. Departments of the Treasury (Treasury) and State, foreign governments, NGOs, and other international organizations. We conducted audit work in Washington, D.C., as well as Hungary, Iceland, Liberia, and Zambia, having selected these four countries as case studies to illustrate the IMF-supported programs in individual country programs. We selected these four countries to ensure geographic diversity and to examine how IMF-supported programs may differ in low-, middle-, and high-income countries receiving relatively large amounts of IMF financial assistance during the time of our review. Our choice of countries is meant to be illustrative, not representative. Furthermore, using published or widely

⁸Letters of intent are prepared by the member country. They describe the policies that a country intends to implement in the context of its request for financial support from the IMF.

⁹The Article IV consultation is an annual review of members' macroeconomic circumstances. Typically, an IMF staff team visits the country, collects economic and financial information, and discusses with officials the country's economic developments and policies. The staff prepares a report, which forms the basis for discussion by the Executive Board.

cited empirical studies identified in economic research databases including EconLit and Google Scholar, we identified key relationships between macroeconomic policies and economic growth and crises and compared them with macroeconomic policies in current IMF-supported programs. Specifically, we reviewed two parts of the academic literature relevant to the macroeconomic policy decisions in IMF-supported programs, namely the literature that links inflation with economic growth and the crisis “early warning system” literature that identifies leading indicators of currency, banking, and debt crises.

We conducted our work from November 2008 to November 2009 in accordance with all sections of GAO’s Quality Assurance Framework that are relevant to our objectives. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions in this product. Appendix I contains a more detailed description of our scope and methodology.

Results in Brief

Designing an IMF-supported financial assistance program involves a complex, iterative process based on projections for key macroeconomic variables; discussions between IMF staff and country officials regarding program goals, policies, and trade-offs; use of economic judgment; and IMF Executive Board (IMF Board) approval. The IMF-supported program is intended to help countries achieve their objectives in the context of macroeconomic stability. The IMF macroeconomic framework provides the analytical basis for an IMF-supported program and is designed to ensure consistency among the projections for the various sectors of the economy while incorporating country-specific circumstances. IMF-supported programs in low-income countries are broadly geared toward increasing economic growth and reducing poverty. These programs generally strive to achieve low inflation and sustainable levels of debt by, for example, setting targets for the size of the budget deficit and growth in the money supply. In middle- and high-income countries, IMF-supported programs generally aim to stem capital outflows, restore confidence, and stabilize the exchange rate by, for example, setting targets for budget deficits and international reserves. A range of possible targets can be consistent with macroeconomic stability depending on the severity of existing macroeconomic imbalances. Trade-offs among these different combinations of objectives or policies allow for negotiations between the IMF staff and country officials, reflecting what is technically feasible and

politically acceptable. Countries seeking IMF assistance are already experiencing challenging and often severe economic situations, and their available options usually require difficult choices. For example, countries often have to sacrifice priority spending to achieve macroeconomic stability, which includes a sustainable debt burden and low inflation. Ultimately, IMF staff and country officials reach agreement on the objectives and targets of IMF-supported programs, which then require the IMF Board's approval.

IMF-supported programs in each of the four countries we studied—Liberia, Zambia, Hungary, and Iceland—include different sets of objectives, targets, and conditions that reflect the various circumstances in each country, based on negotiations between IMF staff and country officials. Although IMF staff and country officials generally agreed on the areas that require reform, they sometimes disagreed on the content and timing of specific policies for achieving program goals. All four countries are making progress, but each has encountered challenges in implementing conditions or achieving targets in their IMF-supported programs. In the two low-income countries (Liberia and Zambia), IMF-supported programs focus on achieving long-term economic stability and growth.

- In *Liberia*—a country recovering from years of civil war and lacking basic infrastructure, rule of law, and budget accountability—the IMF-supported program is designed to help address the country's immediate needs. Given Liberia's dire situation, IMF and Liberian officials stated that Liberia has few options available for achieving its program objectives. For example, under the program target to maintain a cash-based, balanced budget, the government is precluded from borrowing to finance additional spending. Officials stated that the typical trade-off decisions—for example, between larger budget deficits and increased public expenditures—are not as relevant under this constraint.
- In *Zambia*—a country negatively affected by the recent economic crisis—the IMF-supported program is designed to increase economic growth, reduce poverty, and improve governance. Key elements of Zambia's negotiations with IMF staff continue to center on fiscal trade-offs, with the authorities preferring to use greater deficit spending to stimulate economic growth, while IMF staff suggest restraint and reform to guard against wasteful spending and maintain economic stability.

For the middle- and high-income countries (Hungary and Iceland, respectively), the IMF responded to sovereign debt or banking crises with a goal of reestablishing economic stability.

- In *Hungary*, a rising risk of default and the central government's unsustainable debt helped fuel the need for an IMF-supported program. A key aspect of the program is to restore confidence by shrinking the amount of government debt, largely through reduced expenditures. While expenditure cuts are not expected to be popular with the general public, Hungarian officials acknowledged that the spending cuts in the IMF-supported program are necessary to stabilize the economy.
- *Iceland* is experiencing a crisis driven by the collapse of its banking system and excessive private sector borrowing. Its IMF-supported program contains controversial approaches to monetary policy and banking reform that have yet to be finalized. For example, authorities in Iceland would prefer to reduce high interest rates earlier than IMF staff suggest to provide a stimulus for struggling households and businesses. IMF staff caution against moving too quickly due to the risk of currency depreciation, which would increase the cost of the large stock of Iceland's foreign currency debt and could cripple recovery prospects. In addition, determining how to restructure failed banks, and particularly who will bear the losses, remains a contentious issue for Icelandic authorities and the country's foreign creditors.

The macroeconomic policies in IMF-supported programs are broadly consistent with the findings of the empirical literature we reviewed, although this literature lacks precise guidance for setting policy targets. Inflation targets are a prominent feature of IMF-supported programs in low-income countries, but there has been considerable debate about appropriate targets for these countries. For low-income countries, empirical evidence generally suggests inflation is detrimental to economic growth after it exceeds a critical threshold of approximately 5 to 12 percent. This threshold is broadly consistent with the inflation targets of 5 to 10 percent in the 31 IMF-supported programs we reviewed. Reducing inflation below this critical threshold produces no additional economic growth or may cause a country to sacrifice some long-term growth benefits, according to the evidence we reviewed. Although there are comparatively few systematic analyses, the findings of the literature suggest a complex relationship between inflation and growth that could vary across countries both in terms of the optimal inflation target and the impact of higher levels of inflation on economic growth. Given these findings and the differences across countries at various stages of

development, a uniform inflation target applicable to all countries may not be appropriate. For middle- and high-income countries, the academic literature identifies weaknesses in macroeconomic policies that often precede economic crises that are consistent with the policies focused on in the IMF-supported programs we reviewed. We focused on this aspect of the academic literature because middle- and high-income countries have sought significant IMF financial assistance due to stress associated with the global financial crisis. Economic crises may include one or more of currency, banking, and debt crises, and can have severe negative effects on the economy. The empirical academic literature identifies a number of specific policy weaknesses in advance of crises, including high inflation, high public indebtedness, and low international reserves. These weaknesses are consistent with the policies upon which the IMF focused in the 13 programs in the middle- and high-income countries we reviewed. While informative for the development of macroeconomic policy, the crisis “early warning system” literature contains limitations, such as selections of countries in some studies that may bias estimates of policy effects. For example, the amount of international reserves necessary to guard against a crisis may be lower for countries excluded from the analysis. As a result, this literature provides qualitative rather than precise quantitative guidance.

The Department of the Treasury provided written comments on a draft of this report (see app. III), stating that it fully concurs with our conclusions. Treasury and the IMF also provided technical comments, which we incorporated as appropriate.

Background

The IMF, an organization of 186 countries, provides surveillance, lending, and technical assistance to its member countries. IMF surveillance involves the monitoring of economic and financial developments and the provision of policy advice, with key aims including financial crisis prevention. The IMF also lends to countries with balance-of-payments difficulties, including medium- to high-income countries, to provide temporary financing and support policies to achieve macroeconomic stability in the medium term. Its loans to low-income countries are to assist policies designed to foster economic growth and promote poverty reduction. In addition, the IMF provides countries with technical assistance and training in its areas of expertise.

Upon request by a member country, an IMF loan is generally provided under a program that stipulates the specific policies and measures a country has agreed to implement. As part of an agreement to receive IMF financing, a

member country may agree to implement policy measures, known as conditions, designed to resolve its balance-of-payments problems, overcome the problems that led it to seek financial aid, and help ensure that it can repay the IMF. The IMF also conducts periodic program reviews to assess whether the IMF-supported program is broadly on track and the country has met established conditions, or whether modifications are necessary to achieve the program's objectives. Based on these reviews of a country's performance, including whether the country has implemented conditions according to a specific timetable, the IMF Board determines whether the country will receive subsequent installments of IMF funding.¹⁰

The IMF's resources are provided by member countries through quota contributions, loan provisions to the IMF, and member contributions for lending to low-income countries. When a country joins the IMF, the country pays a quota to the organization, which may increase when IMF members agree to increase the IMF's capital. Each IMF member country is assigned a quota, based broadly on its relative size in the world economy. A member's quota determines its maximum financial commitment to the IMF and its voting power and has a bearing on the amount of IMF financing a member can receive. The IMF also may enter into multilateral or bilateral borrowing arrangements to increase its resources. Moreover, resources for IMF-supported programs to low-income countries come from funding outside quota resources, including member contributions and the IMF.

In April 2009, the G-20 world leaders endorsed measures to significantly increase the IMF's available resources to \$750 billion and also supported new SDR allocations of about \$250 billion to increase the international reserves of member countries. An additional special SDR allocation of about \$30 billion came into effect in September 2009 under the Fourth Amendment.¹¹ The source of IMF's increase in resources includes both increased quota contributions and a significant amount of borrowing from

¹⁰In May 2009, the IMF announced reforms to its policy on conditions. For example, the IMF eliminated structural elements as performance criteria. These structural performance criteria (SPC) are changes in the underlying makeup of an economy, such as fiscal systems, social safety nets, and measures to strengthen the financial sector. Though eliminated as criteria, the IMF will continue to monitor structural reforms as part of the overall review of country progress.

¹¹The G-20 also called for urgent ratification of a long-pending amendment to the IMF's Articles of Agreement. The Fourth Amendment was proposed to enable all IMF members to participate in the SDR system on an equitable basis and correct for the fact that countries that joined the IMF after 1981—now more than one-fifth of the current IMF membership—had never received an SDR allocation.

some member countries. Part of these additional resources includes funding from the United States. In June 2009, the U.S. Congress passed legislation that appropriated about \$7.8 billion for an increase in the U.S. quota to the IMF.¹² It also made available up to about \$117.5 billion for loans to the IMF.¹³ Congress set some provisions for the IMF as part of the legislation, including language directing U.S. officials to oppose loans to countries that have repeatedly supported acts of international terrorism and to programs that would force developing countries to cap spending on health care and education.¹⁴ When signing the legislation, the President issued a statement stating that certain provisions within the legislation would interfere with his constitutional authority to conduct foreign relations and that he would not treat these provisions as limiting his ability to engage in foreign diplomacy or negotiations.¹⁵ In addition to the increase in the IMF's overall resources, the IMF Board agreed in July 2009 to measures that will boost the IMF's concessional lending capacity available to low-income countries to \$17 billion through 2014.

Since August 2008, the IMF has dramatically increased its commitment to lend to member countries in response to the global economic crisis, as shown in table 1. The table categorizes the number of countries and amount of agreed upon IMF funding categorized by various IMF lending arrangements, which are developed and tailored to address the specific circumstances of its member countries. As shown in table 1, the number of countries with Stand-By Arrangements, typically middle- and high-income countries facing crisis and seeking to resolve their short-term balance of payments problems, have significantly increased. See appendix II for a list of the countries that have been approved to receive funding under an IMF-supported program as of August 2009.

¹²Pub. L. No. 111-32. The legislation appropriated the dollar equivalent of 4,973,100,000 SDRs.

¹³Pub. L. No. 111-32. The legislation made available the dollar equivalent of up to 75 billion SDRs.

¹⁴These provisions are included in Pub. L. No. 111-32, Sections 1403(d) and 1404.

¹⁵Statement on Signing the Supplemental Appropriations Act, 2009, June 24, 2009. The provisions noted in the signing statement included Sections 1403 and 1404.

Table 1: Number of Countries and Total Agreed-Upon Amounts of IMF Funding by Type of IMF Lending Arrangements, as of August 2008 and August 2009

Dollars (U.S.) in billions

Type of IMF lending arrangement	Key characteristics of IMF lending arrangement	Number of countries and total agreed-upon amounts, as of August 31, 2008	Number of countries and total agreed-upon amounts, as of August 31, 2009
Poverty Reduction and Growth Facility (PRGF)	Concessional (below-market) interest loans to low-income countries eligible for PRGF assistance; eligibility based principally on the IMF's assessment of country's per capita income. Loans carry an annual interest rate of 0.5 percent; repayments made semiannually, beginning 5½ years and ending 10 years after disbursement.	22 \$1.8	22 \$3.2
Exogenous Shocks Facility (ESF)	Concessional financing for low-income countries that are experiencing exogenous shocks but do not have a PRGF arrangement. Interest rates and repayment terms same as those under PRGF. Length of a loan is 1 to 2 years.	0	6 \$1.1
Stand-By Arrangement (SBA)	Nonconcessional loans designed to help countries address short-term balance of payments problems. Provision may be on a precautionary basis; countries may choose not to draw upon approved amounts but retain the option to do so if conditions deteriorate. Length of a loan is typically 1 to 2 years. Repayment is due within 3¼ to 5 years of disbursement.	4 \$1.2	18 \$84.3
Extended Fund Facility (EFF)	Use of nonconcessional resources to help countries address longer-term balance of payments problems requiring fundamental economic reforms. Interest rates and repayment terms same as those under PRGF, however, disbursements may be over a 1 to 2 year period under certain circumstances.	2 \$0.6	0
Flexible Credit Line (FCL) (Introduced in March 2009 to address the economic crisis)	Accelerated financing for borrower countries, useful for crisis prevention purposes. Large and up-front financing to member countries meeting preset qualification criteria. Criteria include having very strong fundamentals, policies, and track records of policy implementation. Length of a loan is 6 months or 1 year. Repayment period is 3¼ to 5 years.	Data not available because FCL did not exist	3 \$81.7
Total^a		28 \$3.5	49 \$170.4

Source: IMF data.

Notes: Some countries may have an IMF-supported program that combines different types of arrangements. For example, Liberia had PRGF and EFF programs as of August 31, 2008. For all types of IMF lending arrangements, IMF's funding disbursements depend on performance of the recipient countries. FCL arrangements are reserved for members meeting preset qualification criteria and can be of 6 or 12 months in duration.

^aTotals may not add up due to rounding.

Designing an IMF-Supported Program Is a Complex Process That Allows for Negotiated Trade-offs Among Objectives and Policies

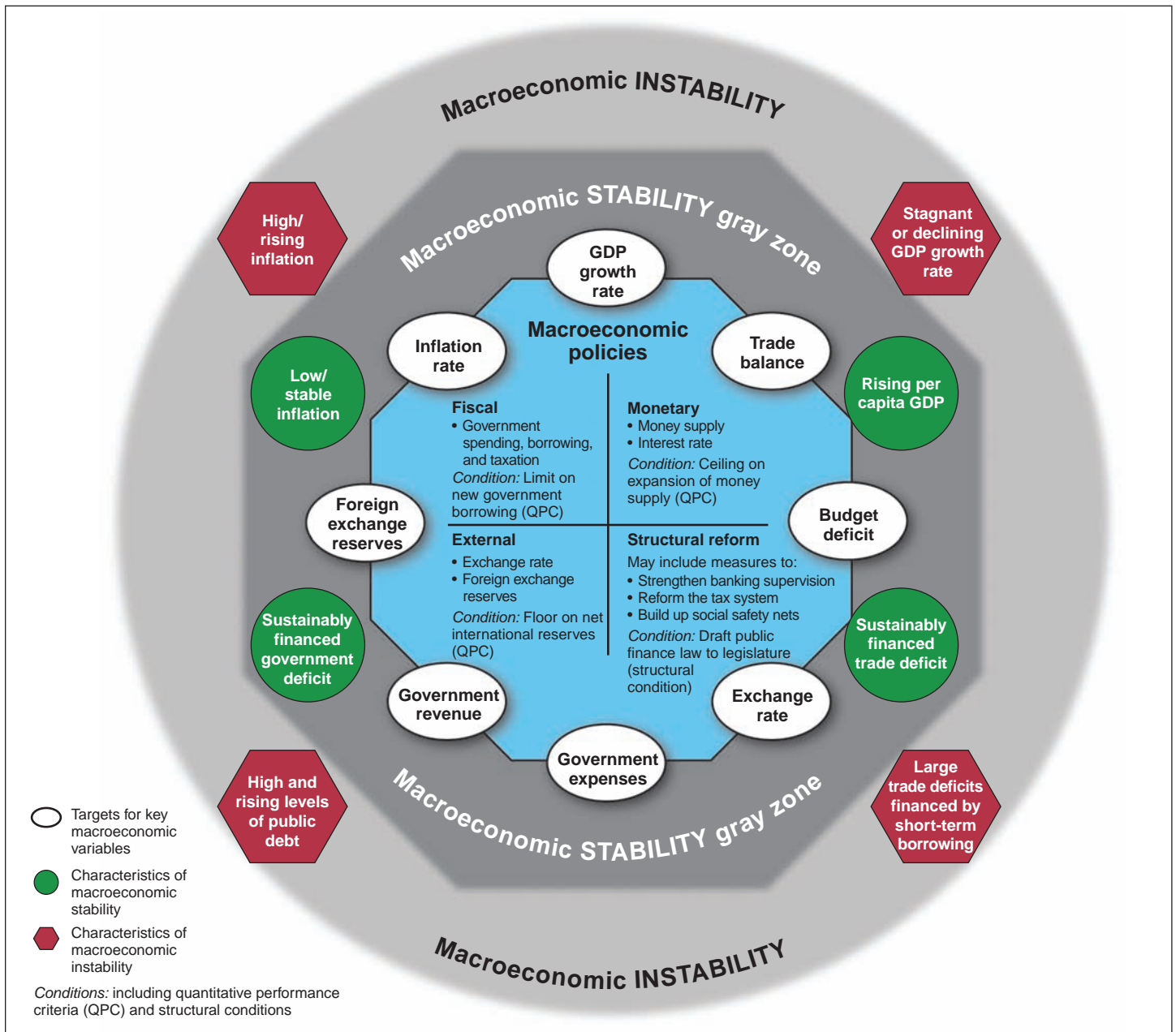
The IMF-supported program is intended to help countries achieve macroeconomic stability and contains objectives, targets, macroeconomic policies, and conditions. The design of an IMF-supported program involves a complex process, which includes the use of a macroeconomic framework, economic judgment, and discussions between the IMF staff and country officials regarding trade-offs among different objectives and policies.

IMF-Supported Programs Are Intended to Help Countries Achieve Their Objectives in the Context of Macroeconomic Stability

An IMF-supported program consists of the objectives, targets, macroeconomic policies, and conditions, to which the borrower and the IMF agree. An IMF-supported program is intended to help a country achieve its objectives while maintaining or restoring macroeconomic stability. Although there may not be a distinct threshold between macroeconomic stability and instability, IMF documents have specified key characteristics that identify a country in a state of macroeconomic stability. These include, for example, a prudent fiscal policy; a sustainably financed trade deficit; low and stable inflation; and rising per capita Gross Domestic Product (GDP) (see fig. 1).¹⁶

¹⁶The IMF identified these conditions for low-income countries. Macroeconomic instability can be characterized by large trade deficits financed by short-term borrowing, high and rising levels of public debt, double-digit inflation rates, and stagnant or declining GDP.

Figure 1: Elements of an IMF-Supported Program



Source: GAO analysis of IMF documents.

An IMF-supported program is defined by its objectives and the link between those objectives and the macroeconomic policies used to achieve them, with the specific content of a country's program reflecting the country's characteristics and circumstances. For example, IMF-supported program objectives in low-income countries are broadly geared toward the long-term goals of increasing economic growth and reducing poverty. In middle- and high-income countries, particularly those experiencing acute crises, IMF-supported programs generally aim to stem capital outflows, restore confidence, and bring about a recovery in the short- to medium-term.

The macroeconomic framework used to develop the IMF-supported program consists of the following elements as illustrated in figure 1:

- *Targets for key macroeconomic variables:* IMF-supported programs include targets to help achieve a country's objectives. In low-income countries, programs may include quantitative targets to limit the growth of the money supply and the budget deficit to lower inflation and maintain debt levels consistent with macroeconomic stability. In middle- and high-income countries, an IMF-supported program may include targets to stabilize the exchange rate, raise interest rates, and tighten credit conditions to stem the outflow of capital and restore investor confidence.¹⁷
- *Macroeconomic policies:* Four types of macroeconomic policies—monetary, fiscal, external, and structural reforms—may be used to help a country achieve its objectives. Monetary policy is used to affect the growth of the money supply and interest rate levels. Fiscal policy sets the amount and composition of government expenditures and government revenue to affect the size of the budget deficit. External policies concern the size of the trade deficit and the exchange rate, which can influence the amount of exports and imports and the buildup of international reserves. IMF-supported programs also are likely to include “macro-critical” structural reforms intended to help countries establish sound financial sector regulatory systems.
- *Conditions:* IMF-supported programs may contain quantitative performance criteria (QPC) and macroeconomic structural conditions, which the country has agreed to implement to receive IMF

¹⁷Limiting the budget deficit may also be crucial for middle- and high-income countries, and stabilizing the exchange rate may also be important for low-income countries.

disbursements.¹⁸ Examples of QPCs that address macroeconomic policy variables include (1) limits on government borrowing to curb the public debt, (2) a ceiling on the expansion of the money supply to manage the interest rate or contain inflation, or (3) a floor on international reserves to stabilize the exchange rate and weather shocks. According to the IMF, a country's performance criteria are frequently revised during the course of a program as external conditions evolve in a way not initially foreseen. Structural conditions are measures that the IMF and country authorities consider critical for the successful implementation of the program. Structural conditions may include specific measures to strengthen banking supervision, reform the tax system, improve fiscal transparency, and build up social safety nets. Although structural conditions are no longer used as performance criteria, the structural reforms that the IMF sees as critical to a country's recovery will continue to be monitored.

Various Combinations of Policies and Variables Are Consistent with Macroeconomic Stability, Allowing for Negotiations

Because of the extensive linkages among the various economic sectors¹⁹ and the mutual dependence of policy instruments and targets,²⁰ designing an IMF-supported program is complex, iterative, and requires economic judgment. The process of designing the program begins when country authorities contact the IMF due to impending or ongoing macroeconomic instability or crisis. The IMF staff and country authorities establish the country's need for borrowing based on the specific underlying macroeconomic problems to be addressed and discuss program objectives and policies. Using a macroeconomic framework as an analytical basis for the IMF-supported program, IMF staff and country authorities use an iterative process to set targets for key macroeconomic variables, such as real GDP growth, inflation, and the budget deficit, and identify specific

¹⁸Conditions may also include prior actions, which are measures that a country agrees to take before the IMF approves financing or completes a review. Examples of prior actions include adjustment of a country's exchange rate, elimination of a country's price controls, or formal approval of a government budget consistent with the IMF-supported program's fiscal framework.

¹⁹The key sectors of the economy are real (output growth), monetary and financial (money and banking system), fiscal (government deficit), and external (balance of payments).

²⁰For example, the projections for GDP growth, inflation, and the current account influence are influenced by monetary, exchange rate, and fiscal policy instruments. GDP growth and inflation are thus important inputs into determining government revenue and expenditures. However, the size of the deficit has an effect on economic activity, as well as the method of financing the deficit influences inflation and interest rates.

economic policies intended to achieve these targets.²¹ The framework is intended to ensure consistency of the target values for the macroeconomic variables among the various sectors of the economy and to align the IMF's macroeconomic and structural policy advice with the program's objectives, while incorporating country-specific factors. For example, the macroeconomic framework might be used to inform discussions about how to achieve the target of a lower budget deficit by weighing policy options that include reducing expenditures, raising revenues, obtaining grant financing, or modifying the goal. The process for designing the program usually culminates with country authorities and IMF staff agreeing on the goals, targets, and policies for a program that is both technically feasible and politically acceptable. Then, they seek agreement on the conditions, including QPCs and structural reforms, needed to complete the program. The IMF Board is then asked to discuss and approve the program.

In designing an IMF-supported program, a government has to make difficult trade-off decisions among different priority objectives and policies consistent with macroeconomic stability. The trade-offs required reflect the specific country circumstances and the severity of the macroeconomic imbalances. According to an IMF/World Bank document, there is a substantial gray area for a combination of levels of key macroeconomic variables, including growth, inflation, fiscal deficit, current account deficit, and international reserves that lies between macroeconomic stability and instability, where a country could enjoy a degree of stability, but where macroeconomic performance could clearly be improved (see fig. 1). This gray area allows for negotiation between the country authorities and the IMF staff.

This process can be illustrated in the following hypothetical example. A country can be adversely affected by the global recession in a number of ways, including through declining export revenue as the price and volume of exports fall. The decline in exports is likely to lead to a rise in unemployment as private sector activity declines, contributing to increased poverty. Any effort on the part of the government to increase

²¹IMF staff use the financial programming model, which consists of accounting identities, behavioral relationships, and economic judgment, as a consistency check on the macroeconomic framework. This process allows targets and policies to be adjusted and reformulated in light of changing outcomes. The process may undergo multiple iterations as IMF staff strive to ensure internal consistency across the various sectors of the economy.

spending to counter this fall in aggregate demand is likely to increase the budget deficit, especially in the context of falling revenues. The increased spending also may contribute to inflationary pressures.²² If the country, prior to the crisis, was already experiencing a high debt level and an elevated inflation rate, the way forward can be quite complicated. If the budget deficit were to rise by too much, inflation could increase to a point where the country would be at risk of macroeconomic instability, while insufficient domestic spending could lower economic growth, worsening the unemployment situation and increasing poverty.

Financial assistance through an IMF-supported program can help mitigate the situation, but the government of the hypothetical country in this example still faces a difficult policy trade-off—how to reduce the impact of the recession on the poor without risking high inflation. Within this overall context, the discussions between IMF staff and government officials are likely to explore targets for the budget deficit and inflation that attempt to balance these two concerns. While the range of discussion regarding these targets is limited to what will achieve or maintain macroeconomic stability, country officials and IMF staff may have different perspectives on the risks of macroeconomic instability, the degree to which spending cuts will harm the poor, and the political feasibility of gaining parliamentary approval for significant spending cuts. These different perspectives could provide the basis for negotiation for the targets contained within the program.

Four IMF-Supported Programs Were Negotiated Based on Countries' Circumstances

IMF-supported programs in each of the four countries we reviewed contain different sets of objectives, targets, and conditions that reflect each country's individual circumstances, trade-offs, and negotiations with IMF staff. The program in postconflict Liberia focuses on rebuilding capacity, whereas the program in Zambia, a country with significant natural resources, but substantial poverty, centers on increasing economic growth. Hungary, a middle-income country, faced a risk of debt default; thus, the program concentrates on restoring investor confidence and reducing debt and expenditures. A banking and currency collapse precipitated Iceland's request for a program, which focuses on recapitalizing the banks and stabilizing the currency. While IMF staff and country officials in all four countries generally agreed with the programs

²²If the increase in government spending is financed by borrowing from the central bank, the effect on the price level may be significant.

and have made progress in implementing the programs, each country has encountered some challenges in implementing conditions or achieving targets. Figures 2, 4, 6, and 8 show country background information for Liberia, Zambia, Hungary, and Iceland. Table 2 summarizes the context, circumstances, and objectives of the IMF-supported programs we reviewed.

Table 2: Context, Circumstances, and Objectives of Four Current IMF-Supported Programs

Country	Context	Circumstances	Objectives
Liberia	Low-income, postconflict	Economy and society devastated by years of civil war and government mismanagement	Rebuild basic capacity, including economy, government, and infrastructure
Zambia	Low-income, adversely impacted by global crisis	Despite significant natural resources, including copper as the mainstay of exports, substantial poverty remains	Increase economic growth, reduce poverty, and improve governance
Hungary	Middle-income, risked defaulting on debt payments	Years of over-spending and easy credit led to massive debt accumulation	Restore investor confidence by reducing debt and expenditures
Iceland	High-income, banking system and currency collapsed	Economic meltdown, currency crash	Recapitalize banks, stabilize currency

Sources: GAO review of IMF and country documents.

Liberia's Program Focuses on Rebuilding Basic Capacity after Years of Devastation

Figure 2: Liberia's Country Background



Sources: IMF and CIA World Factbook 2009.

Liberian Government Is Working to Rebuild Devastated Capacity

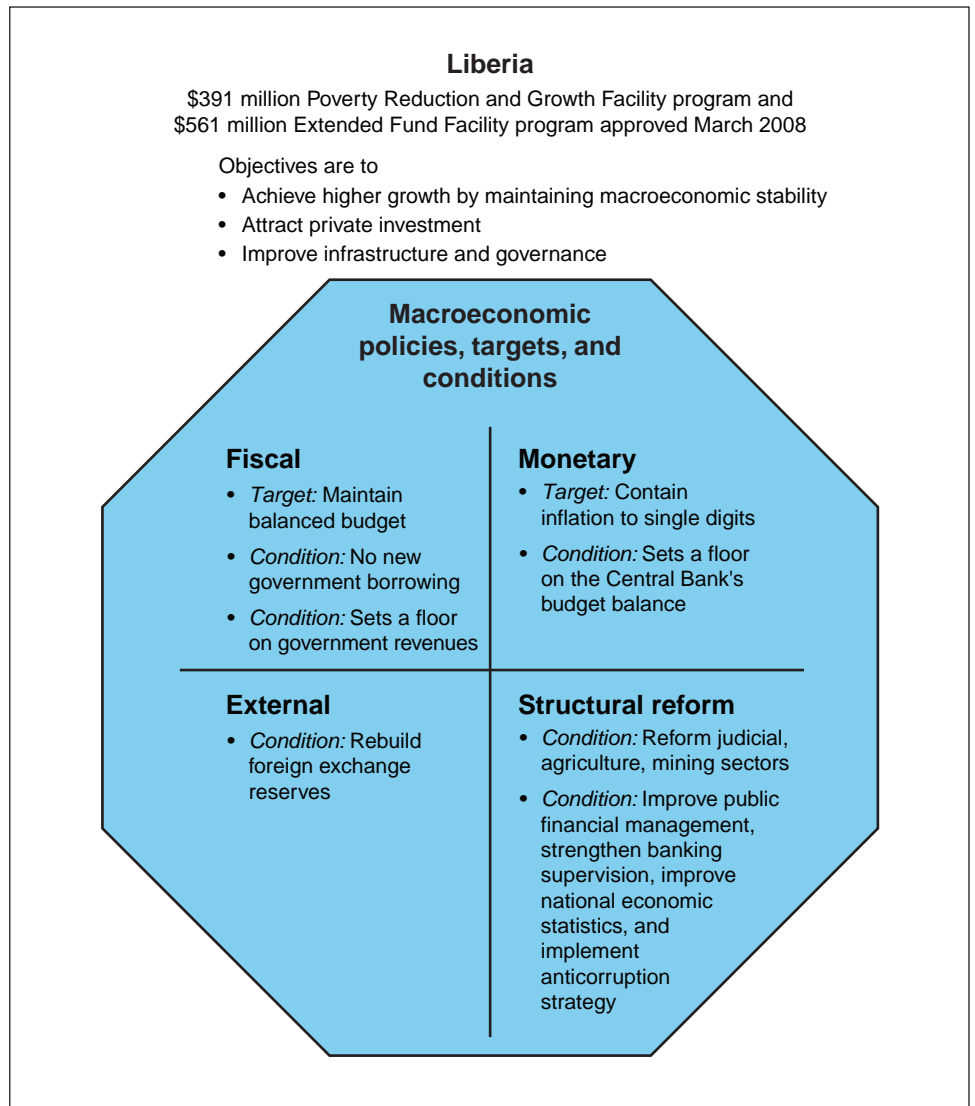
Although recovering from civil wars that spanned 1989 to 2003, Liberia remains one of the world's most impoverished countries. Devastated by past war and government mismanagement, the country suffers from minimal basic infrastructure, limited health care, a largely unskilled labor force, and a population with a low literacy rate. Liberia also has a weak rule of law and widespread corruption, according to the documents we reviewed and Liberian officials we interviewed. Liberian government officials emphasized the need to address social issues, such as building basic infrastructure and providing health care and education.

In the last 3 years, the country has made significant progress in strengthening its economy and government. For example, the GDP has been rising; the exchange rate remains relatively stable; and government revenue has increased. In 2006, the government requested IMF technical assistance to develop a program to support economic reconstruction, begin building a track record of policy implementation, resolve its arrears to creditors, and lessen its significant debt burden. Under this IMF staff-monitored program, in which the IMF provided no financial assistance, the IMF found that the Liberian government made satisfactory progress. Specifically, the IMF reported that the government has facilitated the rebuilding of public institutions, restored credible macroeconomic management, and supported implementation of important structural reforms to improve financial management and the financial sector. In 2008, Liberia cleared its long-standing overdue obligations, including obligations to the IMF that initially precluded the country from IMF assistance, and met requirements to begin receiving debt relief under the enhanced Heavily Indebted Poor Countries (HIPC) Initiative.²³ More than 100 IMF member countries participated in a fund-raising effort for Liberia, securing sufficient commitments to finance the IMF's debt relief to the country.

To make further reforms to help ensure a sustainable recovery over the long term, the government received a new 3-year IMF-supported financial assistance program in 2008. Figure 3 shows elements of the program, including its overall objectives and the policies, targets, and conditions intended to help achieve these objectives.

²³In 1996, the World Bank and IMF launched the HIPC Initiative to create a framework in which all creditors, including multilateral creditors, can provide debt relief to the world's poorest and most heavily indebted countries, and thereby help reduce constraints on economic growth and poverty reduction due to the countries' debt burdens. Countries begin receiving debt relief on an interim basis until they complete the initiative, which Liberia may do in 2010. According to IMF staff, Liberia has been receiving interim debt relief from its main creditors, but full debt relief will only be secured when it reaches the HIPC completion point. For more information, see GAO, *Developing Countries: The United States Has Not Fully Funded Its Share of Debt Relief, and the Impact of Debt Relief on Countries' Poverty-Reducing Spending Is Unknown*, GAO-09-162 (Washington, D.C.: Jan. 26, 2009).

Figure 3: Elements of Liberia’s IMF-Supported Program



Source: GAO analysis of IMF documents.

Note: Program amount was the approximate U.S. dollar amount at the time of program approval.

Government Endorses Program but Questions Fiscal Constraints

Liberian authorities and IMF staff said they generally agreed on the program but continue to negotiate its fiscal constraints. Liberian officials stated that they welcome IMF assistance, have open dialogues with IMF officials, and have a sense of ownership of the program. When the IMF began its support to Liberia in 2005, Liberia had significant external and

domestic debt. In addition, the country did not have the financial resources to service any new debt, and its creditors sought evidence that Liberia could control its fiscal position in advance of providing comprehensive debt relief. Therefore, the IMF's focus was on efficiently securing government resources. To accomplish this, IMF staff said the program focused on the government achieving a balanced budget, in which expenditures equal revenues. Given Liberia's dire situation, the country has few options available for implementing its program objectives, according to Liberian officials and IMF staff. For example, under the program target to maintain a cash-based, balanced budget, the country is precluded from borrowing to finance additional spending. Both Liberian officials and IMF staff said that the typical trade-off decisions—for example, between larger budget deficits and increased public expenditures—are not as relevant under this program target. Rather, policy decisions in Liberia generally centered on the country's need to have a balanced budget, one of the program targets. Some Liberian authorities we met with said that they preferred to have more flexibility in spending to address some urgent needs, such as increased public spending on roads, health care, and education. IMF staff agreed with these views but recommended that the country prioritize having a balanced budget to ensure that it would not incur additional debt. IMF staff informed us that, while maintaining a balanced budget, Liberian officials and not IMF staff determine the composition of the country's expenditures.

Despite the existing program target of zero borrowing to maintain a balanced budget, IMF staff made an exception to this target in response to a Liberian government request. In May 2009, IMF staff supported the Liberian request for limited, highly concessional—or below market-rate—borrowing to invest in critical port infrastructure. According to an IMF review, Liberia's main port in Monrovia was badly damaged during the civil war, and further deterioration could have far-reaching ramifications on economic growth through lower exports, import shortages, and rising prices. The IMF review concluded that the proposed borrowing would not undermine debt sustainability and is directed at an urgent and important facility needed to increase trade and economic activity. IMF staff stated that they accepted Liberia's request in part because the government had thus far performed well under its IMF-supported program.

Program Is on Track, but Challenges Remain

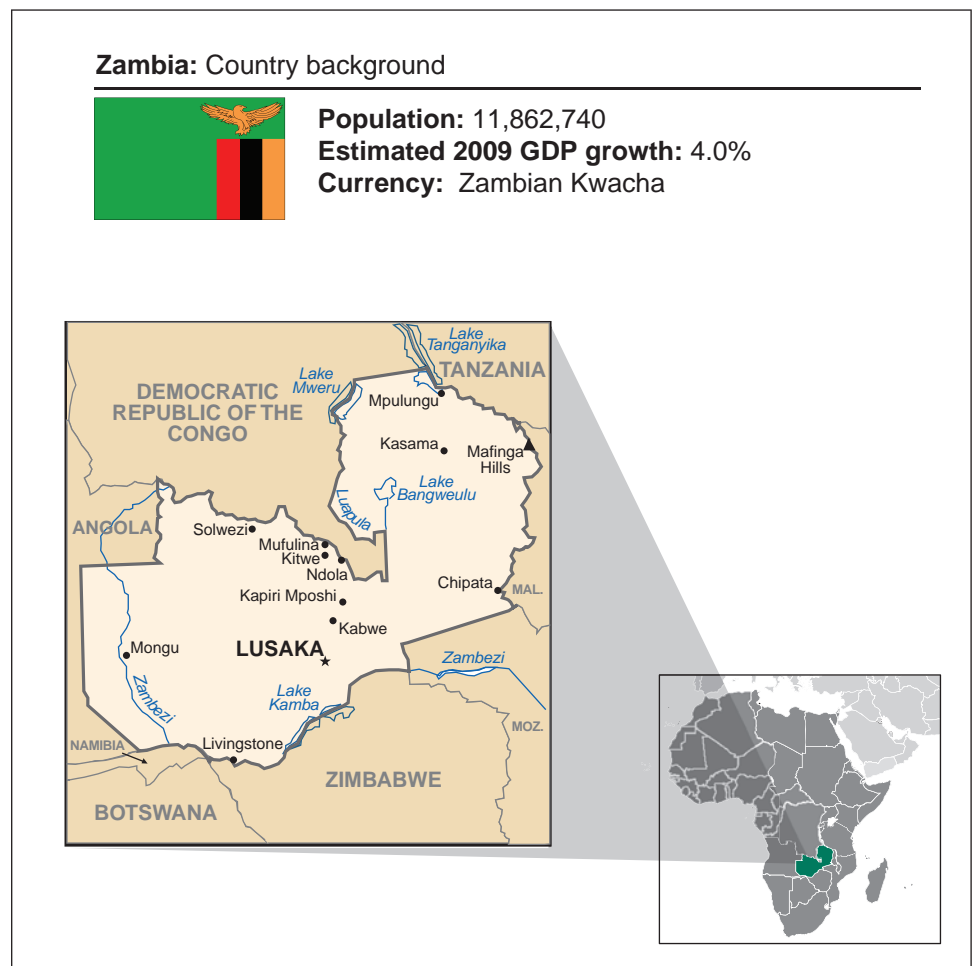
In its June 2009 report, the IMF stated that Liberia's program remains on track while noting challenges. The government met most of its performance criteria and continued to advance structural reforms. For example, the IMF concluded that Liberia's fiscal performance through the end of 2008 was solid. The IMF said that Liberian officials remain strongly

committed to a balanced cash-based budget. Furthermore, the Liberian government established an anticorruption commission that became operational in December 2008.

The government continues to face some challenges that may affect the progress of its reforms. Notably, the global recession has slowed Liberia's economic recovery and may further pose risks to Liberia's achievement of its program objectives. A sharper-than-projected slowdown in global growth or a decline in world commodity prices could reduce demand for Liberia's key exports, or delay investment activity in these sectors, to a greater degree than projected. Liberian officials also stated that the political process presents a challenge in implementing reforms and legislation tied to the IMF-supported program's goals. For example, Liberian government officials said they plan to strengthen public financial management, a stated goal of the IMF-supported program. However, the passage of legislation to improve public financial management was delayed due to lengthy political debates in Liberia's legislature. This legislation was submitted to the legislature in December 2008 but not passed until August 2009. Furthermore, the government encountered a 3-month delay in setting up a functioning commission to address corruption due to late passage of the law to establish it.

Zambia's Program Focuses on Increasing Growth and Strengthening Governance

Figure 4: Zambia's Country Background



Sources: IMF and CIA World Factbook 2009.

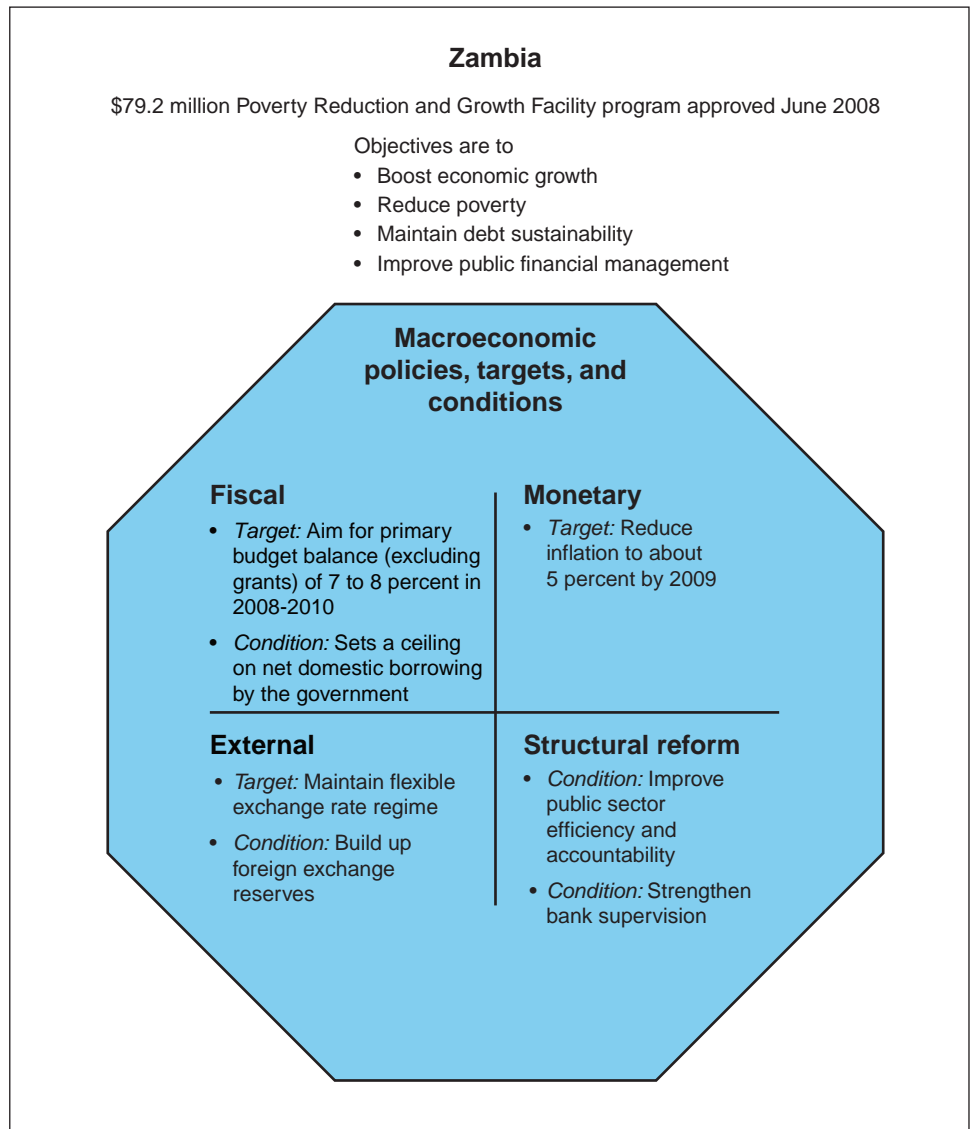
Zambia Has Significant Natural Resources, but Substantial Poverty Remains

Zambia, a country endowed with natural resources, has performed well economically, but poverty, aggravated by the global economic crisis, remains widespread. The country's economy, afflicted by high debt and inflation through the 1990s, grew strongly in the early 2000s. The country's prior PRGF program, begun in 2004, identified reforms intended to help Zambia achieve a sustainable level of debt and reduce its 30 to 40 percent inflation rate, according to IMF staff. In 2005, Zambia qualified for debt relief under the HIPC Initiative and has begun to benefit from approximately \$6 billion in debt forgiveness. As of 2007, its economic growth was robust, inflation remained in the single digits, the currency

was relatively stable, and its strong external position allowed a further increase in international reserves. Zambia also benefited from the revival of mining in the wake of privatization and the higher world prices of copper, the mainstay of the Zambian economy. In 2008, copper accounted for an estimated 74 percent of Zambia's export earnings, according to an IMF document. The IMF reported that Zambia's 2008 budget maintained the prudent approach to fiscal policy of recent years. Despite increased spending, including on capital projects, the fiscal position was expected to strengthen with rising revenue from the mining sector.

Nonetheless, the lack of sufficient infrastructure—including power, transportation, and telecommunications—impedes rapid economic growth and development in Zambia. In addition, poverty has been reduced but remains exceptionally high, especially in rural areas where 80 percent of the population lives in poverty, according to an IMF document. To address economic challenges, the Zambian government received a new 3-year IMF-supported financial assistance program in 2008. Figure 5 shows elements of the program, including its overall objectives and the policies, targets, and conditions intended to help achieve these objectives.

Figure 5: Elements of Zambia's IMF-Supported Program



Source: GAO analysis of IMF documents.

Note: Program amount was the approximate U.S. dollar amount at the time of program approval.

Government Generally Agrees with Program but Debates Spending Limits

IMF staff and Zambian officials stated that they had reached agreement on the initial and revised targets in the current IMF-supported program. IMF staff and Zambian officials said that they maintain a constructive relationship, which has improved during the implementation of the current

IMF-supported program compared with past IMF-supported programs. For example, through negotiations with country officials over the years, the IMF relaxed its targets related to government wages and inflation rates. According to IMF staff, Zambia's government wages were relatively high, causing the IMF to limit wages of Zambia's civil service employees in an earlier IMF-supported program. From 2003 to 2004, some NGOs criticized the IMF's role in determining the budget limits on the size of the Zambian government wage bill. The IMF advised the Zambian government that such a high wage bill would not leave sufficient room in the budget for spending to support the government's poverty reduction strategy. After holding further discussions, IMF staff reached agreement with Zambian officials about this issue. In Zambia's current IMF-supported program, the IMF no longer sets targets related to civil service wages. In addition, IMF staff and Zambian officials discussed and revised the inflation target in Zambia's current program. Zambian officials stated that they thought the program's target of 7 percent inflation, set in June 2008 at the beginning of the program and based on the IMF's projections, was too ambitious. After some external factors that were out of Zambia's control (such as food and fuel price increases) caused the country's inflation rate to accelerate to 16.6 percent at the end of 2008, IMF staff and Zambian officials deemed the initial inflation rate target to be infeasible within the specified time frame. During the IMF's June 2009 review, the inflation rate target was revised to 10 percent by the end of 2009, with a goal to further reduce the inflation rate to single digits in 2010.

Significant elements of Zambia's negotiations with IMF staff have centered on fiscal policy and the trade-offs between increasing priority spending and reducing excessive debt. IMF staff and Zambian officials stated that they discussed policy options, such as the extent to which the government can undertake additional spending and what recourse Zambia has without borrowing to finance the additional spending. Zambian officials said that they would prefer to use greater deficit spending to stimulate growth, particularly to address the impact of the economic crisis. However, IMF staff suggested restraint and reform to guard against wasteful spending and maintain macroeconomic stability. According to IMF staff, the country faces the ongoing risk of returning to its previous unsustainable debt levels if the government does not spend effectively.

Program Was Broadly on Track, but External Shocks Have Slowed Progress

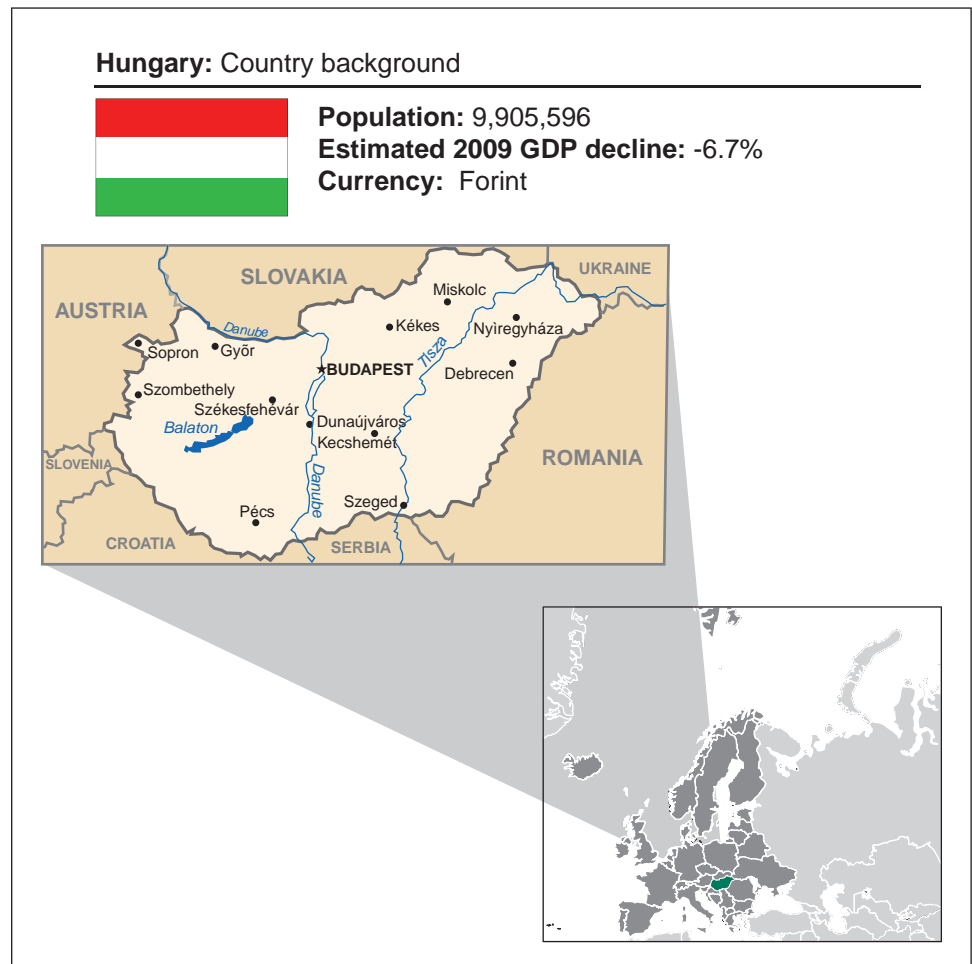
In June 2009, the IMF reported that Zambia's program was initially broadly on track, but slippages occurred later mainly due to three factors that had an adverse impact on the economy. First, rising world food and fuel prices early in 2008 pushed inflation to 16.6 percent, above the program target of 7 percent for the end of 2008. Second, a transition in political leadership

delayed decisions on the budget and structural measures central to Zambia's economic program. Finally, the global economic crisis negatively affected the economy and exacerbated poverty, most directly through the precipitous fall in the price of copper, a commodity on which Zambia overwhelmingly relies for earnings. The IMF review noted that copper prices have declined by about two-thirds since they peaked in mid-2008. Export proceeds, government revenue, and capital inflows have been reduced as a result. The slump in copper prices will inevitably have a detrimental effect on Zambia's economic prospects in view of the mining sector's central role in the economy. As a result of these shocks, Zambia's real GDP is projected to slow down, and its balance of payments position has weakened.

IMF staff noted that Zambian officials have responded appropriately to these external shocks. For example, the IMF found that Zambia's fiscal policy had struck the right balance between maintaining high-priority infrastructure spending to promote medium-term economic growth and safeguarding short-term macroeconomic stability by scaling back investment and recurrent spending. IMF officials noted that spending cuts have not reduced priority social spending. Furthermore, IMF staff said Zambia's public debt sustainability outlook is favorable. Specifically, Zambian officials have adopted a new public debt management policy and strategy to help ensure that the amount of public debt remains sustainable.

Hungary's Program Focuses on Reducing Debt and Expenditures

Figure 6: Hungary's Country Background



Sources: IMF and CIA World Factbook 2009.

Hungary Risked Defaulting on Its Debt Payments

In fall 2008, Hungary's government secured financing from the IMF and other creditors due to a rising risk of default and unsustainable debt. Hungary was among the first emerging market countries to suffer from the fallout of the global financial crisis. As financial difficulties in advanced economies led to a decline in global liquidity and an increase in investors' concern about the risk of their investments, investors increasingly started differentiating among emerging markets. Hungary's high debt levels negatively affected investor interest in its assets. Hungary experienced an earlier short episode of financial stress in March 2008, then its financing conditions deteriorated sharply in mid-October 2008.

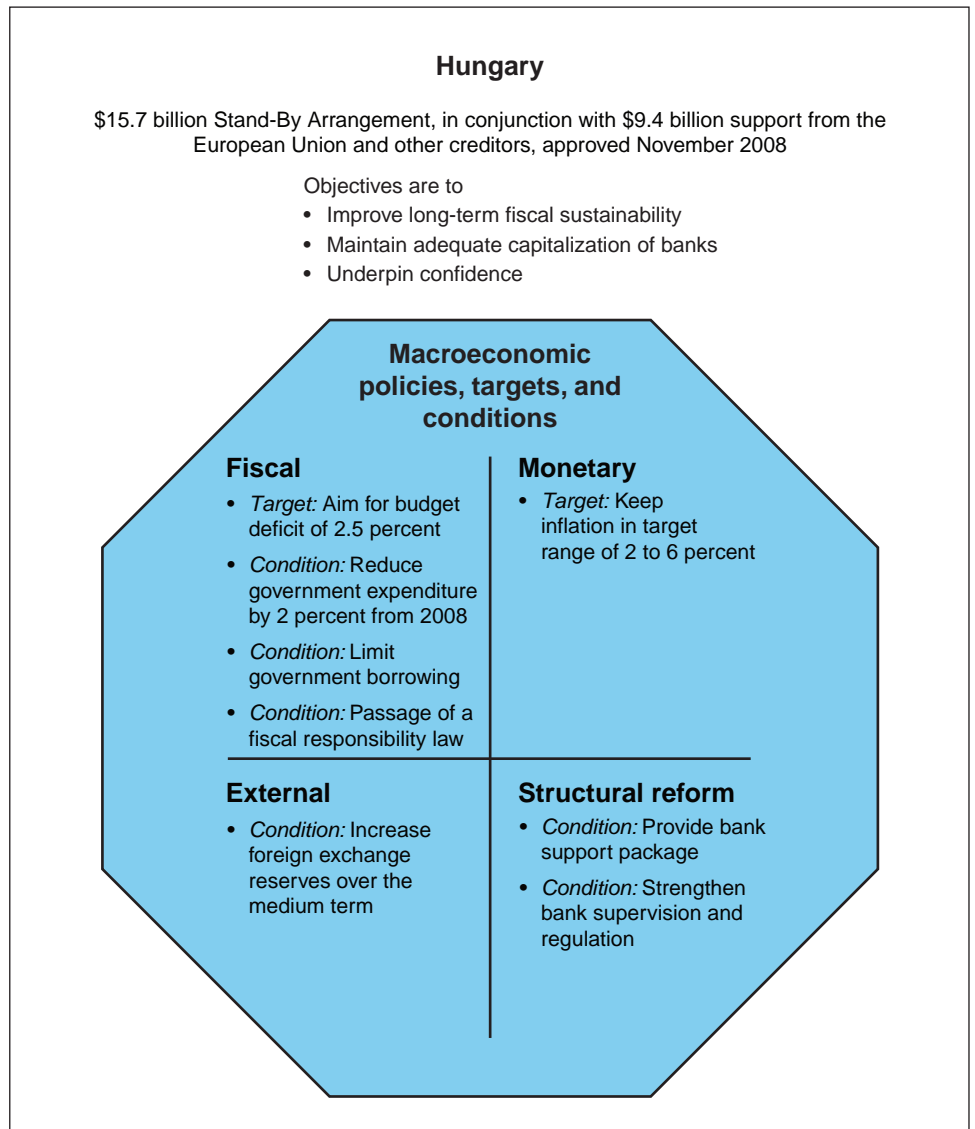
Prior to the crisis, Hungary's large fiscal deficits led to rising government debt. The general government deficit averaged more than 8 percent of GDP from 2002 to 2006. As a result, public debt rose to about 75 percent of GDP in 2008, the highest level of similar countries in Eastern and Central Europe, according to the IMF.

With easy access to foreign currencies, foreign-owned and Hungarian banks made domestic loans in foreign currencies, which carried lower interest rates attractive to Hungarian borrowers. The rise in such lending eventually resulted in about two-thirds of the lending to Hungarian households and corporations being denominated in foreign currency, according to the IMF. The risk of such loans is that a reduction in the value of Hungary's currency, the forint, makes loans more expensive for borrowers to repay. In March 2009, the currency reached an all time low relative to the euro, according to the IMF. In the 5 months between October 2008 and March 2009, the forint depreciated by 26 percent against the euro.²⁴ This reduction stressed borrowers and translated into credit risk for banks that faced difficulty collecting loans.

To address the increasing risks, the initial objectives of Hungary's IMF-supported program focused on restoring investor confidence and reducing government expenditures. Figure 7 shows elements of the program, including its overall objectives and the policies, targets, and conditions intended to help achieve these objectives.

²⁴Foreign exchange data obtained from Thomson Reuters Datastream, a large financial statistical database.

Figure 7: Elements of Hungary's IMF-Supported Program



Source: GAO analysis of IMF documents.

Note: Program amount was the approximate U.S. dollar amount at the time of program approval.

IMF and Hungarian Officials Mainly Concur, but Spending and Banking Challenges Remain

IMF and Hungarian authorities generally agree on the elements of the IMF-supported program, but determining how to achieve the deficit target and support the banking system remain challenges. Country authorities stated that they broadly concur with the goals of the program and accept the

need for reform due to the crisis. In addition, they indicated that IMF staff are cooperative, helpful, and unobtrusive, providing latitude for the policy response to be defined and owned domestically.

Stabilizing the economy requires the Hungarian government to restore investor confidence by decreasing the amount of government debt, mainly by reducing expenditures and achieving the deficit target, according to the IMF. While government officials said they plan to meet the deficit target, they have yet to determine the necessary policy changes. Debate in Hungary now centers on spending decisions for 2009. Because taxes are already high to support a large government budget, increasing revenue by raising taxes is not considered a viable option, according to IMF staff. While spending cuts are not expected to be popular with the general public, Hungarian officials acknowledge that the spending cuts consistent with the IMF-supported program are necessary. However, IMF staff and Hungarian authorities have disagreed on the target for the budget deficit as a percentage of GDP, a key metric. In the beginning, IMF staff called for a lower budget deficit than authorities said was reasonable. Later, their positions reversed, with IMF staff recommending a wider budget deficit target than the Hungarian authorities' suggestion of 2.9 percent, a figure that would allow them to stay within European Union guidelines.²⁵ The latest target, 3.9 percent, was reached after IMF, European Union, and Hungarian officials agreed that deteriorating economic circumstances merited a higher target. Moreover, if the recession lasts longer than expected or if the government officials are unable to agree on sufficient spending cuts, fiscal consolidation efforts could be hampered.

Hungarian officials and IMF staff reached agreement in addressing the domestically controversial area of regulatory oversight of the banking system but expressed different views on how to proceed. Country authorities indicated that a debate continues on formulating a new approach to banking supervision. Currently, the powers of the agency in charge of that responsibility, the Hungarian Financial Supervisory Authority (HFSA), are limited, according to the agency's officials. The HFSA must conduct on-site investigations, which take 45 to 60 days, and can only recommend remedial action for individual banks. The HFSA argues that it should be able to impose regulations in a more timely

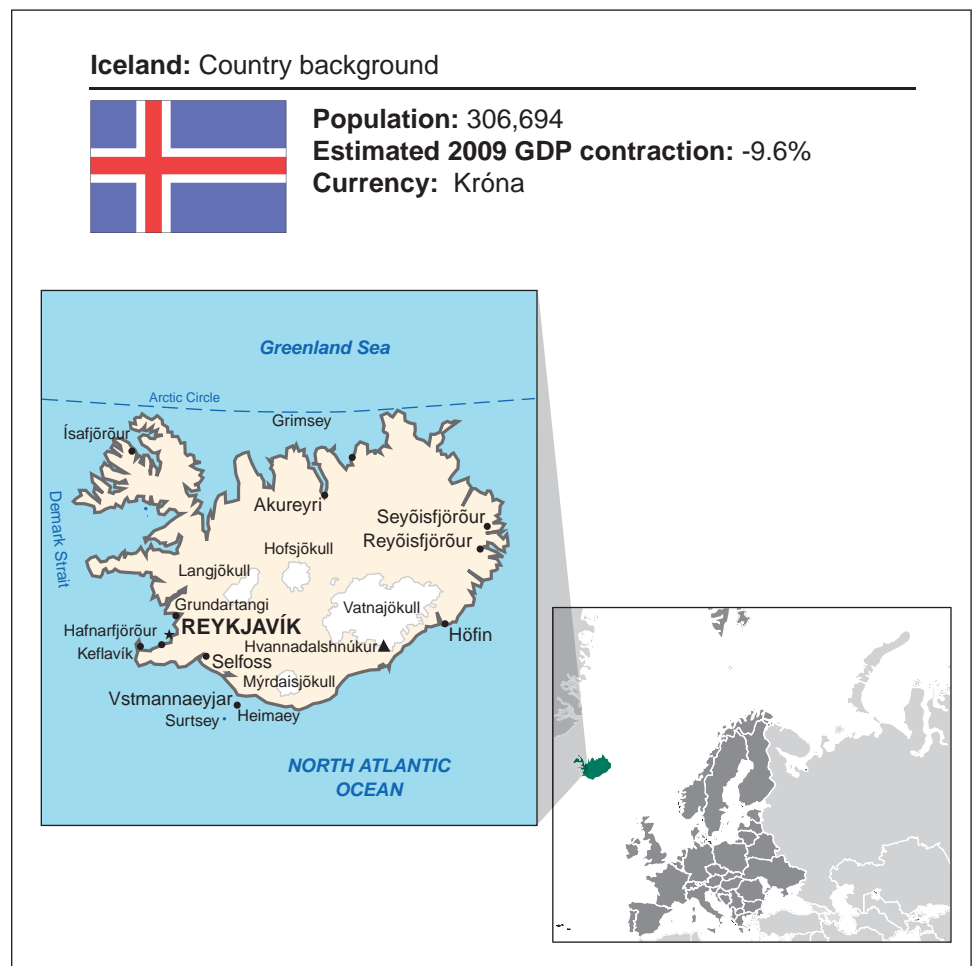
²⁵Hungary aspires to join the group of European countries that share a common currency, the euro, in the future, which requires it to meet a set of criteria, including a budget deficit of less than 3 percent.

fashion and on the entire sector. For example, it should be able to issue binding regulations for the entire banking system, including on capital levels. The HFSA also favors greater independence, suggesting that it report to Parliament rather than the Ministry of Finance, as it currently does. IMF staff support greater independence for the HFSA and seek to strengthen and integrate weak and fragmented segments of the financial supervisory structure. IMF staff outlined details in a paper and provided technical assistance to explore options. The authorities have decided to support the HFSA as an independent agency with the right to issue regulations. However, implementing the change is sensitive and requires political support that may or may not materialize.

Regarding the stability of banks, according to Hungarian authorities, initially IMF staff were concerned that banks did not have sufficient capital and could be at risk of insolvency or collapse. As a result, according to authorities, IMF staff argued for a preemptive bank recapitalization that would provide additional capital to key Hungarian banks. While IMF staff stated that preemptive recapitalization was not the intention, banks were uneasy about the potential of greater government involvement because recapitalization would occur through a capital base enhancement fund established with government funds that would purchase ownership shares of the banks. Although the IMF held discussions with authorities to dispel concerns, Hungarian authorities disagreed with the idea of preemptive capitalization, indicating that the banks were healthy and well-capitalized. In addition, one bank executive expressed concerns that preemptively and massively recapitalizing the banking system would be overly cautious and potentially harmful. He added that it could be counterproductive because it would reduce return on equity for local Hungarian banks and may put foreign parent banks in a situation where they would be unable or unwilling to provide support, resulting in a banking collapse, the very outcome the IMF seeks to avoid. In its June 2009 review of the program, the IMF concluded that the banking sector was resilient during the early part of the year, but that the possible need for additional capital could not be ruled out. In September 2009, the IMF completed its third review stating that, while policies are on track, continued implementation of program policies remains essential to strengthen macroeconomic stability.

Iceland's Program Focuses on Recapitalizing Banks and Stabilizing Currency

Figure 8: Iceland's Country Background



Sources: IMF and CIA World Factbook 2009.

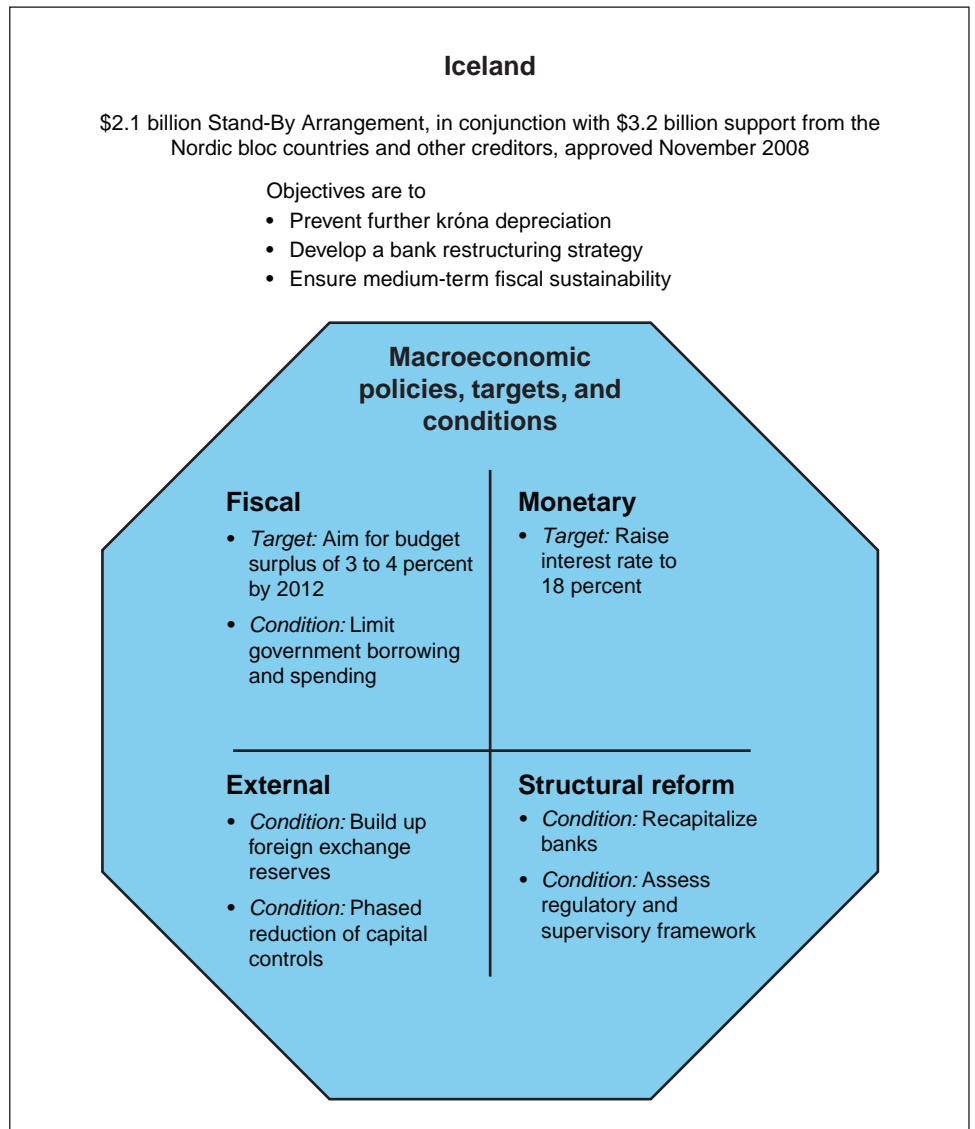
Iceland Is Struggling to Address a Severe Banking Crisis

Iceland's struggle to address a severe banking crisis led it to seek financing from the IMF and other creditors in fall 2008. In the wake of international financial turmoil, Iceland's economy faced a banking crisis of extraordinary proportions. Triggered by a loss of investor confidence and fuelled by the financial sector's high debt and dependence on foreign financing, the crisis led to the collapse of Iceland's three main banks, accounting for around 85 percent of the banking system. The economy continues to experience a deep recession and a dramatic surge in public sector debt, reflecting the unprecedented cost of restructuring the banking system.

In Iceland, an oversized banking system developed that significantly outstripped the authorities' ability to act as a lender of last resort when it ran into trouble. Banks increased their assets from slightly more than 100 percent of GDP in 2004, after the privatization of the banking sector was completed, to close to 1,000 percent of GDP. Iceland was one of the first victims when declining investor confidence intensified in fall 2008 because investors realized that the banking system was too big relative to the economy's size and thus started to pull assets out of Icelandic banks. Within a week, Iceland's three primary banks collapsed, the króna's value dropped by more than 70 percent, and the stock market lost more than 80 percent of its value.

To address its significant banking crisis and plummeting currency, Iceland's government, in fall 2008, received a \$2.1 billion IMF-supported program, which also depended on significant financing from other creditors. Figure 9 shows elements of the program, including its overall objectives and the policies, targets, and conditions intended to help achieve these objectives.

Figure 9: Elements of Iceland's IMF-Supported Program



Source: GAO analysis of IMF documents.

Note: Program amount was the approximate U.S. dollar amount at the time of program approval.

In the short run, the IMF-supported program has been narrowly focused on stabilizing Iceland's currency, the króna. Iceland has a significant amount of debt that is either denominated in foreign exchange or indexed to inflation. Therefore, when the króna depreciates, debt servicing becomes much more expensive, which would likely lead to a wave of

Government Generally
Endorses the Program, but
Some Critical Issues Remain

defaults in the corporate and household sectors, further harming the economy.

Country authorities said they generally endorse the IMF-supported program and recognize the need for fiscal austerity. They said they are fully committed to the program and acknowledge that economic reform and reduced government spending will be painful but necessary measures that must be taken to address the economic crisis. Government efforts are under way to generate more revenue through higher taxes and to decrease expenditures by freezing civil service wages and adjusting some social services. Authorities said stakeholders, including unions, politicians, and households, are involved in the dialogue on austerity, which is critical because any retrenchment will be difficult and unpopular. According to authorities, Iceland is a Nordic welfare state in which its citizens have come to expect a high standard of living and generous social benefits. However, due to the scale of the economic catastrophe, traditional assumptions may be challenged as the government cuts spending.

Regarding fiscal policy decisions, country authorities indicated that IMF staff provide only broad direction and do not get involved in the details, unless asked to provide expertise or input on a specific measure. For example, IMF staff have not recommended cuts in certain government transfers, such as unemployment or parental leave benefits, or stressed that specific taxes be raised. Although budget choices and priorities are left to the government, IMF staff emphasize the need for changes that are durable over time and that will lead to a long-term improvement in the fiscal position. In contrast to the perception that the IMF always imposes fiscal restraint, Iceland's program was designed to provide an increase in the budget deficit initially to mitigate the macroeconomic shock and then to turn the focus to gradually reducing the deficit over a period of time.

Country authorities also stated that relations with IMF staff generally are cooperative, and negotiations involve a fair amount of give and take. In addition, they said that IMF staff have been helpful overall, particularly regarding fiscal and monetary policy, surveillance, and technical assistance. Moreover, authorities said they own the program and take responsibility for the crisis and the steps that must be taken to resolve it. They acknowledged that asking for IMF support was initially highly controversial, and many Icelandic citizens and some members of Parliament still do not want the government to implement the program.

Government authorities and IMF staff expressed different views on how to resolve continuing interest rate, capital controls, and banking issues.

Authorities prefer earlier interest rate reductions than IMF staff suggest. Although Iceland's interest rate is high by international standards, IMF staff said the higher rate is necessary to stabilize the króna and is normal policy in the context of a currency crisis. However, a high interest rate is a drag on the domestic economy because the elevated cost of domestic credit hurts some companies and households. Authorities argue that the interest rate should be reduced to relieve pressure on residents struggling to make payments on home mortgages and business loans. IMF staff caution against reducing the interest rate too quickly due to the risk that such action may lead to renewed currency depreciation, which would increase the cost of the large stock of Iceland's foreign currency debt and could cripple recovery prospects. However, authorities contend that many residents are already facing bankruptcy and question whether a high interest rate does in fact help stabilize the króna. They suggest that interest rate reductions so far have not resulted in significant currency depreciation. Although IMF staff have not questioned the need to lower rates eventually, they differ with the authorities on how quickly the interest rate should be lowered. IMF expressed concern that if interest rates come down too far too fast, Iceland may see excessive depreciation in the exchange rate, which would be difficult to reverse. IMF staff have warned that the current level of uncertainty necessitates a slow and cautious approach.

Icelandic authorities imposed capital controls to restrict the movement of financial assets between countries in October 2008 and maintained them as part of the IMF-supported program approved in November 2008. In addition, Icelandic authorities acknowledged that the controls were necessary to stabilize the economy, at the time, due to the crisis but view them as a drastic measure and favor loosening them as soon as possible. Like a high interest rate, capital controls help limit the outflow of money and reduce downward pressure on the króna. Icelandic authorities view the combination of high interest rates and capital controls as redundant—a “belt and suspenders” approach. In addition, imposing capital controls was a shock to both the domestic and external sectors. Moreover, capital controls created dual exchange rates, one officially sanctioned by the Central Bank, and one determined by market forces off-shore. This enabled foreign importers of Icelandic goods to buy króna more cheaply in currency markets abroad, weakening the system. As a result, authorities created a new rule to stop the practice. International investors, traders, and business people continue to try to identify loopholes and work-arounds, so efforts to update and revise the capital controls structure continue.

Discussion of lifting capital controls is ongoing, but the details of exactly when and how remain controversial. Bank industry representatives we spoke with expressed frustration with capital controls, criticizing them as a harsh measure. Authorities prefer to loosen capital controls as soon as possible and assert that gradual removal of the controls is an important step toward normalizing economic conditions. Icelandic businesses view access to capital markets, international funding, and investments as one of the main preconditions for economic recovery. Both authorities and IMF staff envision a gradual lifting of capital controls, but only when the conditions are right. The concern is that billions of dollars worth of króna-denominated bonds, amounting to about 60 percent of GDP, are held by foreigners. Allowing sudden repatriation of those funds could lead to a massive outflow and currency depreciation. Therefore, IMF staff caution that confidence must be restored through fiscal consolidation and banking sector reform before phasing out capital controls.

Differences also remain on a critical banking issue, particularly who will bear the losses related to certain foreign obligations. Iceland's collapsed banks had several overseas branches and subsidiaries, mainly in other European countries. For example, "Icesave" is a vehicle in which residents of the United Kingdom, Denmark, and other countries deposited billions of dollars worth of savings. When Iceland's banks failed, money to cover these deposits disappeared. Opinion in Iceland about whether and how to ensure the value of the accounts is divided. Critics argue that Icelandic citizens should not have to bear the enormous cost of mistakes made by a few private bankers. However, two IMF Board members, with a deep stake in the issue, argued that Icesave deposits must be honored. While this was not an explicit condition of the IMF-supported program, resolution of the Icesave issue was linked to the provision of \$2.5 billion in support from a bloc of Nordic countries,²⁶ a source of funding critical to, and in addition to, financing provided by the IMF-supported program.

Originally scheduled for completion in early 2009, the first review was delayed, in part to provide more time to address banking issues, and was completed in October 2009. Following the delay in completing the first review, the IMF Board granted the Icelandic authorities' request to extend the program by 6 months (to May 2011), to allow time to achieve objectives that will take longer than expected. The IMF review noted that,

²⁶The countries included Norway, Denmark, Finland, and Sweden.

in the context of Iceland's financial crisis, Iceland's economy has shown some positive signs. For example, according to the IMF review, inflation has decreased; the program's main objective, stabilizing the króna, has been met; the financial sector restructuring objective was achieved; and external financing has been secured.

Macroeconomic Policies in IMF-Supported Programs Are Broadly Consistent with Findings of Academic Literature

For low-income countries, empirical evidence suggests inflation is detrimental to economic growth after it exceeds a critical threshold, which is broadly consistent with the inflation targets included in the IMF-supported programs we reviewed. Similarly, for middle- and high-income countries, the academic literature identifies weaknesses in macroeconomic policies that often precede economic crises that are consistent with the policies in the IMF-supported programs we reviewed.

Empirical Evidence Evaluating the Complex Relationship between Inflation and Growth Is Broadly Consistent with IMF-Supported Programs in Low-Income Countries

Empirical Research Suggests a Complex Relationship between Inflation and Growth; Inflation Harms Growth above a Critical Threshold

Inflation targets are a prominent feature of IMF-supported programs in low-income countries, but there has been considerable debate about appropriate targets for these countries. Some believe that the IMF may have gone beyond the existing empirical evidence in targeting very low inflation, potentially compromising economic growth. Although the precise relationship between inflation and economic growth in low-income countries remains uncertain, the empirical literature over the past 10 years has reached consensus about some aspects of this complex relationship. For example, there is general agreement about the following in low-income countries:

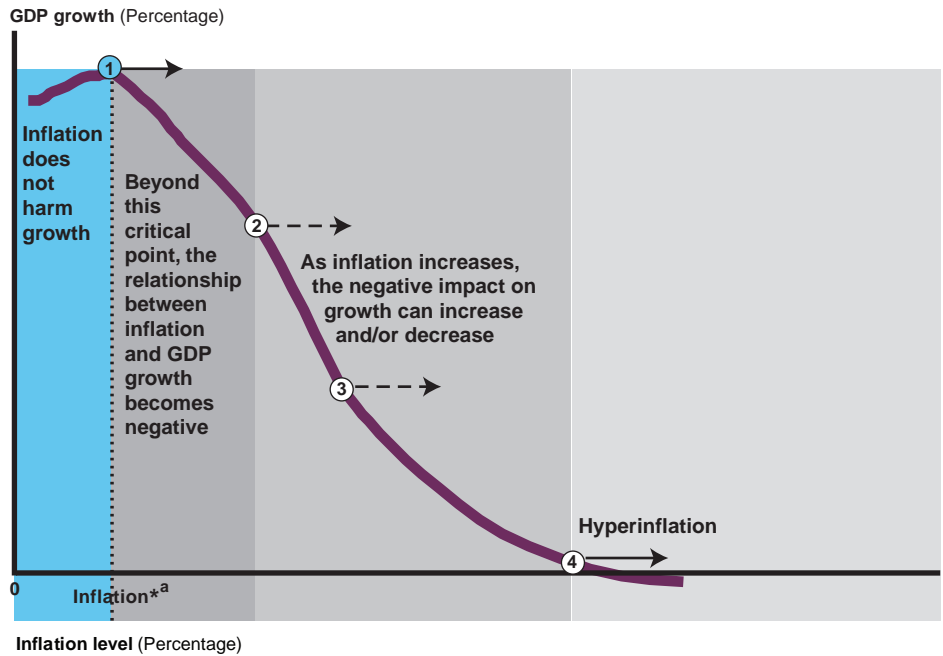
-
- The relationship between inflation and growth varies depending on the level of inflation and potentially on other country-specific variables.²⁷
 - Inflation is detrimental to medium- and long-term economic growth after it exceeds a critical threshold, implying that inflation can compromise growth if it is “too high.”
 - Inflation does not negatively affect economic growth at low levels—in fact, the relationship can be positive for this limited range.²⁸ Reducing inflation below this critical threshold produces no additional economic growth or may cause a country to sacrifice some long-term growth benefits.

These findings are represented in figure 10, which provides an illustrative summary of the impact of rising inflation on economic growth in low-income countries. The central finding from the literature is that relationship is nonlinear with a critical point (point 1) where the relationship between inflation and growth changes significantly.

²⁷In technical terms, this means the relationship has been found to be nonlinear. This implies that the trade-off between higher inflation and lower economic growth—or the marginal growth costs of inflation—can differ as inflation rises.

²⁸Theoretically, inflation can positively and negatively affect growth through various channels. For example, high rates of inflation reduce the value of savings and distort price signals, interfering with the efficient allocation of resources and the functioning of the financial system. On the other hand, at low levels, inflation can help foster capital accumulation, contribute to labor and product market flexibility, and make an economy less vulnerable to prolonged recessions.

Figure 10: Relationship between Inflation and Economic Growth in Low-Income Countries as Described in Empirical Literature



Source: GAO analysis of empirical research on inflation and growth in lower income countries.

Note: Although based on the literature, the relationship depicted here should not be considered definitive.

⁹Inflation* represents the rate of inflation beyond which inflation is harmful to growth. Estimates for this critical threshold rate range from 3 to 18 percent for low-income countries in the empirical literature.

To the left of point 1 in figure 10, inflation does not harm economic growth and, in most cases, a positive relationship is established.²⁹ Beyond point 1, countries face a trade-off between the short-term cost associated with lowering inflation to achieve higher medium- and long-term growth and the cost of accepting higher inflation and therefore lower future growth. Anti-inflationary policies in the region left of point 1 can be counterproductive since the potential costs of reducing inflation are not offset by increases in economic growth or, at worst, can be compounded by declines in long-term growth rates.³⁰ However, as inflation rises and the

²⁹While the relationship is found to be positive, in most cases it is also statistically insignificant.

³⁰IMF and other researchers suggest a need for caution in setting very low inflation targets in low-income countries.

Current IMF-Supported Programs Generally Target Single-Digit Inflation That Is within the Bounds of the Existing Empirical Estimates

critical threshold is breached, the negative effects of inflation surface. Beyond this point, any increases in the inflation rate result in additional declines in economic growth. As points 2 and 3 show, the marginal costs to long-term growth can either increase or decrease as inflation rises, although empirical research does not reach a consensus as to whether the relationship changes for moderate inflation rates. As a country approaches hyperinflation (point 4), it likely faces a complete breakdown in economic functioning.

However, examining the inflation-growth relationship under these conditions generally goes beyond the scope of the literature we reviewed.³¹ Earlier academic literature raised doubts about whether moderate to high inflation was costly to economic growth, but recent literature suggests that the cost of inflation was understated because researchers failed to acknowledge the complex, or nonlinear, nature of the relationship between inflation and economic growth.

Although not definitive, the empirical literature supports the focus of IMF-supported programs on containing inflation in low-income countries. Excluding those with countries in currency unions, or with currency boards, IMF-supported programs in low-income countries consistently target inflation in the 5 to 10 percent range.³² The 31 IMF-supported programs in low-income countries, as of July 2009, are designed to help the countries achieve and maintain macroeconomic and financial stability, including targeting single-digit inflation to avoid the risk that rising prices pose to economic growth. According to IMF documents, inflation above 10 percent is generally considered harmful to medium-term growth, while targeting inflation below 5 percent may not be appropriate given the potential benefits of modest inflation on product and labor markets. Of the 31 IMF-supported programs, the 20 programs that did not involve countries participating in currency unions all targeted single-digit inflation at no less than 5 percent (see table 3). In some cases, we found shorter-term inflation targets above 10 percent. For example, Sao Tome and Principe, and Guinea both have short-term targets in low double digits as

³¹Given that hyperinflation is clearly detrimental to economic growth, the literature we reviewed focused on the effects of moderate to high inflation.

³²A currency union is a group of countries that adopt a single currency and a uniform monetary policy. In the case of the currency unions discussed in this report, the unions also peg the common currency to the euro or the U.S. dollar. A currency board is a monetary arrangement that pegs the currency of a country to a more widely used and dominant currency and typically backs all currency in circulation with international reserves.

part of the longer-term objective of gradually reducing inflation to the single digits.

The 11 other countries with IMF-supported programs participate in common currency unions (or operate a currency board) with inflation targets of 3 percent or lower that are set indirectly by the choice of exchange rate arrangements, not the IMF.³³ Inflation targets in the common currency unions in table 3 are driven by the decision to maintain a fixed exchange rate that requires member countries to keep the range of inflation close to inflation levels in the developed country or area to which the common currency is fixed.³⁴ Almost all of the countries included in the lower half of table 3 belong to currency unions that peg their currency to either the euro or, in the case of Grenada, the U.S. dollar. The only exception is Djibouti, which is not part of a currency union but operates a currency board tied to the U.S. dollar. As a result, the inflation targets for these countries are largely independent of IMF inflation policy and tend to approximate the inflationary experiences of the euro area or the United States.

Table 3: Inflation Targets in IMF-Supported Programs for 31 Low-Income Countries, as of July 2009

Low-income country	Medium-term inflation target	Type of IMF arrangement
Afghanistan	6%	PRGF
Burundi	6%	PRGF
Gambia, The	5%	PRGF
Guinea	5%	PRGF
Haiti	7%	PRGF
Kyrgyz Republic	Single digit	ESF
Liberia	Single digit	PRGF
Madagascar	Under 10%	PRGF

³³For example, the West African Economic and Monetary Union pact sets a 3 percent inflation threshold as a convergence requirement for participating countries. The Central African Economic and Monetary Union pact has a similar convergence criterion. Grenada is part of the East Caribbean Currency Union, which pegs to the U.S. dollar. Djibouti operates a currency board tied to the U.S. dollar.

³⁴If inflation were allowed to deviate significantly from the levels in the developed country or area, the real exchange rate would become increasingly misaligned and undermine the goals of the fixed-rate currency system.

Low-income country	Medium-term inflation target	Type of IMF arrangement
Malawi	5%	ESF
Mauritania	5%	PRGF
Mongolia	9%	SBA
Mozambique	Single digit (7%)	ESF
Nicaragua	7%	PRGF
Pakistan	5%	SBA
Rwanda	Single digit (7%)	PRGF
Sao Tome and Principe	Single digit	PRGF
Sierra Leone	Single digit	PRGF
Tajikistan, Republic of	Single digit	PRGF
Tanzania	5%	ESF
Zambia	5%	PRGF
Currency unions (or currency board)		
Benin	Below 3%	PRGF
Burkina Faso	3%	PRGF
Central African Republic	Below 3%	PRGF
Congo, Republic of	3%	PRGF
Cote d'Ivoire	Below 3%	PRGF
Djibouti	3%-3.5%	PRGF
Grenada	Below 3%	PRGF
Mali	Below 3%	PRGF
Niger	Below 3%	PRGF
Senegal	Below 3%	ESF
Togo	Below 3%	PRGF

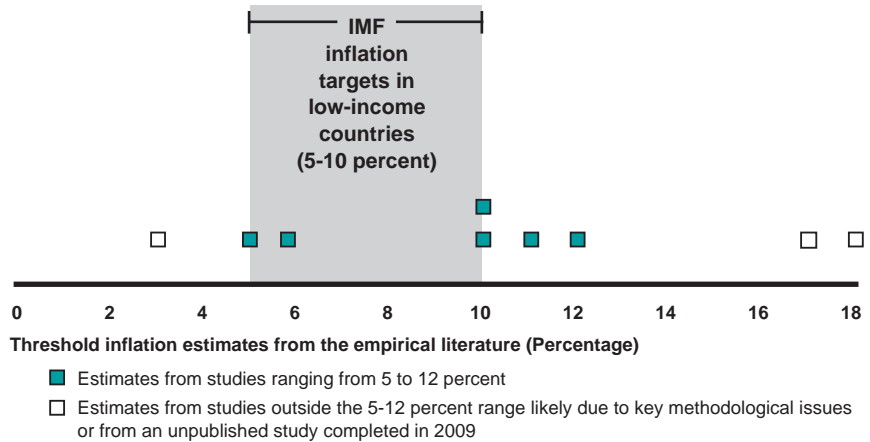
Sources: GAO analysis of recipient countries' letters of intent and IMF's Article IV reports.

Note: For Mauritania, Mongolia, and Grenada, no clear target was articulated, and therefore we have taken the long-term inflation projection for the country as the implicit target.

Inflation Targets in IMF-Supported Programs Within the Bounds of the Existing Empirical Studies

The empirical literature we reviewed, consisting of nine studies, provides estimates of the inflation rate (ranging from 3 to 18 percent) beyond which inflation hampers long-term growth for low-income countries. Inflation targets in IMF-supported programs, although at the lower end of the 3 to 18 percent range, are generally consistent with estimates in empirical studies. (See fig. 11.)

Figure 11: Inflation Targets in IMF-Supported Programs Are within the Estimates from Nine Studies



Sources: GAO analysis of empirical research on inflation and growth in lower income countries and IMF documents.

Note: Threshold estimates indicate the inflation rate where growth is negatively and significantly affected by further increases in the inflation rate. Figure 11 only includes threshold rates of inflation that were estimated empirically using low-income, developing, or nonindustrial countries.

Eliminating the lowest and two highest estimates produces an approximate range of 5 to 12 percent for the threshold, which is roughly consistent with the inflation targets of 5 to 10 percent in the 31 IMF-supported programs for low-income countries we reviewed.³⁵ Across the studies, the estimated threshold is generally found to be higher for low-income than for high-income economies, providing some support for inflation targets in IMF-supported programs that tolerate higher inflation in low-income countries. (The bibliography for inflation-growth literature contains a full listing of the studies.) While there is some disagreement on where the critical threshold lies, there is consensus that it is lower than the level suggested by some studies prior to 2000. These studies provided

³⁵Given the state of the literature, a 5 to 12 percent range is a reasonable interpretation of the literature since two of the three estimates outside the 5 to 12 percent range are likely due to methodological issues and the remaining estimate (17 percent) is from a June 2009 study that addresses a number of the methodological issues in the existing literature but has not been peer reviewed. Of the published studies, one estimates a 3 percent threshold using a specification that is now used infrequently in the literature because it allows a few outliers to drive the results. The other study estimates a threshold of 15 to 18 percent using a simple nonlinear model that may not accurately estimate the threshold inflation rate. However, none of the studies should be interpreted as having identified the exact inflation level beyond which inflation hampers long-term growth, and this exercise is not meant to imply that literature is conclusive.

Flexibility in the Selection of an Inflation Target for a Particular Country Is Prudent

some evidence that inflation did not significantly hurt economic growth until it reached the 20 to 40 percent range, but these findings have not proven robust for a number of reasons. Specifically, some of the threshold calculations were based on judgment rather than empirical estimation.³⁶

The complexity of the relationship between inflation and economic growth uncovered by the literature indicates it may be inappropriate to set a uniform policy target applicable to all countries. The empirical literature illustrates that combining countries at different levels of development can produce unreliable results both in the estimating of the threshold in the inflation-growth relationship and the effect of low and high inflation on economic growth. This calls for flexibility in the implementing inflation targets in individual countries because the “growth-maximizing” rate of inflation might be expected to differ, at least somewhat, even across low-income countries at various stages of development. For example, after increasing the sample of low-income countries, some researchers found that the estimated inflation threshold increased from 6 to 17 percent.³⁷ Similarly, another study found no clear-cut threshold for developing countries and attributes this finding to the differences across countries grouped under the “developing” country label.³⁸ One interpretation of these findings is that, even though the literature generally supports inflation targets in IMF-supported programs, the gains from a given reduction in inflation to single digits from somewhat higher levels might

³⁶For example, two widely cited studies prior to 1999 impose thresholds ranging from 15 to 40 percent. See Michael Bruno and William Easterly, “Inflation Crises and Long-Run Growth,” *Journal of Monetary Economics* 41 (1998); and Stanley Fischer, “The Role of Macroeconomic Factors in Growth,” *Journal of Monetary Economics* 32 (1993). To the contrary, the threshold models that dominate recent literature are designed to estimate inflation thresholds as opposed to imposing them.

³⁷See Stephanie Kremer, Alexander Bick, and Dieter Nautz, “Inflation and Growth: New Evidence from a Dynamic Panel Threshold Analysis,” *Sonderforschungsbereich Discussion Paper 649*, Humboldt University, Berlin, Germany (2009).

³⁸See A. Vaona and S. Schiavo, “Nonparametric and Semiparametric Evidence on the Long-run Effects of Inflation on Growth,” *Economics Letters* 94, no. 3 (2007). It is important to note that this study exploits techniques that have some positive methodological features but are extremely sensitive to outliers.

by the cost in some cases. As a result, the relationships and trade-offs should be carefully evaluated for each country.³⁹

Moreover, the methodologies and the validity of the estimates vary across studies, and none should be viewed as definitive. Although recent empirical literature is informative and addresses a number of methodological issues that plagued earlier studies, other limitations remain. Important limitations of the literature analyzing the relationship between inflation and economic growth include (1) potential biases due to the omission of important variables; (2) biases resulting from the failure of some studies to address the fact that, in addition to inflation impacting economic growth, economic growth may also affect inflation; (3) issues with small samples and outlier effects; and (4) technical issues related to the modeling procedures employed. Moreover, the negative effects on the economy may extend beyond the effects on economic growth. As a result, studies that investigate only the impact of inflation on economic growth may understate the total negative effects of inflation. Finally, there are relatively few systematic analyses of the critical threshold beyond which inflation hampers long-term growth; therefore, there is likely to be continued disagreement on where the threshold lies.

Academic Literature Identifies Weaknesses in Macroeconomic Policies That Often Precede Economic Crises, Consistent with IMF-supported Programs

Academic Literature Identifies Weaknesses in Macroeconomic Policies Preceding Currency, Banking, and Debt Crises

The academic literature identifies weaknesses in macroeconomic policies preceding economic crises. We focused on this aspect of the academic literature because, as previously noted, middle- and high- income countries have sought significant IMF financial assistance due to stress associated with the global financial crisis. Empirical academic literature

³⁹Even if inflation above 10 percent is believed to be harmful to long-term growth in a country, there are still trade-offs to be considered for negotiation. For example, if there is only a small benefit to moving from 12 percent to 9 percent inflation, it may not justify the potential cost of disinflation.

we reviewed, focused on anticipating and explaining economic crises, attempts to identify leading indicators of crises, including weaknesses in macroeconomic policies. This body of research is known as the crisis “early warning system” literature. Economic crises include in particular (1) currency crises, which involve a speculative attack or large depreciation of a currency; (2) banking crises, which involve the widespread failure of critical financial institutions; and (3) sovereign debt crises, which involve the default or near default of a government on its debt obligations. Economic crises can involve one or more of the types of crises described above and often precipitate moderate to severe recessions involving substantial losses of jobs, income, and production.

By analyzing a broad history of crises—crises that have occurred in dozens of countries over the last several decades—researchers have tried to identify common precursors of crises that may provide “early warning” that a crisis is coming. We reviewed 19 published or widely cited studies, identified in economic research databases, or in citations of other studies, written since 1998.⁴⁰ For each study, we documented the variables that were predictive of an economic crisis. Across the studies, several macroeconomic policy variables (and many variables unrelated to macroeconomic policy) consistently predict currency, banking, or debt crises. These variables suggest a number of specific policy weaknesses that make countries more vulnerable to crises, especially high inflation, high public indebtedness, and an overvalued currency. These vulnerabilities can represent unsustainable monetary, fiscal, and exchange rate policies, such as (1) high money growth, inconsistent with the government’s commitment to a fixed exchange rate or broad exchange rate stability; (2) large and persistent budget deficits that significantly increase the stock of public debt and jeopardize the ability of the government to meet its obligations; or (3) a significant inflow of foreign capital without the central bank accumulating a buffer of international currency to guard against sudden capital outflows. Table 4 contains the specific macroeconomic policy variables identified by the literature and the nature of the related vulnerabilities.

⁴⁰See appendix I for our complete literature review methodology and the bibliography for crisis “early warning system” literature for a list of the studies reviewed.

Table 4: Indicators of Crisis Vulnerability from the Academic Literature

Indicator	Nature of vulnerability
Real exchange rate	A high real exchange rate relative to historical averages indicates that the currency may be overvalued and the economy uncompetitive.
M2/international reserves ^a	Low international reserves relative to the supply of money indicates that the currency has only limited backing.
Inflation	High inflation can indicate monetizing the budget deficit or monetary policy inconsistent with the exchange rate, which may trigger a loss of confidence in the currency
Short-term debt/international reserves	Low international reserves relative to short-term debt indicates that the central bank only has limited capacity to mitigate the effects of rapid capital flight.
Measures of public indebtedness ^b	High public debt indicates that fiscal policy may be unsustainable and that investors may lose confidence in the ability of the government to meet its obligations.

Source: GAO analysis of academic literature.

^aM2 is a measure of the money supply that includes currency and bank deposits.

^bMeasures of public indebtedness in the literature include the budget deficit and external debt/GDP.

Several factors unrelated to macroeconomic policy also often precede crises, including external events (e.g., a crisis in a neighboring country), private sector behavior (e.g., significant private sector borrowing), and institutional or political factors (e.g., weak law enforcement). Crises are not singularly caused by unsustainable macroeconomic policies; there are often other factors or triggers that increase the likelihood of a crisis. Nevertheless, crises do not strike at random, poor macroeconomic policy management can greatly increase a country's vulnerability to crisis.

While the crisis "early warning system" literature can inform the development of macroeconomic policy, it has limitations and provides

qualitative rather than precise quantitative guidance.⁴¹ Conceptually, the literature identifies certain costs associated with loose macroeconomic policies that are important considerations to include in the full accounting of the costs and benefits associated with macroeconomic policies, but these are not the only considerations. Furthermore, the literature has a number of methodological limitations. Specific limitations that we identified during our review of the crisis literature include selecting a sample of countries in a way that overstates the predictability of crises, analytical approaches that fail to account for multiple causes of economic crises, and crisis definitions that may not correspond to severe economic consequences (e.g., the inclusion of speculative attacks that did not result in actual currency depreciation in the definition of currency crises). The limitations we identified may introduce biases into estimates of policy effects in studies where they are present. The exclusion of noncrisis countries in some analyses may, for example, overstate the level of international reserves necessary to guard against crises in some countries. These limitations suggest caution in interpreting the precise numerical results of the literature.

Macroeconomic Policies Are Focused on Critical Vulnerabilities in IMF-Supported Programs in Middle- and High-Income Countries

The central macroeconomic policy weaknesses identified by the literature closely correspond to the macroeconomic policy areas upon which IMF-supported SBA programs focus. The IMF-supported programs in middle- and high-income countries we reviewed have macroeconomic program requirements (generally QPCs) designed to limit money growth and inflation, limit public debt, and accumulate international reserves. Similarly, high debt, high inflation, and low international reserves are important macroeconomic policy weaknesses that make a country more

⁴¹The lack of consensus in the crisis “early warning system” literature as to the appropriate way to estimate the effects of policies (and other variables) implies that it is difficult to obtain precise quantitative guidance from researchers’ estimates of policy effects. This lack of consensus is reflected in the two different methods, which we denote as (1) the signals approach and (2) the marginal approach, which researchers have used to assess potential leading indicators of economic crises. The signals approach assumes that there are thresholds beyond which relevant indicators “signal” that a crisis is more likely. The marginal approach assumes that changes in relevant indicators increase or decrease the likelihood of a crisis, irrelevant of particular thresholds. As an example of the divergent predictions from the two approaches, consider the real exchange rate. As discussed above, a higher real exchange rate can indicate an overvalued currency, an uncompetitive economy, and an increased likelihood of crisis. According to one study using a marginal approach, a 10 percent increase in the exchange rate would increase the likelihood of a currency crisis by approximately 3.6 percentage points. According to a study using a signals approach, the real exchange rate signals that a crisis is likely only when its value exceeds the 90th percentile.

vulnerable to crises.⁴² We reviewed certain quantitative macroeconomic program requirements in all SBA programs in which governments have drawn IMF funds, which included 13 countries for which program documents were available as of July 2009.⁴³ Because SBA programs are for countries considered to have temporary balance-of-payments needs, these countries are generally middle- or high-income countries that have been adversely affected by the global financial crisis. In each of the 13 programs, we found that quantitative program requirements supported the broad goals of (1) limiting money growth and inflation, (2) limiting public debt, and (3) accumulating international reserves.⁴⁴

To support the broad goals identified above, IMF-supported programs often used a variety of specific policy variables. To limit money growth and inflation, SBA programs featured QPCs and other program requirements for a number of macroeconomic policies. These included ceilings on the net domestic assets of the central bank, inflation consultations, and ceilings on the amount of credit the central bank may extend to the government or the private sector.⁴⁵ To limit public debt, 11 of the 13 SBA programs had QPCs for the government's budget deficit, and some had restrictions on the government issuing new external debt, and short-term external debt in particular.⁴⁶ To accumulate international reserves, 12 of the 13 SBA programs had floors for either net international reserves or net foreign assets.⁴⁷ With respect to our case study countries,

⁴²Another leading indicator of crises, an overvalued currency, does not correspond to common quantitative macroeconomic program requirements in SBA programs. However, the crisis events that precipitate IMF-supported programs are likely to involve a significant depreciation of the currency. As a result, the likelihood of overvaluation to be present once a crisis ensues is diminished.

⁴³See appendix I for more information on our methodology.

⁴⁴The IMF-supported program in Bosnia-Herzegovina did not have a QPC or other program requirement to facilitate the accumulation of international reserves. However, Bosnia-Herzegovina operates under a currency board in which it must hold foreign exchange reserves not less than domestic currency in circulation, under domestic law. Maintaining this currency board is also a structural benchmark of the program, but not a performance criterion.

⁴⁵An inflation consultation is a program requirement that triggers a meeting with IMF staff or the IMF Board if inflation falls outside of certain bounds.

⁴⁶Short-term debt has a maturity of 1 year or less.

⁴⁷Net international reserves are a subset of net foreign assets. Net international reserves are the foreign exchange reserves of the central bank, less liabilities. Net foreign assets is a broader concept that includes the foreign currency assets and liabilities of the banking system.

we have noted above that a large stock of public debt was a key factor driving the crisis in Hungary. In Iceland, the IMF noted in 2007 that the króna was overvalued by 15 to 25 percent, and inflation rose sharply before the banking crisis ensued. The focus of IMF-supported programs on the central policy weaknesses should assist countries in regaining investor confidence and addressing the underlying crisis vulnerabilities.

Agency Comments

The Department of the Treasury provided written comments on a draft of this report, which are reprinted in appendix III. Treasury stated that it fully concurs with our conclusions that IMF-supported programs are shaped by negotiations with local officials in the context of country circumstances. In addition, Treasury noted our finding that the underlying economic literature on growth, inflation, fiscal and external sustainability, and financial stability, drive IMF policy advice in lending programs. Treasury also emphasized that it encourages the IMF to work with low-income countries to increase spending in areas such as health and education. Furthermore, we received technical comments on a draft of this report from Treasury and the IMF, which we incorporated as appropriate.

We are sending copies of this report to other congressional offices, Treasury, and the IMF.. The report also is available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-9601 or melitot@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Other contacts and major contributors are listed in appendix IV.

Sincerely yours,



Thomas Melito
Director, International Affairs and Trade

Appendix I: Scope and Methodology

To examine the process for designing an International Monetary Fund (IMF)-supported program, we reviewed and analyzed IMF's public documents and data. These documents include IMF Articles of Agreement; countries' letters of intent; IMF consultation reports and assessments of country progress under IMF-supported programs, including the Article IV consultation reports; program design papers; strategy papers; policy documents; and IMF's Independent Evaluation Office reports. We also met with officials representing the IMF and the U.S. Department of the Treasury (Treasury) in Washington, D.C., to discuss the process of designing of an IMF-supported program and the typical trade-offs associated with the program's policy decisions. Specifically, we used IMF policy documents and countries' letters of intent to identify the primary objectives and key targets of low- and middle- to high-income countries. We also reviewed the letters of intent provided to the IMF by countries receiving current IMF-supported financial programs, as well as updates of program reviews conducted by the IMF for these programs, available as of July 2009, to obtain examples of macroeconomic target variables, quantitative performance criteria, and structural reforms. We utilized interviews with IMF officials, as well as IMF policy papers, including IMF institute documents, to clarify and explain the process of designing an IMF-supported program.

To examine the IMF-supported programs in recipient countries, we selected four case study countries—Hungary, Iceland, Liberia, and Zambia—and reviewed documents and interviewed officials regarding these countries' IMF-supported programs. Our selection of these four countries include criteria to examine how IMF-supported programs may differ in low-, middle-, and high-income countries with geographic diversity that had relatively large amounts of IMF financing as of April 2009. Our choice of countries was meant to be illustrative, not representative or generalizable to the population of IMF-supported programs. Documents we reviewed include the letters of intent provided to the IMF by these four countries; IMF reviews, reports, and press releases regarding these countries' IMF-supported programs; and country background documents provided by U.S. embassies in these four countries. In addition, we interviewed IMF and Treasury officials in Washington, D.C., to discuss the context of the four recipient countries and the countries' IMF-supported programs. In Hungary, Iceland, Liberia, and Zambia, we met with U.S. embassy officials, IMF staff, officials representing foreign governments, academics, and nongovernmental organizations to obtain their views about the IMF-supported programs.

To examine the extent to which the findings of empirical economic studies are consistent with the IMF's macroeconomic policies, we reviewed IMF documents and empirical studies. Using published or widely cited empirical studies identified in economic research databases EconLit, Social Science Research Network, and Google Scholar, we identified key relationships between macroeconomic policies and economic growth and crises, and compared them with macroeconomic policies in IMF-supported programs. Specifically, we reviewed two parts of the academic literature relevant to the macroeconomic policy decisions in IMF-supported programs, namely the literature that links inflation with economic growth, and the crisis "early warning system" literature that identifies leading indicators of currency, banking, and debt crises. For the inflation and growth literature, we reviewed empirical studies isolating the threshold level of inflation explicitly for lower-income countries identified in economic research databases and published since 1999. Due to the lag between publication and submission, we also included working papers produced during the last 2 years. Although we found these studies to be reliable for the purposes of identifying the range of estimates and comparing them with targets in IMF-supported programs, their inclusion in this report does not imply that we deem them to be definitive. (The bibliography contains a full listing of the studies linking inflation with economic growth that we reviewed.) To determine the inflation targets in all 31 IMF-supported programs in low-income countries, as of July 2009, we reviewed countries' letters of intent and IMF Article IV reports and recorded the target for each country. To ensure the data were collected consistently and accurately, each recorded target was independently reviewed and verified. In a few cases where no clear target was articulated, we used the long-term inflation projection for the country as the implicit target. For the crisis "early warning system" literature, we reviewed 19 published or widely cited studies, identified in economic research databases, or in citations of other studies, written since 1998. We chose 1998 as the starting year because of the large volume of research explaining or predicting economic crises that was performed after the Asian financial crisis. For each study, we documented the variables that were predictive of an economic crisis. Where possible, we used a conservative standard for identifying key predictor variables. Under the signals method, we selected only variables that had a noise-to-signal ratio (NTSR) of 0.5 or less (less than 1 indicates more signal than noise). Noise indicates an incorrect prediction while a signal indicates a correct prediction, so a NTSR of less than 1 implies more correct than incorrect predictions. Under traditional regression methods, we selected only variables whose coefficients had p-values less than 0.05. (Several studies we reviewed reported coefficients that were statistically significant at the

10 percent level.) (The bibliography contains a full listing of studies in the “early warning system” literature that we reviewed.) Similar to our identification of inflation targets in IMF-supported programs in low-income countries, we determined certain quantitative macroeconomic program requirements in all Stand-By Arrangements in which governments have drawn IMF funds, which included 13 countries for which program documents were available as of July 2009. We reviewed these countries’ letters of intent, determined and recorded the policies associated with the macroeconomic program requirements for each country, then independently verified that the requirements data were collected consistently and accurately.

We conducted our work from November 2008 to November 2009 in accordance with all sections of GAO’s Quality Assurance Framework that are relevant to our objectives. The framework requires that we plan and perform the engagement to obtain sufficient and appropriate evidence to meet our stated objectives and to discuss any limitations in our work. We believe that the information and data obtained, and the analysis conducted, provide a reasonable basis for any findings and conclusions in this product.

Appendix II: Countries Approved to Receive IMF Financial Arrangements as of August 31, 2009

Table 5 shows the countries that have been approved to receive financial assistance from the IMF as of August 31, 2009. The recipient countries are categorized by type of IMF lending arrangement.

Table 5: Countries Committed to IMF Financial Arrangements as of August 31, 2009

Type of IMF lending arrangement	Countries approved to receive funding
Poverty Reduction and Growth Facility	Afghanistan
	Burkina Faso
	Burundi
	Central African Republic
	Congo, Republic of
	Cote d'Ivoire
	Djibouti
	Gambia
	Ghana
	Grenada
	Guinea
	Haiti
	Liberia
	Mali
	Mauritania
	Nicaragua
	Niger
	Sao Tome and Principe
	Sierra Leone
	Tajikistan
Togo	
Zambia	
Exogenous Shocks Facility	Ethiopia
	Kyrgyz Republic
	Malawi
	Mozambique
	Senegal
	Tanzania

**Appendix II: Countries Approved to Receive
IMF Financial Arrangements as of
August 31, 2009**

Type of IMF lending arrangement	Countries approved to receive funding
Stand-By Arrangement	Armenia
	Belarus
	Bosnia and Herzegovina
	Costa Rica
	El Salvador
	Gabon
	Georgia
	Guatemala
	Hungary
	Iceland
	Latvia
	Mongolia
	Pakistan
	Romania
	Serbia
	Seychelles
Sri Lanka	
Ukraine	
Flexible Credit Line	Colombia
	Mexico
	Poland

Source: IMF.

Appendix III: Comments from the Department of the Treasury



DEPARTMENT OF THE TREASURY
WASHINGTON, D.C. 20220

October 26, 2009

Mr. Thomas Melito
Director, International Affairs and Trade
Government Accountability Office
441 G St., NW
Washington, DC 20548

Dear Mr. Melito:

I would like to commend the Government Accountability Office (GAO) on the quality of the forthcoming report titled "International Monetary Fund Lending Programs Allow for Negotiations and Are Consistent with Economic Literature". The report distills the complex, iterative process used by the IMF in its negotiations with country authorities into a concise and accessible description of the factors that drive IMF program design. The Treasury Department fully concurs with GAO's conclusions that IMF-supported programs are shaped by negotiations with local officials in the context of country circumstances and that macroeconomic policies in IMF programs are consistent with empirical economic studies.

As the GAO report highlights, the macroeconomic frameworks at the heart of IMF programs naturally involve trade-offs between different policy objectives. Local authorities' prioritization of any given issue may impact other aspects of the macroeconomic framework. Striking an appropriate balance between different priorities is not easy and requires careful judgment. The IMF faces the added challenge that governments often avoid requesting IMF assistance until imbalances are clearly unsustainable and policy options are limited. Nonetheless, as the report shows, the conclusions of the underlying economic literature on growth, inflation, fiscal and external sustainability, and financial stability drive IMF policy advice in lending programs.

Besides supporting broad macroeconomic stability and economic growth, IMF policy advice and financing can also play an important role in protecting the poorest, especially in low-income countries. The poorest are often the most vulnerable to macroeconomic volatility like high inflation or financing crises. We strongly encourage the IMF to work with low-income countries to increase pro-poor spending (such as on health and education).

Again, I thank GAO staff for its fine job in tackling this complicated issue.

Sincerely,

A handwritten signature in cursive script that reads "Mark Sobel".

Mark Sobel
Acting Assistant Secretary for International Affairs

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Thomas Melito, (202) 512-9601, or melitot@gao.gov

Staff Acknowledgments

In addition to the individual named above, Cheryl Goodman, Assistant Director; Lawrance Evans, Assistant Director; Marc Castellano; Michael Hoffman; Victoria Lin; and Roberta G. Steinman made key contributions to this report. The team benefited from the expert advice and assistance of Lynn Cothorn, Etana Finkler, Joel Grossman, and Mary Moutsos.

Bibliography of Empirical Studies Reviewed in the Inflation-Growth Literature

To examine the relationship between economic growth and inflation in low-income countries, we reviewed the following academic articles. Our review of the literature included academic studies, using data from low-income countries, published from 1999 to 2009. Due to the lag between publication and submission, we included working papers produced in the last 2 years. The studies indicated with an asterisk (*) provided empirical estimates of the threshold level of inflation for low-income, developing or nonindustrial countries that serve as the basis for figure 11 in the report. The list includes widely cited studies published prior to 1999, although they either combine low-income and high-income countries when estimating the threshold inflation rate or determine the threshold on the basis of judgment.

Barro, Robert. "Inflation and Economic Growth," *Federal Reserve Bank of St. Louis Review* 78 (1996).

Bruno, Michael and William Easterly. "Inflation Crises and Long-Run Growth," *Journal of Monetary Economics* 41 (1998).

Bruno, Michael and William Easterly. "Inflation and Growth: In Search of a Stable Relationship," *Review of Federal Reserve Bank of St. Louis* 78, no. 3 (1996).

*Burdekin, Richard C.K., Arthur T. Denzau, Manfred W. Keil, Thititthep Sitthiyot, and Thomas D. Willett, "When Does Inflation Hurt Economic Growth? *Different Nonlinearities for Different Economies*," *Journal of Macroeconomics* 26 (2004).

Fischer, Stanley. "The Role of Macroeconomic Factors in Growth," *Journal of Monetary Economics* 32 (1993).

Ghosh, Atish and Stephen Phillips. "Warning: Inflation May be Harmful to Your Growth," *IMF Staff Papers* 45 (1998).

*Gillman, Max, Mark Harris, and Laszlo Matyas. "Inflation and growth: explaining a negative effect," *Empirical Economics* 29, no. 1 (2004).

Gylfason, Thorvaldur and Tryggvi T. Herbertsson. "Does Inflation Matter for Growth?," *Japan and the World Economy* 13 (2001).

*Khan, Mohsin S. and Abdelhak S. Senhadji. "Threshold effects in the Relation Between Inflation and Growth," *IMF Staff Papers* 48 (2001).

*Kochar, Kalpana and Sharmini Coorey. "Economic Growth: What Has Been Achieved So Far and How?", in Hugh Bredenkamp and Susan Schadler (eds), *Economic Adjustment and Reform in Low-Income Countries* (Washington, D.C.: International Monetary Fund, 1999).

*Kremer, Stephanie, Alexander Bick and Dieter Nautz, "Inflation and Growth: New Evidence from a Dynamic Panel Threshold Analysis," *Sonderforschungsbereich Discussion Paper 649*, Humboldt University, Berlin, Germany (2009).

*Kremer, Stephanie, Alexander Bick and Dieter Nautz, "Inflation and Growth: New Evidence from a Panel Data Threshold Analysis," *Goethe University Working Paper*, Frankfurt (2008).

*Pollin, Robert and Andong Zhu, "Inflation and Economic Growth: A Cross-Country Non-linear Analysis," *Journal of Post Keynesian Economics* 28, no. 4 (2006).

Sarel, Michael. "Nonlinear Effects of Inflation on Economic Growth," *IMF Staff Papers* 43 (1996).

*Sepahri, Ardeshir and Saeed Moshiri. "Inflation-Growth Profiles Across Countries: Evidence from Developing and Developed Countries," *International Review of Applied Economics* 18, no. 2 (2004).

*Vaona, A. and S. Schiavo, "Nonparametric and Semiparametric Evidence on the Long-run Effects of Inflation on Growth," *Economics Letters* 94, no. 3 (2007).

Bibliography of Empirical Studies Reviewed in the Crisis “Early Warning System” Literature

We reviewed the following empirical studies in the crisis “early warning system” literature written since 1998. For each study, we documented the variables that were predictive of an economic crisis. Where possible, we used a conservative standard for identifying key predictor variables. Under the signals method, we selected only variables that had a noise-to-signal ratio (NTSR) of 0.5 or less (less than 1 indicates more signal than noise). Noise indicates an incorrect prediction while a signal indicates a correct prediction, so a NTSR of less than one implies more correct than incorrect predictions. Under traditional regression methods, we selected only variables whose coefficients had p-values less than 0.05. (Several studies we reviewed reported coefficients that were statistically significant at the 10 percent level.)

Berg, Andrew and Catherine Patillo. “Predicting Currency Crises: The Indicators Approach and an Alternative,” *Journal of International Money and Finance* 18 (1999).

Borio, Claudio and Philip Lowe. “Assessing the Risk of Banking Crises,” *BIS Quarterly Review* (December 2002).

Burkart, Oliver and Virginie Coudert. “Leading Indicators of Currency Crises for Emerging Countries,” *Emerging Markets Review* 3 (2002).

Bussiere, Matthieu and Marcel Fratzscher. “Towards a New Early Warning System of Financial Crises,” *Journal of International Money and Finance* 25 (2006).

Ciarlone, Alessio and Giorgio Trebeschi. “Designing an Early Warning System for Debt Crises,” *Emerging Markets Review* 6 (2005).

Davis, E. Philip and Dilruba Karim. “Comparing Early Warning Systems for Banking Crises.” *Journal of Financial Stability* 4 (2008).

Demirgüç-Kunt, Asli and Enrica Detragiache. “The Determinants of Banking Crises in Developing and Developed Countries,” *IMF Staff Papers* 45, no. 1 (1998).

Edison, Hali J. “Do Indicators of Financial Crises Work? An Evaluation of An Early Warning System,” *International Journal of Finance and Economics* 8 (2003).

Esquivel, Gerardo and Felipe Larrain. “Explaining Currency Crises.” Harvard Institute for International Development (1998).

Hemming, Richard, Michael Kell and Axel Schimmelpfennig. “Fiscal Vulnerability and Financial Crises in Emerging Market Economies,” Occasional Paper 218 (Washington, D.C.: International Monetary Fund, 2003).

Kamin, Steven B., John Schindler, and Shawna Samuel. “The Contribution of Domestic and External factors to Emerging Market Currency Crises: An Early Warning Systems Approach,” *International Journal of Finance and Economics* 12 (2007).

Kaminsky, Graciela L. “Currency Crises: Are They All the Same?” *Journal of International Money and Finance* 25 (2006).

Kaminsky, Graciela, Saul Lizondo, and Carmen Reinhart. “Leading Indicators of Currency Crises,” *IMF Staff Papers* 45 (March 1998).

Kaminsky, Graciela L. and Carmen Reinhart. “The Twin Crises: The Causes of Banking and Balance of Payments Problems,” *American Economic Review* 89 (1999).

Komulainen, Tuomas and Johanna Lukkarila. “What Drives Financial Crises in Emerging Markets?” *Emerging Markets Review* 4 (2003).

Kumar, Mohan, Uma Moorthy, and William Perraudin. “Predicting Emerging Market Currency Crashes.” *Journal of Empirical Finance* 10 (2003).

Manasse, Paolo, Nouriel Roubini, and Axel Schimmelpfennig. “Predicting Sovereign Debt Crises,” *IMF Working Paper WP/03/221* (November 2003).

Manasse, Paolo and Nouriel Roubini. “‘Rules of Thumb’ for Sovereign Debt Crises,” *IMF Working Paper WP/05/42* (March 2005).

Shimpalee, Pattima L. and Janice Boucher Breuer. “Currency Crises and Institutions,” *Journal of International Money and Finance* 25 (2006).

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to www.gao.gov and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, <http://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Ralph Dawn, Managing Director, dawnr@gao.gov, (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, DC 20548

