INTERNATIONAL MONETARY FUND

Fund Assistance for Countries Facing Exogenous Shocks

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August 8, 2003

EXECUTIVE SUMMARY

This paper is an initial reflection on the challenges in assisting developing economies in reducing their vulnerability to exogenous shocks. The main points are:

- Exogenous shocks, such as natural disasters, terms-of-trade shocks, and conflicts or crises in neighboring countries, can have a significant negative impact on developing countries' growth, macroeconomic stability, debt sustainability, and poverty.

- Evidence over the past two decades shows that low-income countries are particularly vulnerable to these types of shocks. In many cases, vulnerability has been magnified by policy choices over time that have failed to encourage diversification of output and exports. Many low-income countries also have limited capacity to build up cushions of reserves and fiscal resources as a buffer against shocks. In addition, market insurance is frequently expensive or not available to these countries. As a result, shocks can lead to resources being diverted to mitigate the loss of income rather than spent on investments that have a longer term payoff in reducing vulnerability.

- The Fund has an important role in providing countries with macroeconomic policy advice on how to prepare for shocks better and how to respond once a shock hits. Currently the coverage of preparation for shocks varies considerably. A systematic focus in surveillance and the design of Fund-supported programs could help countries prepare for shocks more effectively. In the aftermath of a shock, the Fund can help countries select the best policy responses.

- External assistance can play an important role in helping countries mitigate the effects of shocks. Recent studies show that foreign assistance can be unusually effective in the aftermath of a shock. But the assistance needs to be available quickly, and provided in a way that includes incentives for good economic policies and measures to reduce vulnerability to future shocks. For highly indebted countries, it is most appropriately provided as grants to prevent a build up of debt. The Fund can play an important catalytic role and help alert donors when a country may have unaddressed needs for financing.

- While grant assistance will generally be more appropriate than Fund loans, the Fund can provide relatively quick-disbursing balance of payments assistance in cases where there is an immediate need and donor assistance is not immediately forthcoming. Nevertheless, Fund financial assistance would continue to be a relatively small part of the overall international efforts to address the effects of exogenous shocks.

- The paper presents an initial reflection on how existing Fund instruments can be best utilized and adapted for assisting members adjust to the impact of exogenous shocks.

I. INTRODUCTION

1.   Many developing countries have made impressive gains in improving macroeconomic policies and in raising growth rates in recent years. However, these gains are fragile, and they need to be reinforced with a sustained and comprehensive effort to put in place the policy reforms, with external support, necessary to achieve and sustain higher growth rates. Reducing the vulnerability of developing countries to exogenous shocks is an important part of this challenge. A large number of developing countries remain vulnerable to a wide range of different types of exogenous shocks that are quite substantial in terms of overall macroeconomic impact. For example, between 1997 and 2001, the average damage per natural disaster was over 5 percent of GDP in low-income countries. Some of these shocks are discrete, temporary and reversible events, but in many cases they recur with discouraging and damaging frequency. Some types of shocks prove to be more permanent. It is often hard to diagnose the nature and duration of the impact at an early stage.

2.   The causes of vulnerability are varied. Structural weaknesses contribute to developing countries' vulnerability. In many cases, vulnerability has been magnified by policy choices over time that have failed to encourage diversification of output and exports. Many low-income countries also have limited capacity to build up cushions of reserves and fiscal resources as a buffer against shocks. As a result, shocks can lead to resources being diverted to mitigate the loss of income rather than spent on investments that have a longer term pay off in reducing vulnerability.

3.   The economic literature provides a reasonably strong case in support of the provision of external finance to help support domestic absorption through a temporary shock and to support policy reforms to smooth adjustment to more permanent shocks. And it provides some cautionary notes on the moral hazard risk inherent in this area. Providing assistance to mitigate the income effects can reinforce vulnerability to crisis if it diverts resources away from long-term investments and reforms to diversify output and to mitigate risk, to floods, for example. A survey of a range of approaches by the development community suggests areas in which external assistance could be strengthened. The overall provision of external development assistance is not at present very elastic or flexible in response to shocks.

4.   This paper explores whether the Fund should better target its policy advice and financial instruments to help its members reduce their vulnerability to shocks. The paper is designed to be read in conjunction with the issues note on *The Role of the Fund in Low-Income Member Countries over the Medium Term*. The considerations presented here are preliminary. They will be pursued further in conjunction with follow-up to the above paper as regards modalities of assistance to low-income members and issues in PRGF access and financing; in work on program design; and in the upcoming review of the Compensatory Financing Facility.

5.   An exogenous shock is defined here as a sudden event beyond the control of the authorities that has a significant negative impact on the economy. Such shocks can include terms-of-trade shocks, natural disasters, shocks to the supply of goods for domestic

consumption or export, shocks to demand for exports, shocks to the availability of finance, and shocks caused by conflict and civil unrest. While many shocks are unpredictable, some countries are highly susceptible to the recurrence of particular types of shocks. Shocks are to be distinguished from other exogenous developments that may harm low-income countries, for example, secular declines in commodity prices, changes in trade preferences,[1] or HIV/AIDS; since the effect of these is not sudden, they are beyond the scope of this paper. Whether a shock is reversible or not is of considerable importance, since the correct policy response may depend on this factor. Nevertheless, it can be difficult to tell at the outset how permanent a shock will be.

6.   This paper focuses on two particular forms of exogenous shocks, shocks to export prices (as an example of terms-of-trade shocks) and natural disasters, since these are the most prevalent types of shocks for low-income countries. Shocks to import prices have similar effects to those of export prices, apart from their distributional aspects, while shocks to export volumes are similar analytically to natural disasters. The paper does not analyze other types of exogenous shocks (e.g., spillover effects of conflict in other countries and fallout from regional crises) from an historical perspective, although many of the issues are similar. The paper does not cover shocks that result from the variability of aid flows or from domestic financial crises because of the difficulty in determining whether such shocks result from endogenous or exogenous factors.[2] Assistance to post-conflict countries has been dealt with in other papers.

7.   Section II of this paper looks at the impact exogenous shocks can have on various economic variables, and shows that low-income countries are more vulnerable and less resilient to shocks than other developing countries. Section III considers the measures that countries can take to reduce their vulnerability to shocks, and notes that many of these are unavailable to or too costly for the poorest countries. Section IV looks at the analytical arguments for dampening the effects of shocks, and at issues in determining the appropriate mix of financing and adjustment. However, the paper does not discuss the specific policies that a country might adopt in order to prepare for and respond to shocks. Section V describes the existing mechanisms for external financing targeted to shocks and the difficulties that have been encountered with some of them. Section VI argues that there should be more systematic focus on the effects of exogenous shocks in the Fund's policy advice and catalytic role, and explores how Fund concessional financial assistance might be better targeted to helping member countries deal with the effects of shocks. The paper concludes with a set of issues for discussion.

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[1] Changes in trade preferences or quotas are generally more gradual, predictable, and permanent ("Four Notes on Issues Raised by Developing Countries," IMF, EB/CWTO/03/2, 1/27/03).

[2] Nevertheless, the volatility of aid flows can have serious consequences for countries. See "Aid and Tradable Goods in Aid-Dependent Countries," Arellano and others (2002).

II. IMPACT OF EXOGENOUS SHOCKS

A. Incidence of Exogenous Shocks

8.   Developing countries are more prone to suffer from serious exogenous shocks than are industrial countries, and the incidence of such shocks is particularly high for the low-income developing countries. Although in value terms the economic damage from **natural disasters** tends to be largest in developed countries since they have more valuable capital to lose, most disasters occur in developing countries, with damage relative to GDP that is far higher.[3] For example, between 1990 and 1998, 94 percent of the world's major disasters and 97 percent of disaster-related deaths were in developing countries.[4] Average annual damage and the number of people affected by disasters in developing countries have also been rising (Figure 1).[5]

9.   **Commodity prices** and their fluctuations are also of greater importance to developing than to industrial countries. There has been a secular downward trend for commodity prices for a considerable period of time, and particularly since the 1970s, leading to deteriorating terms of trade for commodity exporters.[6] In addition, short-term variability in commodity prices can be substantial (Table 1).[7] Staff estimates show that for developing

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[3] "Natural Disasters and Sustainable Development: Understanding the Links Between Development, Environment and Natural Disasters," United Nations—ISDR (2001).

[4] "Dealing with Increased Risk of Natural Disasters: Challenges and Options," Freeman and others, 2003, IMF Working Paper (forthcoming).

[5] In part, this reflects the increased frequency of large natural disasters in developing countries, which more than doubled between 1977-81 and 1997-2001 (see Figure 1). Damages from natural disasters may further increase in the future because the intensity and frequency of extreme weather events is predicted to increase (ibid).

[6] From the 1960s to the 1990s, the Fund's non-fuel commodity price index declined in real terms by 25-40 percent, depending on whether it is measured from peak to peak or trough to trough. For a more detailed discussion of commodity price trends, see "The Long-Run Behavior of Commodity Prices: Small Trends and Big Volatility," Cashin and McDermott (2002), *IMF Staff Papers, Vol 49, No. 2*. In "*The Elusive Quest for Growth*" (2001), Easterly reports a small downward trend in poor countries' terms of trade. However, he also argues that there is no downward trend in commodity prices relative to the prices of manufactured goods if the improvement in the quality of manufactured goods is taken into account. Empirical evidence for the latter view is, however, limited, as the quality-adjusted prices of manufactured goods are difficult to calculate.

[7] Cashin and McDermott (2002) conclude that the variability is relatively large compared to the downward trend in real commodity prices.

countries between 1981 and 2000, negative price shocks led on average to a direct loss of income of 3.5 percent of GDP.[8]

10.   **Low-income countries** have a higher incidence of shocks compared to other developing countries and tend to suffer larger damages when shocks occur. Since the late 1970s, there have been significant increases in the frequency and damages from *natural disasters* for all developing countries, reflecting both climatic changes and increased concentration of these countries' populations in vulnerable areas.[9] However, disasters have been more frequent in low-income than in other developing countries (Table 2). The average low-income country now has a large disaster every 2½ years while other developing countries have a large disaster on average every 4½ years (Table 3).[10] The average annual damage relative to GDP is also much larger in low-income countries than in most other developing countries. The exception is small developing states, most of which are islands particularly susceptible to weather-related shocks.[11] However, the average annual damage relative to GDP due to disasters in small states has declined sharply since the late 1970s, possibly reflecting more effective action to mitigate disasters.

11.   Evidence shows that **low-income countries** are also more vulnerable to *commodity price shocks* than are other developing countries (Table 4), and that such shocks occur more frequently in low-income countries. For example, for the 1992-2001 period, low-income countries experienced this type of shock on average every 3.3 years, while other developing countries experienced this type of shock on average every 4.4 years.[12] Table 4 also shows that the average size of shock, measured as a decline in real export prices or terms of trade, is generally larger in low-income countries than in other developing countries.

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[8] The direct income loss is estimated as the price change times the volume of exports prior to the shock, a definition similar to that used by Collier and Dehn (2001), "Aid, Shocks, and Growth" (World Bank Working Paper 2688). Collier and Dehn, however, reported a much higher average direct income loss from negative price shocks (around 6.8 percent of GDP) because they used a higher threshold for price shocks.

[9] Developing countries are defined here as those countries with gross national income (GNI) per capita of less than US$9,209 in 2001. Low-income countries are defined here as PRGF-eligible countries, other than small developing states (see below).

[10] For the purposes of this paper, a disaster is classified as large if it caused direct damage of at least one half of 1 percent of GDP or affected at least one half of 1 percent of a country's population.

[11] Small developing states are defined as developing countries with fewer than 1.5 million inhabitants.

[12] The 2000 *Global Economic Prospects* report from the World Bank concluded that the terms-of-trade volatility in commodity-exporting countries such as Sub-Saharan Africa during 1961-97 was about twice as high as in countries that mainly export manufactured goods.

12.   Structural weaknesses also contribute to low-income countries' vulnerability to shocks. These countries mainly export primary commodities and rely heavily on climate-dependent sectors such as agriculture and tourism for creating output and employment.[13] Vulnerability in many cases has been magnified over time by policy choices that have failed to encourage diversification of output and exports. Low-income countries also have relatively more people living in marginal areas that are particularly vulnerable in the event of natural disasters. Recently, some attempts have been made to combine various measures of structural weaknesses of developing countries into a single vulnerability index. Figure 2 looks at three such indices of economic vulnerability and shows how vulnerability correlates with income level.[14] While these indexes vary in their specifics, they show a very similar picture of the greater vulnerability of low-income countries and small developing states.

13.   While natural disasters and commodity price shocks are the most common types of exogenous shocks experienced by developing countries, there are **other types of exogenous shocks** that can also be very costly. One of these is conflicts in neighboring countries that create various spillover effects that can include refugees, loss in export markets, increased transportation costs, decreased remittances, and even conflict contagion and increased defense expenditures. Much of the spillover effects of conflicts in recent years has been in Africa, with low-income countries particularly affected, although the conflict in the Balkans in the 1990s and related UN sanctions also had significant spillover effects. For example, the sociopolitical crisis in Cote d'Ivoire affected neighboring countries through decreased trade and transfers, increased transportation costs and higher security spending.[15] Economic crisis in large countries can also have various spillover effects on other countries. For example, the Russian financial crisis of 1998 had a significant adverse impact on neighboring countries, affecting their exports, private transfers, and economic growth.[16] In four of these countries

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[13] For example, 62 percent of the total exports of the least developed countries were unprocessed primary commodities in the late 1990s compared to 66 percent in the early 1980s (UNCTAD, *Report on the Least Developed Countries*, 2002).

[14] These three composite indices of vulnerability are the United Nations' Economic Vulnerability Index—*Report of the Expert Group Meeting on Economic Vulnerability,* UN (2000)*;* the Commonwealth Secretariat's Composite Vulnerability Index—*Commonwealth Vulnerability Index for Developing Countries: The Position of Small States*, Atkins and others (2000), Economic Paper, No. 40; and the Caribbean Development Bank's Vulnerability Index—*An Index of Economic Vulnerability for Developing Countries*, Crowards, T. (1999), Caribbean Development Bank, Barbados.

[15] For example, see "*Regional Impact of Côte d'Ivoire's 1999-2000 Sociopolitical Crisis: An Assessment,*" Dore and others.(2003), IMF Working Paper 03/85.

[16] "Armenia, Georgia, Kyrgyz Republic, Moldova, and Tajikistan: External Debt and Fiscal Sustainability," IMF and the World Bank, 2001.

(Armenia, Georgia, Kyrgyz Republic, and Tajikistan), on-going PRGF arrangements were augmented to help manage the spillover effects of the crisis. While this paper does not analyze the impacts of these types of exogenous shocks, they raise similar issues in terms of policy and financing.

B. Economic Impact of Exogenous Shocks

14.   Negative exogenous shocks have both direct and indirect economic effects. For natural disasters, the direct impact is usually through damage to the stocks of physical and human capital and in some cases to output, while the direct impact of terms-of-trade shocks is on income of both the private and public sectors. Shocks also have indirect effects that reverberate throughout the economy and can affect output, investment, macroeconomic balances, debt, and poverty. The path and the size of the impact will depend on the nature of the shock, its size and duration, and the structure of the economy, including the degree of diversification. The effects of a shock will also depend on measures taken *ex ante* to mitigate any impact, the government's policy response to the shock, and the amount and form of external assistance.

Impact on Economic Growth and Poverty

15.   Exogenous shocks can have significant adverse effects on growth, a finding that is supported by both country-specific studies and cross-country comparative analyses. *Natural disasters* can affect growth in a variety of ways. They affect output and incomes, and they can destroy physical capital, which unless replaced, will have longer term effects on growth beyond the immediate effects on income. Evidence from sixteen Latin America and Caribbean countries suggests that 1 percentage point of GDP in direct damage from natural disasters can reduce GDP growth by half a percentage point in the same year.[17] Similarly, an analysis of six African countries showed that the 1991-92 drought contracted real income by amounts ranging from 2 percent in South Africa (a relatively diverse economy) to over 8 percent in Malawi (an economy with a large agriculture sector).[18] In case studies prepared for this paper, the impact of natural disasters on GDP growth varied from a 9 percent contraction in GDP after a major drought in Zimbabwe to a less than 1 percent dip in the growth rate in Cambodia following a combination of a drought and flood (Box 1 and Annex I).

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[17] Auffret, Philippe (2003), "High Consumption Volatility: the Impact of Natural Disasters," World Bank Working Paper 2962. A strong negative impact on growth is also reported by Crowards (2000), "Comparative Vulnerability to Natural Disasters in the Caribbean," CDB Working Paper 1/00.

[18] "The Impact of Drought on Sub-Saharan African Economies," Benson and Clay (1998), World Bank Technical Paper 401.

Box 1. Impacts of Exogenous Shocks: Evidence from Five Case Studies

Five case studies were prepared as background for this paper: Cambodia (drought/flood, 1994), Honduras (hurricane, 1998), Zimbabwe (drought, 1992), Mali (export price shock, 1992-93), and Uganda (export price shock, 1987-92). These were chosen to illustrate variation in type, size, and region of the shocks, and also in the nature of the government's response. (See Annex I for more details.)

Economic Growth and Poverty

Exogenous shocks adversely affected economic **growth** in each of the five case studies. In three countries (Honduras, Mali, and Zimbabwe), real GDP contracted in the year of shock or the year after (Annex Table 1). The adverse impact on growth was particularly large in Zimbabwe, where real GDP contracted by 8½ percent, given the country's heavy reliance on agriculture, in which production dropped by 23 percent. In Cambodia, growth remained positive, but was lower than had been expected (Annex Figure 1). For Mali and Uganda, a counterfactual analysis indicates that foregone output over the shock period averaged 3.5 percent of GDP per year for Uganda and 1.8 percent of GDP per year for Mali. The implied cumulative loss was particularly large for Uganda where the low export prices lasted six years.

The limited data available on the case studies suggest shocks contribute to **poverty** unless strong economic growth or some well-targeted safety net can offset the impact of the shocks. In the two large disaster cases (Honduras and Zimbabwe), both headcount poverty and non-income indicators of poverty worsened despite the authorities' efforts to increase social spending (in Honduras) or increase food transfers (in Zimbabwe). It appears that food transfers in Zimbabwe covered only 15 to 25 percent of household food needs at the height of the shortages and were not well targeted. No conclusive rise in poverty was found in Uganda, where the shock occurred against the background of rapid GDP growth following the end of civil conflict. Also, in Uganda, the coffee marketing board supported producer prices for coffee, and the successive large devaluations of the currency improved competitiveness and stimulated production of coffee. In Mali, there is evidence that the real income of cotton farmers declined substantially as a result of the shock. Although the cotton marketing board maintained the minimum guaranteed price for farmers during the shock years, it faced large losses and was unable to pay out the premiums given to producers in normal years. (Poverty data for Cambodia are insufficient to draw conclusions.)

Macroeconomic Balances

Fiscal Impact: The case studies show that both terms-of-trade shocks and natural disasters can have a large adverse impact on **government revenue** (Annex Figure 2). For example, the drought in Zimbabwe was one of the primary factors behind the 2.4 percent decline in the ratio of government revenues to GDP over the subsequent two years, and in Uganda the loss of revenues from the coffee sector contributed to persistent shortfalls in revenue compared to what was budgeted during 1987-90. In addition, **government expenditure** was higher than programmed in the period after the disaster in four of the five cases (Annex Figure 3). The exception was Mali, where a large fiscal deficit before the shock (12 percent of GDP in 199) left little room for fiscal policy to maneuver. In Zimbabwe, drought-related emergency outlays (including distribution of maize at a highly subsidized price) increased government expenditures relative to GDP in the drought year, but by less than had been previously programmed, and expenditures declined the following year. Consequently, the **fiscal deficit** increased in each of the five cases, both in absolute terms and relative to program (Annex Figure 4). Countries whose fiscal deficits were financed mostly with grants and that had strong donor support before the shock were able to adjust and recover more quickly. Official grants increased significantly above program levels in Cambodia and Honduras, and moderately in Mali and Uganda, but were similar to the programmed level in Zimbabwe in the period immediately after the drought. However, in all cases except Cambodia, additional government borrowing was necessary and the government's external debt increased relative to GDP (Annex Table 1).

Box 1 (concluded). Impacts of Exogenous Shocks: Evidence from Five Case Studies

Balance of Payments Impact: In all of the five cases, the **trade balance** worsened in the period after the shock, and in some cases it remained weak a few years thereafter (Annex Figure 5). Exports declined in four of the cases, either because of lower export prices (Mali, Uganda) or lower export volumes in the natural disaster cases (Honduras and Zimbabwe). In all three of the natural disaster cases, the shocks also resulted in higher imports to compensate for lost production and for reconstruction, dampening the impact on the trade and current account. In most cases, the deterioration of the **current account** was somewhat less pronounced, because of mitigating official grants or private remittances (Annex Figure 6), but nevertheless deteriorated in all cases (Annex Table 1). The **use of foreign reserves** was generally limited. Zimbabwe and Uganda were the only countries that drew down the absolute level of their reserves and then only by a small amount (Annex Figure 7). The increased current account deficits were instead financed mainly with **higher borrowing**. In Mali, Uganda, and Zimbabwe, external borrowing increased significantly, and in Honduras it rose moderately. Zimbabwe's increased borrowing included significant amounts of non-concessional loans. In each of these three cases, the result was a sharp rise in external debt to GDP. Four of the countries received **external debt relief** in the 2-3 years following the shock, the exception being Cambodia.

Fund Assistance

In all cases, a Fund-supported program was either in place at the time of shock or was approved shortly after the shock. In Honduras, discussions on a PRGF arrangement were well advanced when the hurricane hit. Emergency natural disaster assistance was approved two months later to allow time to revise the PRGF-supported program, which was approved about five months after the shock. In the case of the prolonged export price shock in Uganda, the Fund provided not only compensatory financing immediately after the beginning of the shock (through the CFF in 1987) but also provided substantial assistance under the ESAF arrangement approved in 1989. In the remaining three cases (Cambodia, Mali and Zimbabwe), an ESAF, PRGF or EFF arrangement was approved by the Fund in the first year of shock.

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16.   Negative *terms-of-trade (including export price) shocks* directly reduce real income and the resources that are available for investment and consumption. The evidence on the adverse effects of terms-of-trade shocks on economic growth is also strong.[19] Of particular interest is the finding that the secondary effects of negative shocks in terms-of-trade, measured as the impact of shocks on the rate of growth of GDP, can be very large. For example, Collier and Dehn show that, for a sample of cases where the direct income loss from negative export price shocks averaged 6.8 percent of GDP in the year of the shock, the loss of income through the reduced growth channel over a four-year period amounted to about 14 percent of initial output. This secondary impact is, moreover, asymmetric, because positive price shocks were not found to increase the rate of growth significantly.

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[19] For example, "Aid, Shocks, and Growth," Collier and Dehn (2001), World Bank Working Paper 2688; "Aid and Performance: A Reassessment," Chauvet and Guillaumont (2001), *Journal of Development Studies*, Vol. 37; "Commodity Price Volatility, Vulnerability and Development," Combes and Guillaumont (2002), *Development Policy Review*, Vol. 20(1).

17.   Collier and Dehn do not focus on the effect of prolonged shocks, but case studies by staff on Uganda and Mali examine such multi-year shocks. Because the case studies deal with a single country rather than a cross-section, the methodology differs from Collier and Dehn. These case studies demonstrate that the cumulative direct income loss of a prolonged shock can be very large (Annex I).[20]

18.   Exogenous shocks can affect poverty through the destruction of assets of the poor or near poor and through direct income losses, lower overall growth in the economy, higher inflation, and lower government social spending. Research shows that normally these shocks increase the incidence of poverty (Annex II). Shocks tend to hurt the poor disproportionately because they generally have limited labor skills, they rely heavily on public social services, and their consumption basket is heavily weighted toward food. Moreover, the poor have limited savings to draw on in response to a shock and limited access to credit.

Impact on Macroeconomic Balances and Debt

19.   Both terms-of-trade shocks and natural disasters can also have a significant impact on macroeconomic (fiscal and external) balances and debt. Government revenues can be directly affected by terms of trade shocks if the relevant export products are a significant source of tax revenue, as was the case with the export price shocks in Uganda and Mali (see Box 1). Natural disasters can also affect the government's ability to collect revenue. In addition, government expenditures, particularly social expenditures, frequently expand following a shock. While it is possible for governments to take offsetting measures to adjust to reduced revenues or higher expenditures, these have to be carefully designed so as not to exacerbate income losses for those hardest hit by the shock, or to constrain capital spending when reconstruction is needed, or to divert resources from investments that have longer term pay offs in raising economic performance. In most cases, the fiscal deficit is likely to rise, with additional financing needed. A country's flexibility in responding to a shock will depend in part on its initial fiscal position, how the deficit is financed, and the sustainability of its debt.

20.   In most cases, exogenous shocks worsen the external balance of the affected countries. The trade balance deteriorates in the period after the shock, and in some cases it may remain weak a few years thereafter. In most cases, lower export earnings are the major source of deterioration in trade balance, but in some natural disaster cases, higher imports of food and reconstruction materials can also contribute to the trade deficit.[21] However, the

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[20] Cumulative loss over a period is simply the sum of the direct income loss in each year of the shock.

[21] Most of the large natural disasters in Latin America and the Caribbean during 1974-1998 led to larger current account deficits. See "A Matter of Development: How to Reduce Vulnerability in the Face of Natural Disasters," ECLAC (2000).

impact on the current account is mitigated to the extent that inflows of official grants and private remittances rise in response to the shock.

21.   Exogenous shocks and the associated policy responses have contributed to the accumulation of unsustainable external debt in many developing countries, through the effects on exports and growth and because of the portion of donor financing provided in the form of loans rather than grants. Evidence from ten low-income countries indicates that external factors such as terms-of-trade shocks and adverse weather conditions played an important role in creating debt problems.[22] An analysis of debt dynamics shows that an 11 percent decline in export earnings in 1999/00 added 20 percentage points to Uganda's NPV of debt-to-exports ratio that year.[23] But evidence also shows that a strong policy response by governments to exogenous shocks can help avoid a lasting adverse impact of these shocks on the debt burden.[24]

III.   POLICY ACTIONS TO REDUCE VULNERABILITY TO SHOCKS

22.   The best way to deal with shocks is to reduce the vulnerability of the economy to their impact through policy reforms and in the careful design of policies to mitigate their impact when they occur. (Annex III describes a number of *ex ante* mechanisms.) Strengthening of institutions and building up policy-making capacity will be important to this process. Policies to reduce exposure to natural disasters could include removing population and physical assets from disaster-prone areas, the construction of dams and reservoirs to manage flood and drought-risk, and better design and implementation of building codes to reduce the impact of an earthquake or hurricane. Such mitigating measures are supported in developing countries by IFIs including the World Bank, the IDB and the CDB (Annex IV). Vulnerability to export price shocks can be reduced by diversification of the economy. This is another area in which the World Bank plays an important advisory role. Of course, protection from natural disasters is generally expensive, and diversification often requires considerable time.

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[22] "External Debt Histories of Ten Low-Income Developing Countries - Lessons from Their Experience," Brooks and others (1998), IMF Working Paper 98/72.

[23] See "Debt Sustainability in Low-income Countries: Toward a Forward-looking Strategy," IMF, (2003).

[24] Brooks and others (1998) concluded that a good record of policy implementation in Ghana and to a lesser extent in Uganda, helped keep the external debt at manageable levels, in contrast to the experience in Cameroon, Niger and Zambia.

23.   Another approach to reducing vulnerability is insurance.[25] Commercial insurance may be available against natural disasters or crop failures, or if not available, the government might be able to promote the creation of such an insurance market. Commodity price fluctuations can be mitigated by long-term sales contracts or the use of forward markets to the extent that such markets exist.

24.   Countries can also rely on self-insurance in the form of accumulating savings that can be drawn down in the event of a crisis. Such savings can be private savings, an accumulation of official foreign exchange or food reserves, or schemes such as price stabilization funds, marketing boards, or buffer stocks. Finally, a country may have the capacity to borrow to help meet the costs of a shock.

25.   However, for various reasons, insurance for these purposes is unlikely to be cheap, and markets may not have developed for many of the products that would be of most use to developing countries for managing risk. For example, weak financial markets in many developing countries adversely affect the cost and availability of products for risk management, and make it more difficult for these countries to access international insurance markets. Stabilization funds and buffer stocks have proved difficult to manage,[26] and pressures on the authorities may be such that it is difficult to save the surpluses in good years to use in the bad. Social safety nets are typically inadequate, and the poorest segments of the population may be living so close to the subsistence level that they are unable to save to tide themselves over a shock. Low-income countries are in a significantly more difficult position than other developing countries in taking these kinds of measures.[27]

26.   Nevertheless, countries need to compare the cost of a shock with the cost of insurance, particularly for those shocks that tend to recur, such as those related to weather conditions or commodity price cycles. Since the poor are especially prone to suffer from shocks, explicit or implicit insurance may be considered an important form of pro-poor expenditure. At the same time, the international community should consider how far it can supplement these national efforts, and how it can protect these countries' active development or poverty reduction strategies. For example, donors might play a role by

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[25] In developed countries, market-based mechanisms for managing the risk of a shock include a variety of insurance services (e.g., catastrophe and weather insurance) and a range of capital market instruments (e.g., future and option contracts, catastrophe bonds, and weather derivatives).

[26] "Dampening Price Shocks," in *Natural Resources and Violent Conflict: Options and Actions*, Guillaumont and Jeanneney (2003).

[27] During the 1985-1999 period, less than 1 percent of the total losses from natural disasters were insured in low-income countries. See "Catastrophes and Development: Integrating Natural Catastrophes into Development Planning," Freeman.and others (2002), World Bank DMF Paper 1. Also see Freeman and others (2003).

providing subsidies to low-income countries to use market-based mechanisms for risk management.[28]

IV. FINANCING AND ADJUSTMENT IN RESPONSE TO A SHOCK

27.   When a country is hit by a negative shock, it must decide the appropriate mix of adjustment to the impact of the shock and the appropriate use of external or domestic financing. Many factors influence the strategy, including the nature of the shock, the country's initial fiscal, balance of payments and debt positions, the exchange rate regime, the impact of the shock on poverty, the rate of return on expenditures for disaster relief and reconstruction, and the availability and the terms on which financing is available. This section looks at some of the issues that are relevant for determining the appropriate mixture of adjustment and financing in response to shocks. However, it does not discuss the range of policy choices a government might deploy.

28.   The financing-adjustment mix will depend in part on the nature of the shock. Is the shock a temporary one, or is it likely to indicate a permanent change in the conditions facing the country? A country must ultimately adjust to a permanent shock. The permanence of some shocks may be clear: for example, if a technological development has shifted the demand schedule for a commodity, or if a country loses access to a major market. For other shocks, the permanence is less obvious.

29.   Even if a price shock is temporary, there can be considerable uncertainty about how long it will take to be reversed. For example, over-optimism concerning the pace of recovery of commodity prices has been a factor behind the excessive incurrence of debt by poor countries. The more durable the shock or the lower the probability of a rapid reversal, the greater the need for adjustment. For many commodities, the price shocks can be shown to persist so long that the cost of a consumption-smoothing scheme would outweigh the gains.[29] Similarly, the costs of borrowing to tide the country over until favorable conditions return can rapidly encumber the country.

30.   Another aspect of a temporary shock that is relevant to the financing-adjustment decision is the nature of the recovery. If the negative shock can be expected to be followed

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[28] The International Task Force (ITF) on Commodity Risk Management, a World Bank-led partnership of private and public sector institutions, is exploring market-based approaches for assisting producers in developing countries to better manage their vulnerability to commodity price fluctuations. One of the proposals is to provide subsidized insurance against price shocks. See "Dealing with Commodity Price Volatility in Developing Countries: A Proposal for Market-Based Approach," ITF (1999).

[29] "How Persistent are Shocks to World Commodity Prices?," Cashin and others (2000), *IMF Staff Papers, Vol. 47, No.2*. The paper examines world prices for 44 commodities from 1957 to 1998. For 35 of these commodities, it concludes that price shocks were of finite duration. However, for 17 of these 35 commodities, the shocks were very persistent.

by a positive shock, then it makes sense to finance the bad years out of the savings from the good years, or to borrow in the poor years in anticipation of repayment out of the income from the good years. Such reversals may occur in export prices. Similarly, poor harvests associated with poor weather conditions can be expected to be matched with good harvests when climatic conditions are better than usual. This approach requires two things: firstly, it must be possible to identify clearly the fluctuations around the trend or the norm; secondly, if the government is to spend extra resources on those negatively affected in the bad years, it must be able to raise resources from those benefiting in the good years.

31.   Even in the case of a permanent shock or a negative shock that is not followed by a positive shock, adjustment need not be instantaneous, and financing to smooth the adjustment path to the new equilibrium may be warranted. In the event of a shock, the return on certain expenditures may be very high. If the direct impact of the shock was the destruction of physical capital, replacing the lost capital stock is likely to have a high return. There may also be a high rate of return in spending to maintain the incomes of the poor. Research shows that fluctuations in income growth can have an asymmetric impact on poverty; that is, a one percentage point contraction in *per capita* income increases poverty more than the equivalent increase in income reduces poverty.[30] Therefore, consumption smoothing, particularly for the poor, can generate large welfare gains. Higher return on certain expenditures and welfare gains from consumption smoothing means that aid can be particularly effective in the aftermath of a shock.[31] This implies that, even with the assumption that the total foreign assistance available to a country is fixed over time, it would make sense to reallocate some of that assistance to help offset the effects of a shock. The speed of assistance is also important, in order to reduce the initial impact on the income of the poor so that they do not have to take irreversible steps, such as selling their livestock, to maintain consumption.

32.   The more flexible the government's tax and expenditure patterns, the more able it will be to redirect expenditures in response to a shock away from existing programs towards the support of those most affected and towards recovery expenditures, or to raise taxes to finance disaster relief itself. In the absence of additional external financing on suitable terms, expenditure switching in response to a shock is desirable if the return on the post-shock expenditure (e.g., the preservation of human capital through relief expenditure, or the repair of infrastructure) is greater than the return to the alternative expenditure. However, many developing countries tend to have rather rigid expenditure and taxation systems, and the tendency of fiscal spending in general and pro-poor spending in particular to be pro-

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[30] "Global Economic Prospects and the Developing Countries," Chapter 2, World Bank, 2000.

[31] "Making Aid Smart: Institutional Incentives facing Donor Organizations and their Implications for Aid Effectiveness," Collier (2002).

cyclical has been documented.[32] Similarly, it may be inadvisable to switch resources out of development projects that are already underway and have longer term payoffs. There is, thus, a case for countries affected by shocks to use external resources to finance high-return expenditure in the post-shock environment while avoiding excessive interruption of existing programs, and a case for the international community to support such efforts.[33]

33.   Another factor affecting the choice between financing and adjustment is the availability of external assistance and its terms. If financing is not available, there will be no choice but to adjust. But even if it is available, it may be on terms the country cannot afford. Borrowing will incur interest and will have to be repaid. However, as discussed, only certain types of negative shock will be associated with subsequent periods of good fortune, during which the debt incurred can be repaid with relative ease. For many shocks, the expenditure associated with the disaster and the recovery only serves to restore economic conditions to those prevailing before the shock. Over this period, the country will not have generated additional resources to service the additional debt it has incurred. If its capacity to service debt was constrained before the shock, its debt situation will now be worse. In these circumstances, grant financing may be the most appropriate assistance in response to shocks for the poorest and most highly debt-constrained countries.[34] Some of the sources of external financing for shocks are discussed in the next section of the paper.

V. AVAILABILITY OF EXTERNAL ASSISTANCE

A. Existing Sources of External Financing

34.   External assistance to countries affected by exogenous shocks is provided through a variety of channels and forms. The diversity of programs and the variation in concepts in the statistics produced by various agencies make it difficult to quantify the total amount of assistance available.[35] The following describes some of the larger external assistance programs.

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[32] "Poverty and Policy in Latin America and the Caribbean," Wodon and others (2000), World Bank Technical Paper 467.

[33] A number of recent studies on export price and natural disaster shocks conclude that additional foreign assistance is important for mitigating secondary impacts on growth and hastening recovery. For example, Collier and Dehn (2001) concluded that additional foreign aid can compensate the income loss from export price shocks and, thus, help prevent the secondary impact on growth. See also Chauvet and Guillaumont (2001), Freeman and others (2002), and Benson and Clay (2003) for more discussion on effectiveness of external assistance in post-shock situations.

[34] Assuming that the rate of return on such use of the resources was higher than on other uses.

[35] Bilateral aid may be provided directly, through multilateral organizations, or through NGOs, and may be offered as debt relief, grants, or loans. Lending from multilateral organizations tends to be

Financing for Natural Disasters and Other Emergencies

35.   Financial assistance for natural disasters can generally be categorized as either humanitarian, or reconstruction and rehabilitation assistance. Official financial assistance for humanitarian purposes following emergencies was US$5.5-6.0 billion annually in 1999-2001 (in 2000 prices) (Table 5). However, humanitarian assistance as a share of official development assistance (ODA) has increased from 4 percent of the total in 1990 to about 11 percent in 2000, with the same upward trend when refugee assistance is excluded.[36] The shift from aid for development to emergency response has been sharp for some agencies (e.g., the World Food Programme (WFP)).[37] A majority of humanitarian assistance has been used for complex emergencies (i.e., crises where there is a breakdown in authority resulting from internal or external conflict), but data from the UN's Office for Coordination of Humanitarian Assistance (OCHA) suggest that the relative share of assistance for natural disasters was much higher in the second half of the 1990s than in earlier years (see Table 5). Annex IV provides further detail on humanitarian aid programs.

36.   Much of the assistance for natural disasters has been concentrated on a few large and highly visible events. Natural disaster assistance coordinated by OCHA through its "appeal" system shows a high concentration, with the top three disasters accounting on average for almost two-thirds of the total assistance in each year (Table 6). Donors tend to respond to an appeal based on historical relationships, visibility and sustained media coverage of disasters, and foreign policy objectives.[38] This raises a question about whether smaller disasters,

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more directed at development, for specific projects or programs with broader purposes. In some cases, assistance for countries hit by exogenous shocks is classified together with assistance for other purposes. For example, the World Bank's emergency recovery loans (ERL) are targeted to recovery from natural disasters as well as for post-conflict situations.

[36] A significant part of the humanitarian assistance was allocated to aid for refugees, particularly for refugees in the donor countries. Excluding the aid for refugees from the total humanitarian assistance is likely to give a better picture of the amount provided for natural disasters. However, the remaining humanitarian assistance still contains spending for both natural disasters and complex emergencies, which are generally defined as crises where there is a breakdown in authority resulting from internal or external conflict.

[37] The WFP spent about 32 percent of its food aid for emergency relief in the 1988 -90 period but used over 72 percent of its aid for emergencies in 1996-98 period, *Global Humanitarian Assistance 2000,* OCHA (2000).

[38] "An External Review of the CAP," Porter (2002). Porter also found that emergency assistance for complex emergencies was also concentrated on a few highly visible conflicts. OCHA data shows that two conflicts (Former Yugoslavia and Great Lakes) accounted for over 60 percent of the total humanitarian assistance for complex emergencies during 1994 -2001.

particularly those that do not get significant media coverage, are receiving an appropriate share of overall assistance

37.   Multilateral financial institutions are also paying more attention to natural disasters. Many such institutions have designed special programs and facilities in order to provide such assistance quickly, including through new programs, augmenting existing programs, or reprogramming planned lending, often with more concessionality (Table 7 and Annex IV). Much of multilateral assistance for emergency purposes—including for natural disasters—is targeted to reconstruction and rehabilitation activities.

Assistance for commodity price shocks

38.   Financial assistance in the event of a terms-of-trade shock is harder to identify than natural disaster assistance, because it is frequently provided through general program assistance rather than targeted support. There have been two major compensatory financing programs for terms-of-trade shocks: the European Commission's Stabex and Sysmin, and the Fund's Compensatory Financing Facility (CFF).[39] The EC programs covered agricultural commodity exports and selected minerals exports (see Annex IV for details). A transfer to the affected country was triggered by a decrease in the export earnings from eligible products as compared to historical averages. From 1975 to 2000, about €6.1 billion was disbursed under these schemes. The programs were targeted to low-income countries and were highly concessional, moving to an all-grant basis in the 1990s (Table 8). The Fund's CFF provides financing to members experiencing balance of payments difficulties resulting from a temporary shortfall in export earnings or an excess in cereal import costs. A total of SDR 25 billion has been disbursed in response to 344 requests for assistance since 1963, but the lack of concessionality has limited its attractiveness for low-income countries. The operation of this facility is described further below.

B. Strengthening Existing External Financing

39.   Natural disasters appear to attract more external financing than commodity price shocks.[40] This may stem in part from the greater visibility of natural disasters, while commodity price shocks are mostly "silent crises." For the silent and slow-onset crises, such as terms-of-trade shocks and droughts, work on aid effectiveness indicates that prompter and more focused attention to the affected countries' financing needs would be desirable. Even for natural disasters, however, a better alignment of allocation with needs would seem useful.

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[39] In 2002, the EC started a new compensatory financing program (FLEX).

[40] Collier and Dehn (2001) show evidence that aid allocations are not well targeted to meet commodity price shocks.

40.   ***Delays in response***: Although the speed of response of international agencies and bilateral donors has improved considerably since the early 1980s, as many have developed targeted facilities or programs (Annex IV), the disbursement of funds still takes a long time. Improvements have resulted from better early warning systems and a higher level of preparedness on part of aid agencies. Delays are due to lengthy application processing because of inadequate information on the impact of disasters and reconstruction needs. For terms-of-trade shocks, the period between the shock and the provision of compensatory financing has been even longer than for natural disasters. This was especially true under the EC schemes, because of the complex analysis required to justify payments, which resulted in disbursements being so delayed as to be pro-cyclical.[41] However, the EC has started a more flexible compensatory financing program (FLEX) that provides general budget support instead of sector-specific assistance, which is likely to reduce delays in disbursement of aid. Delays in response also partly reflect the more gradual onset of terms-of-trade shocks and the difficulty of determining *ex ante* how long they will last.

41.   ***Moral hazard considerations and reducing vulnerability:*** The availability of concessional external finance may reduce incentives for countries to take preventative measures to reduce their vulnerability to shocks.[42] For example, in many countries, governments guarantee a certain minimum price for the primary export commodity and, thus, perform an essential "safety-net" role. However, it may be argued that concessional external financing that allows the governments to continue these activities indefinitely is counterproductive in the face of a prolonged decline in world prices of primary commodities. Such compensatory financing in the past might have distorted private incentives and increased future vulnerability by subsidizing the affected sectors. Therefore, it is important that external assistance for shocks be combined with action by the recipient countries to undertake an appropriate degree of adjustment to the shocks and to undertake measures to reduce their vulnerability to future shocks. Conditionality can sometimes address potential moral hazard problems and adjustment issues. But conditionality needs to be designed carefully: the earlier EC schemes required recipients to reinvest the assistance in the affected sector, thus aggravating the problem of dependence on volatile commodity exports.

42.   ***Debt sustainability considerations****:* Financial assistance for countries hit by shocks needs to take account of their external debt situation. For some very heavily indebted countries, even highly concessional loans may not make sense and grants may be the only option. Bilateral donors and many multilateral creditors have made significant progress toward making their assistance targeted to shocks concessional for low-income countries. For example, the World Bank's recent Country Assistance Strategy for Niger gave

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[41] "Stabex Versus IMF Compensatory Financing: Impact on Fiscal Policy," Brun and others (2001), *Journal for International Development*, 13, pp. 571-581.

[42] See Freeman and others. (2003) for a discussion of moral hazard effects of foreign assistance.

prominence to the issue of commodity volatility, and argued that, in the event another shock occurs, grant funding from other donors should be sought.

VI. THE ROLE OF THE FUND

43.   This section considers how the Fund can strengthen its role through more systematic emphasis on helping low-income countries deal with exogenous shocks in order to help them achieve their growth and poverty reduction objectives. The Fund's role can be strengthened in three principal ways: (1) more systematic focus in its policy advice, both in the context of surveillance and in Fund-supported programs, on helping countries prepare for exogenous shocks and respond to them; (2) more consistency in the provision of Fund balance of payments assistance in response to temporary shocks and to ease the adjustment to permanent shocks; and (3) helping catalyze donor financing for shocks that are less visible.

A. Helping Member Countries Prepare for Shocks

44.   The Fund has an important role in providing countries with macroeconomic policy advice on how to prepare better for shocks. Fund staff documents should contain a frank analysis of a member's vulnerability to shocks and discuss measures that might be appropriate to reduce this vulnerability. As discussed above, the costs of shocks to a country's growth rate and to its efforts to reduce poverty are so large that action to reduce vulnerability and insure against exogenous shocks can have a high return. If a country that experiences persistent or repeated shocks can be seen to be making an effort to reduce its vulnerability to exogenous shocks, it may be easier to raise the assistance when shocks do occur.

45.   Currently, the coverage of preparation for shocks in Fund surveillance and program documents varies. In some cases, staff reports have included extensive analysis of the risks from future shocks, while in other cases where the country is known to be vulnerable, there has been little or no coverage. Some steps are being taken to make the Fund's focus on these issues more systematic. Following the recent paper on PRGF and PRSP alignment, guidance is being developed to encourage staff reports to explore more systematically the major downside risks and uncertainties in PRGF-supported program projections with regard to exogenous factors, and to include qualitative and quantitative sensitivity analysis.[43] Fund assistance for financial sector development could focus more on those aspects of financial markets that help shock-prone countries utilize market-based solutions for managing risks of shocks. Guidance on debt sustainability is also being developed for new borrowing by low-

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[43] Recent PRSPs are increasingly addressing the issue of vulnerability to exogenous shocks. For example, 8 out of the 22 PRSPs published in 2001-2002 contained aspects of disaster risk management (Cambodia, Honduras, Malawi, Mongolia, Mozambique, Nicaragua, Tajikistan, and Vietnam).

income countries, including consideration of how the external debt position affects the authorities' flexibility in responding to an exogenous shock. The fresh perspective on policy objectives that should be included in *ex post* assessments and Article IV surveillance reports could provide another venue for deepening country-by-country analysis on how to prepare for exogenous shocks. Finally, Fund staff reports can also stress the importance of measures outside the Fund's expertise to ameliorate the impact of shocks—e.g. through diversifying production or through reducing exposure to natural disasters—for which institutions like the World Bank are able to provide assistance.

B. Helping Member Countries Respond to Shocks

46.   As described earlier, exogenous shocks can present countries with difficult decisions as regards the best policy responses**,** including the most appropriate mix of adjustment and financing and the most appropriate choice of policy instruments. In the aftermath of a shock, the Fund can help countries assess the fiscal and balance of payments impacts in order to develop appropriate fiscal, monetary and exchange rate policies, and determine the incremental financing need. For natural disasters, the Fund would generally draw on damage and cost estimates by those with the relevant expertise. For large shocks with a broad international impact, such as the recent conflict in Iraq or increases in the international oil price, the Fund normally analyzes the effects of the shock across the whole membership and makes estimates about possible adjustment and financing responses.

47.   Fiscal issues loom large in the aftermath of a crisis. The Fund can help assess the scope for switching expenditures to disaster relief, and how this can be done with the least disruption to existing programs. The Fund can also assist in managing the macroeconomic consequences of the absorption of external resources. As discussed above, reallocating some international financial assistance to mitigate the impacts of shocks could reduce the damage that such shocks do to growth prospects and poverty-reduction programs in developing countries. Further research and analytical work on the effectiveness of different domestic policies in the aftermath of various types of shocks would be useful.

48.   The previous section noted that the amount of financing made available to countries for shocks tends to correlate strongly with the visibility of the shock. Countries suffering export price shocks and lower profile natural disasters appear to receive a good deal less external assistance. The Fund can help alert donors when there may be unaddressed needs for financing in the aftermath of a shock. The Fund's catalytic role can be particularly important in raising financing for low-income countries, which rely heavily on official assistance and do not have recourse to a wide array of hedging mechanisms.

49.   The capacity of many low-income countries to service debt is limited, and the effect of a shock is normally to reduce the country's debt-servicing capacity. Thus, financing for shocks would ideally be provided to these countries in the form of grants. Beyond quick-disbursing humanitarian and emergency assistance from already-budgeted pools of funds, bilateral donors generally have some flexibility to reprogram grant financing quickly, but the

amounts are very limited and exercising the flexibility requires great effort. While the Fund does not provide grant financing and Fund financing would continue to be a relatively small part of the overall international effort, it can generally mobilize its lending mechanisms relatively quickly, and would therefore be well placed to address part of the immediate financing needs where there is a gap. Fund financing in such situations could act as both a smoothing mechanism and as catalyst to donor flows. The likely future availability of grants will be important in the Fund's decision to provide such financing.

C. Current Fund Instruments for Financing for Shocks

50.   The Fund has four instruments for providing financial assistance in response to exogenous shocks of the types covered in this paper: (i) Emergency Natural Disaster Assistance; (ii) the Compensatory Financing Facility (CFF); (iii) stand-by arrangements in the credit tranches; and (iv) for low-income members only, augmentation of existing PRGF arrangements. While this array of instruments provides the basis for relatively rapid assistance where needed, most of the resources are only available on regular (GRA) terms, which may be too onerous for low-income countries.

Emergency Natural Disaster Assistance

51.   Emergency Assistance for Natural Disasters aims to provide quick-disbursing assistance to member countries that cannot meet their immediate financing needs arising from a major natural disaster without serious depletion of their foreign reserves. In most cases, emergency assistance has been approved within two to three months of the occurrence of the disaster, with the longest gap being five months. (See Box 2 for a description of the evolution of the assistance.)

Box 2. Emergency Natural Disaster Assistance

The Fund has provided Emergency Assistance for Natural Disasters since 1962, when it agreed to lend Egypt 25 percent of quota to help cover temporary liquidity needs resulting from a major crop failure. Initially, the policy evolved on an *ad hoc* basis, as the Fund responded to emergencies by permitting outright purchases beyond the first credit tranche without requiring phasing or performance criteria. The policy was first reviewed by the Executive Board in1982 , at which time the Board broadly endorsed the practice that had evolved, with the Summing Up from the discussion providing broad guidelines for future use (SM/82/7, 1/8/82; and EBM/82/15).

The policy was reviewed again in 1989 (EBS 89/69, 4/13/89). The issues discussed included the degree of conditionality and the financial terms. On the issue of the relatively limited conditionality of the assistance, the review concluded that, as the post-1982 experience showed that the economic policy statements had become broader in coverage and emergency assistance had generally been followed by Fund support under its regular arrangements, no change was needed. On the issue of non-concessional nature of the assistance, the paper noted that the value of emergency assistance could not be measured solely in financial terms, and that its greatest merit was its flexibility, speed, the consistency in the Fund's response to members' emergency needs, and its catalytic role. While the paper described various options that could be considered to improve the financial terms of the

emergency assistance for low-income countries, it noted that the options touched on the principles of burden sharing, the income position of the Fund, uniformity of treatment, and mobilization of donor resources in support of a possible separate subsidy account or special facility, as well as the fundamental question of whether all other purchases from the GRA by low-income members should be subject to similar cost-reduction schemes. It concluded that, given the relatively infrequent use of emergency assistance and its small size relative to overall use of Fund resources, changes in the terms of the assistance did not seem warranted. Certain aspects of the Emergency Natural Disaster Assistance were also considered in the 2000 Review of Fund Facilities (EBS/00/37, 3/2/00). No changes were made, except that emergency assistance was converted to a special facility.

52.   The types of disasters covered have included floods, droughts, hurricanes, and earthquakes. Assistance is provided in the form of outright purchases, and is not subject to phasing or performance criteria. Access is generally limited to 25 percent of quota, although larger amounts can be provided in exceptional circumstances. Emergency natural disaster assistance has been used 25 times, at an average of 30.5 percent of quota. [44] The purchases are from the GRA and are subject to the standard GRA rate of charge and repurchase periods. The lack of concessionality has limited its use by low-income countries. The concessionality issue was considered in the 1989 review of emergency assistance, but no changes were made (see Box 2).[45]

53.   Conditionality is similar to that for a first credit tranche drawing, and consists of a statement of economic policies and the assurance that the country will work with the Fund to find solutions to its balance of payments problems, and will not introduce or intensify trade or exchange restrictions. In most cases, especially since the 1982 Review, emergency assistance purchases were either made concurrently with an active Fund-supported program, or the recipient country agreed to seek subsequent Fund assistance under an upper credit tranche stand-by or equivalent arrangement. Only two countries, having such an understanding, failed to follow through.

Compensatory Financing Facility (CFF)

54.   The CFF has historically been an important instrument by which the Fund has responded to exogenous shocks. It provides financing for members experiencing balance of payment difficulties resulting from a temporary decline in export earnings or a temporary increase in cereal import costs. (An oil import element was added temporarily from

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[44] Exceptional access has most often been used for small-island countries that suffered damage from a hurricane that was very large relative to their quota, although Honduras (1998 hurricane) and Turkey (1999 earthquake) also received assistance of more than 25 percent of quota. The largest amount provided was 50 percent of quota.

[45] While Emergency Post-Conflict Assistance is now being subsidized via an administered account, Emergency Assistance for Natural Disasters is not.

November 1990 to December 1991, when oil prices rose sharply as a result of the Gulf War.) Access is rules-based, determined by calculating the deviation of the shortfall or excess year from the trend over a five-year period.[46] The calculations result in lower access when there is a declining trend in export earnings (or an increasing trend in cereal import costs), effectively decreasing the financing element in circumstances where there is such a trend. Access is 100 percent of the shortfall or excess, limited by the member's overall balance of payments need and a percentage of quota (Box 3). The eligibility requirements include that the shortfall or excess be temporary and largely beyond the member's control. As the CFF can be used to compensate for shocks that result from either price or volume changes, it can be used for either natural disasters or terms-of-trade shocks. The facility has been used 344 times, most heavily in the 1970s and early 1980s, and mostly for export shortfalls, with sporadic bunching of use for the oil import and cereal import components. Average access has been 35.5 percent of quota. Use by low-income countries has decreased considerably since the creation of the ESAF (now PRGF), under which concessional assistance could be provided through new or augmented arrangements.

55.   Since the January 2000 review, no purchases have been made under the CFF. Possible reasons include: (i) many middle-income members have sufficient financial cushions or borrowing capacity to finance a response to the shock without recourse to the Fund; (ii) those middle-income members with weaker balance of payments positions may not qualify for a stand-alone CFF, or may already have a Fund arrangement that is simpler to use; and (iii) the PRGF remains a more attractive instrument for low-income members. In addition, the duration of some commodity price shocks, although still temporary, may be too long for the CFF access calculations to show a shortfall.[47]

Box 3. Compensatory Financing Facility: 2000 Review

The last Executive Board review of the CFF was in January 2000. The Board discussed the risk that the relatively low conditionality applying to provision of CFF resources could weaken incentives for adjustment and reform. Directors observed the difficulties in judging the policy cooperation required for a CFF outside the context of a Fund-supported program, and the problems in calculating export shortfalls, given the difficulty in knowing whether the shortfall would actually be reversed within the calculation period. While some Directors favored eliminating the CFF, it was decided to address these concerns through retaining a streamlined CFF, limiting use of the CFF to cases in which an upper credit tranche arrangement is in place with the associated phasing and conditionality, or where the balance of payments position is deemed satisfactory apart from the temporary export shortfall or cereal

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[46] While a shortfall (or excess) year can be the latest 12-month period for which data are available, it is possible to use estimated data for part or all of the shortfall (or excess) year under the early drawing procedure (SM/93/147, 7/08/93).

[47] Cashin and others (2002) estimate that the average length of commodity price slumps is 5½ years.

import excess. Access rules were also simplified through adopting a uniform access limit of 45 percent of quota for either an export shortfall or a cereal import excess, or a combined limit of 55 percent of quota.

Stand-by arrangements in the credit tranches

56.   Stand-by arrangements in the credit tranches are general purpose financing instruments that have been used to provide assistance to members with all types of balance of payments difficulties, including those resulting from natural disasters and export price and other terms-of-trade shocks. Access is based, *inter alia*, on an overall balance of payments need at the time of drawing, a need which may in part result from an exogenous shock. Unlike the CFF, this allows access decisions to take into account a broader picture, although it also means that the determination is more judgmental.[48] Because a stand-by arrangement in the credit tranches does not have the detailed data requirements of the CFF, in some cases it may allow assistance to be disbursed more quickly than under the CFF. A stand-by arrangement in the credit tranches also has flexibility to provide assistance in the event of a terms-of-trade shock that is expected to last longer than provided for under the calculations for CFF access. Of the 264 terms-of-trade shocks identified between 1981 and 1999, stand-by arrangements in the credit tranches were either approved or already in existence in 56 of the cases (Table 9), 11 of which combined access under the CFF. Of the 106 large natural disasters between 1977 and 2001, members had stand-by arrangements in the credit tranches in 22 cases, nine of which were combined with CFF access or emergency assistance (Table 10). About half of the stand-bys were for middle-income and transitional economies and the rest for low-income countries.

Augmentation of PRGF arrangements

57.   Since the creation of the ESAF, augmentation of ESAF or PRGF arrangements has been the main vehicle the Fund has used to provide financing for low-income countries hit by shocks, as this is the Fund's principal means for providing concessional financing. The PRGF Instrument provides that access may be augmented at the time of consideration of each annual arrangement or any review under it.[49] In practice, augmentation in response to

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[48] For the policy on access in the credit tranches and under the extended Fund facility, see *Selected Decisions*, Twenty-Seventh Issue, pp. 295-304.

[49] The Instrument establishing the Poverty Reduction and Growth Facility Trust, Section II, paragraph 2 (dd) stipulates: "The amount of resources committed to a qualifying member under a three-year arrangement may be increased at the time of any review contemplated under the arrangement, to help meet a larger balance of payments need or to support a strengthening of the program. The amounts committed to a member shall not be reduced because of developments in its balance of payments, unless such developments are substantially more favorable than envisaged at the

(continued…)

shocks has also taken place at the time of semi-annual reviews, and on one occasion, a PRGF arrangement was augmented and a disbursement authorized outside a semi-annual review. [50] Augmentation is guided by balance of payments need and the strength of the member's program. There are no additional rules or staff guidance for augmentation. There are no limits on cumulative PRGF access, although there is guidance on access levels for successive programs.[51] The augmented amount can be disbursed immediately after the review in which it is approved, or in tranches subject to future reviews, in which case disbursement will be subject to meeting the conditionality associated with the arrangement.

58.   The small size and infrequency of augmentation of PRGF arrangements suggests that there may be room in some cases for a more systematic Fund response. Of the 121 three-year ESAF and PRGF arrangements which have been approved since the inception of the ESAF, 32 have been augmented, with average augmentation equal to 12.4 percent of quota (or 0.8 percent of GDP). In the 14 cases where staff provided an estimate of the direct impact of the shock, PRGF augmentation was relatively small compared to the impact. The average impact on the balance of payments was estimated to be about 70 percent of quota (or 4.6 percent of GDP) but average augmentation was only 11.6 percent of quota (or 0.7 percent of GDP).

D. Possible Enhancements of Fund Financing for Shocks

59.   If the Fund were to consider enhancing its financing for low-income members affected by exogenous shocks, the following issues would need to be addressed:

- The *level and form of conditionality:* Conditionality needs to be appropriate to the type and duration of the shock and supportive of the appropriate balance between adjustment and financing.

- The *speed of response:* Relatively quick disbursement can be important to dampen the multiplier effects of shocks.

- The *types of shocks covered and the determination of access:* Members face a wide range of types of shocks. Access determined on the basis of calculated losses would

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time of approval of the three-year arrangement and the improvement for the member derives in particular from improvements in the external environment."

[50] The Kenya PRGF arrangement was approved on July 28, 2000 for a total of SDR 150 million, with an immediate disbursement of SDR 13.6 million. In response to a severe drought, the arrangement was augmented on October 18, 2000 by SDR 40 million and an immediate disbursement was made of SDR20 million.

[51] Norms for PRGF access are 90 percent of quota for first-time users, and 65 percent of quota for second-time users (BUFF/99/1, 01/05/99).

provide for an automatic and transparent response, but a more judgmental approach to determining access would allow a more comprehensive assessment of overall financing needs.

- The *terms* on which assistance is provided: A concessional interest rate is generally more appropriate for low-income countries than the GRA rate of charge. In addition, the extent to which the member can be expected to build repayment capacity needs to be considered.

- The *incentive effects of assistance*: Assistance needs to be provided in a way that minimizes moral hazard and encourages countries to take steps towards reducing vulnerability.

60.   A range of options could be considered depending on the member's circumstances. About half the eligible low-income **members have PRGF arrangements**, including some with low access. [52] For these members, it would be possible for the Fund to provide assistance in dealing with the effects of exogenous shocks through augmenting access under their PRGF arrangement. This would allow the assistance to be provided in the context of a conditionality-based program, while still providing a fairly quick response. The member might be expected to take measures, at least those within the scope of Fund conditionality, to reduce vulnerability to future shocks. This option would also allow all types of shocks to be considered, but with the decision on additional access taken on the basis of the member's overall balance of payments position. However, this more comprehensive approach also means that the response is more judgmental and possibly less transparent. Development of guidelines could help clarify and make more consistent amounts by which a PRGF arrangement would be augmented or rephased and the conditions under which this might be done.

61.   For **PRGF-eligible countries without a PRGF arrangement that are hit by a natural disaster and need assistance from the Fund**, consideration could be given to making Emergency Natural Disaster Assistance available at a subsidized rate of charge. If subsidy resources were available to the Fund for this purpose, this would allow a quick response by the Fund on terms that are less likely to contribute to a debt burden than at present. However, even an interest subsidy on use of this facility would not guarantee that the member will have little difficulty in repurchasing. The first-best approach will continue to be the provision of grant resources by donors, and consideration needs also to be given to helping catalyze additional grant finance from donors in the aftermath of a disaster. While the member might be expected in its statement of policies to indicate action that it planned to take in economic policy areas where the Fund has expertise to reduce future vulnerability, the stand-alone nature of the Emergency Assistance purchase does not provide for

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[52] As of June 30, 2003, 37 out of 77 PRGF-eligible countries had a PRGF arrangement and negotiations were underway for another 12.

conditionality in the form of performance criteria. Such subsidized access to Emergency Natural Disaster Assistance could be limited to 25 percent of quota, with the understanding that, if needed, larger amounts of assistance could be provided through an arrangement.[53] Subsidized emergency assistance on a stand-alone basis would need to be structured so as not to be an obviously more attractive alternative to an augmentation to a PRGF or stand-by arrangement.[54]

62.   **PRGF-eligible members without a PRGF-supported program may be affected by shocks other than natural disasters and need financial assistance from the Fund**. In the vast majority of these cases, assistance will need to be both affordable and provided in a context that promotes needed adjustment. One possibility might be a stand-by arrangement, as this can be put in place relatively quickly. For members where policy and other shortcomings had earlier prevented agreement on a PRGF arrangement, such an emergency stand-by should be viewed as a step towards a PRGF arrangement, not as a substitute for the PRSP approach. Consideration could be given to subsidizing the rate of charge on purchases made by PRGF-eligible members under the stand-by arrangement. As with subsidized Emergency Natural Disaster Assistance, a source would need to be found for the subsidy resources for stand-by arrangements. A stand-by arrangement would have the added advantage of allowing a broad range of shocks to be covered, and with the decision on additional access based on the member's overall balance of payments position.

63.   In principle, **another possible option would be to subsidize use of the CFF for PRGF-eligible countries.** However, given the Board's view that stand-alone CFFs should only be provided in the relatively limited circumstances where the country's balance of payments position is sound apart from the shock, most low-income countries would need to have an arrangement in place or approved at the time of the CFF purchase. In these circumstances, the question is whether a subsidized CFF purchase should be provided as an adjunct to a PRGF arrangement, as an alternative to augmentation. The CFF has a number of disadvantages relative to the alternative of augmentation of a PRGF arrangement, including some limits to the flexibility it offers for responding to different types of circumstances and

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[53] "The Role of the Fund in Low-Income Member Countries Over the Medium Term—Issues Paper for Discussion" (SM/03/257, 7/22/03), discusses the issue of the appropriate form of arrangement for those members that are not able to meet the requirements of the PRGF decision.

[54] One alternative to providing subsidized Emergency Natural Disaster Assistance would be to provide the assistance at the GRA rate of charge, with an understanding that if the member subsequently obtained a PRGF arrangement, access under that arrangement could be set high enough to allow early repayment of the Emergency Assistance. However, this would leave unchanged the rate of charge for countries that did not, or could not, move to a subsequent arrangement. Such an approach was taken in fall 2002 in the case of Malawi, where Emergency Assistance was provided at the GRA rate of charge while the PRGF-supported program was off track, with the understanding that once the program was brought back on track Emergency Assistance could be repaid early.

the expectation it can create for the amounts of Fund financing that could be made available in relation to the size of the shock. The forthcoming review of the CFF will discuss these issues in more detail.

64.   In sum, Fund macroeconomic policy advice can play an important role in helping vulnerable low-income countries prepare for, and respond to, exogenous shocks. A strong and systematic focus in surveillance on identifying vulnerabilities and measures to reduce them can help countries prepare for shocks more effectively. Similarly, initial design of PRGF-supported programs could focus more systematically on the risk of shocks, and the macroeconomic framework could be structured accordingly. While many of the measures that can be taken to prepare for shocks are outside the Fund's domain, the Fund can flag the importance of these measures and encourage both country authorities and relevant institutions to pay adequate attention to these issues. In the aftermath of a shock, the Fund can help countries select the best policy responses, including the most appropriate mix of adjustment and financing. While Fund financial assistance would continue to be a relatively small part of the overall international effort, the Fund can provide relatively quick-disbursing balance of payments assistance in cases where there is an immediate balance of payments financing gap and donor assistance is not immediately forthcoming. The Fund can also play a role in catalyzing concessional financing from other sources.

VII. ISSUES FOR DISCUSSION

65.   This paper is meant to be an initial reflection on whether the Fund should target its policy advice and financial assistance more to dealing with the effects of exogenous shocks, which can have important repercussions for growth prospects and poverty reduction. In light of the information provided in the paper, it poses the following issues for Directors to consider:

- Do Directors agree with how the paper approaches the issue of vulnerability to shocks?

- Should Fund policy advice and programs pay more systematic attention to the impact of shocks and appropriate policy responses by the member?

- Is there a case for the Fund enhancing its financing for mitigating the effects of shocks? Should such assistance be concentrated on low-income members, which are not able to fully utilize market-based solutions, or developing countries more generally?

- Which, if any, of the options for enhancing Fund financing would Directors wish staff to explore further: more systematic use of augmentation of PRGF arrangements; making stand-by arrangements, Emergency Natural Disaster Assistance, and/or the CFF available on subsidized terms for low-income members?

66.   Depending on Directors' views on these questions, and the associated outreach effort, staff would return to these issues with more specific proposals in a subsequent paper. Important considerations would include the resource requirements of the various approaches and the possible financing options.

Figure 1. Large Natural Disasters in Developing Countries 1/ 2/

a. Number of disasters and damages, 1977-2001
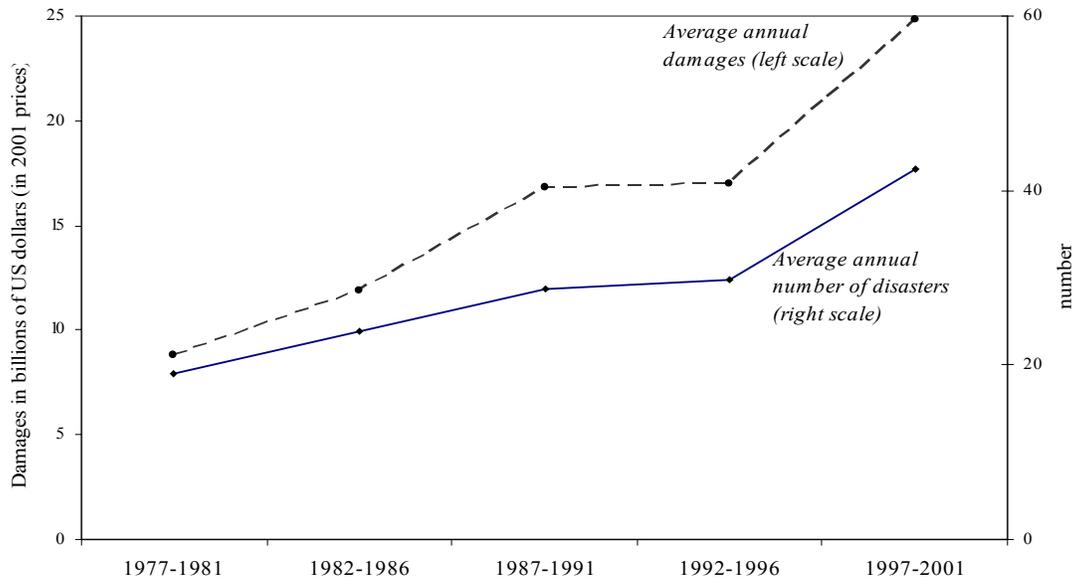
b. Number of People Affected, 1977-200
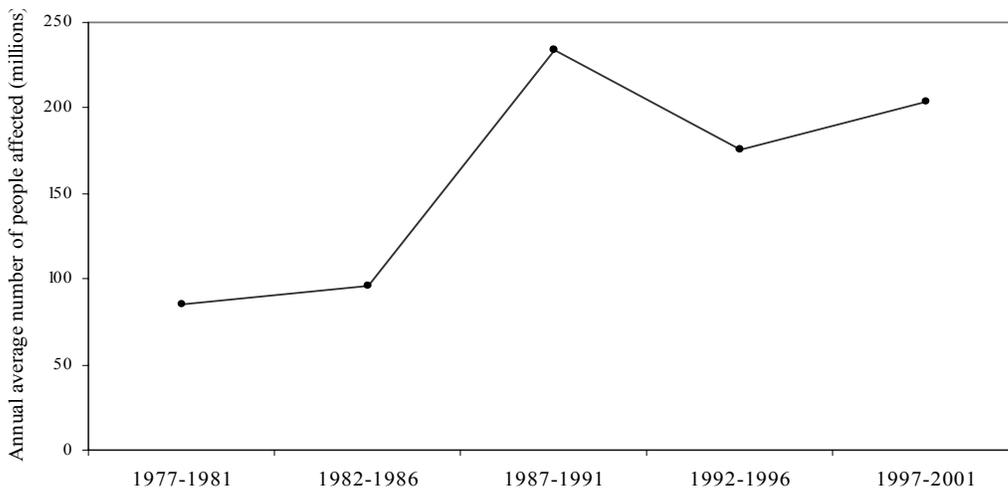
Source: Centre for Research on the Epidemiology of Disasters (CRED), 2002.

1/ Paucity of data on economic losses for developing countries before mid-1970s led us to analyze trends for the 1997-2001 period. Even for this period, only about 40 percent of all reported disasters have estimate of damages.

2/ The CRED database defines disasters as natural hazards that have caused 10 or more fatalities, affected 100 or more people, and resulted in a declaration of a state of emergency and led to an appeal for international assistance. Based on the CRED database, we classify a disaster as "large" if it had affected at least half a percent of a country's population or caused damages of at least half a percent of the national GDP or resulted in more than one fatality in every 10,000 population.

Figure 2. Various Vulnerability Rankings and Average GDP Per Capita, 1996-2000
(In U.S. Dollars) 1/ 2/

CWS Composite Vulnerability Index Ranking

UN Economic Vulnerability Index Ranking

CBD Vulnerability Index Ranking
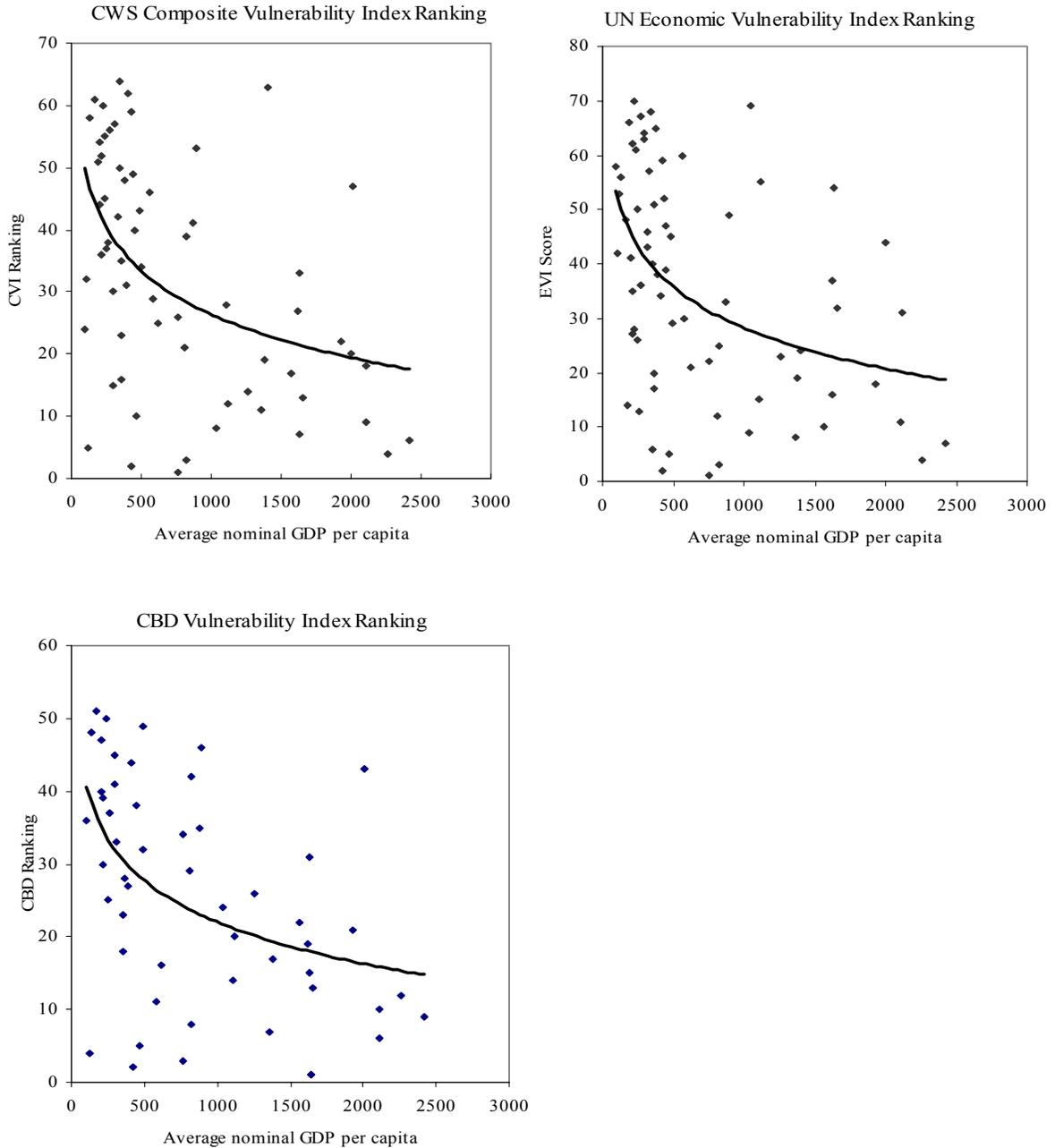
Sources: United Nations; Commonwealth Secretariat; Journal of Eastern Caribbean Studies; and WEO.

1/ Excludes small states (i.e., states with population less than 1 million) and countries with per capita GDP of more than US$3,000.00.
2/ Higher ranking indicates greater vulnerability to shocks. As all three indices include population size as a factor for lower vulnerability, five low-income countries with population over 100 million (China, India, Indonesia, Pakistan, and Bangladesh) have both low per capita GDP and low ranking on vulnerability indices.

Table 1. Size and Frequency of Negative Shocks in Export Prices and Terms of Trade
(All Developing Countries)

	Number of Shocks 1/	Size of Shocks (percent decline)		
		Average size	Median size	75th percentile 2/
Real prices for commodity exports (52 countries)				
1981-1983	25	-16.3	-14.2	-18.9
1984-1986	90	-22.1	-19.5	-25.6
1987-1989	50	-23.8	-21.3	-30.8
1990-1992	41	-16.2	-14.6	-20.2
1993-1995	30	-20.2	-17.4	-27.0
1996-1998	53	-22.1	-21.5	-25.7
1999-2001	48	-20.2	-17.8	-22.7
Real prices for all exports (74 countries)				
1981-1984	48	-18.8	-15.8	-22.5
1985-1988	88	-20.5	-16.6	-25.5
1989-1992	62	-17.9	-15.9	-19.4
1993-1996	27	-18.8	-13.6	-22.8
1997-2000	39	-15.9	-14.1	-18.6
Overall terms of trade (72 countries)				
1981-1984	64	-18.1	-15.7	-21.1
1985-1988	56	-21.5	-18.4	-28.8
1989-1992	59	-18.0	-16.0	-19.4
1993-1996	35	-17.7	-17.6	-22.6
1997-2000	32	-15.5	-13.8	-17.4

Sources: Staff calculations based on real commodity prices data from Cashin and others (2002); and export prices and terms of trade data from UNCTAD (2001).

1/ A shock is defined as a decline of at least 10 percent in real price or terms of trade from the previous year's levels.
2/ The decline in real prices or terms of trade was larger than these levels for a quarter of the shocks.

Table 2. Trends in Natural Disasters: Frequency, People Affected, and Damages

	Annual Average Number of Disasters 1/		Annual Average Number of People Affected (million)		Annual Average Damages (US$billion, in 2001 prices)		Large Disasters with Data on Damages (Percent of large disasters)
	All disasters	Large disasters	All disasters	Large disasters	All disasters	Large disasters	
All developing countries 2/							
1977-1981	43	19	86	86	9	9	53
1982-1986	54	24	98	96	12	10	57
1987-1991	53	29	235	233	17	16	54
1992-1996	60	30	177	175	17	15	52
1997-2001	78	42	205	203	25	24	48
Low-income countries 3/							
1977-1981	19	10	80	79	2	2	45
1982-1986	24	12	83	82	4	3	43
1987-1991	24	15	128	128	5	5	32
1992-1996	29	18	64	64	3	2	47
1997-2001	39	24	83	83	5	5	37
Other developing countries							
1977-1981	18	5	6	6	7	7	65
1982-1986	22	8	14	13	8	7	71
1987-1991	22	8	107	106	11	10	83
1992-1996	25	8	112	111	14	12	66
1997-2001	31	13	121	120	20	20	73

Source: Staff calculations based on data from the Centre for Research on the Epidemiology of Disasters (CRED), 2002.

1/ The CRED database defines disasters as natural hazards that have caused 10 or more fatalities, or affected 100 or more people, and resulted in a declaration of a state of emergency and led to an appeal for international assistance. Based on the CRED database, the table classifies a disaster as "large" if it affected at least half a percent of a country's population or caused damages of at least half a percent of the national GDP or resulted in more than one fatality in every 10,000 population.

2/ The sample includes a total of 146 developing countries, of which 59 are low-income countries, 31 are small devloping states, and 56 are other developing countries.

3/ Low-income countries include all PRGF-eligible countries except small developing states, which are shown separately in the next table. Small states are defined as having fewer than 1.5 million inhabitants, a definition used by the World Bank.

Table 3. Frequency and Cost of Natural Disasters Across Countries

a. Average Years Between Reoccurrences of Large Disasters 1/
(Number of Years)

	Developing Countries 2/	Small States	Low Income	Other Developing
1977-1981	7.7	7.8	6.0	10.8
1982-1986	6.1	7.8	5.1	6.8
1987-1991	5.1	5.7	3.8	7.0
1992-1996	4.9	8.2	3.2	7.4
1997-2001	3.4	5.5	2.5	4.4

b. Average Damages from Large Disasters 3/
(Damages per disaster, as percent of GDP)

	Developing Countries 2/	Small States	Low Income	Other Developing
1977-1981	7.1	22.4	3.2	1.8
1982-1986	7.0	20.6	4.9	2.4
1987-1991	12.3	34.7	4.8	2.3
1992-1996	3.3	11.7	2.7	1.0
1997-2001	4.1	9.0	5.8	1.5

Sources: Staff calculations based on data from the CRED (2002); and the *World Economic Outlook* (2002).

1/ Average number of years between reoccurrence of large disasters is calculated as an inverse of the average annual number of disasters per country, which is the annual number of disasters divided by the number of countries (as reported inTable 2).
2/ Sample includes 31 small states, 59 low-income countries, and 56 other developing countries.
3/ Average damages per disaster are based on unweighted averages of country ratios of damages-to-GDP.

**Table 4. Size and Frequency of Negative Shocks in Export Prices
and Terms of Trade Across Countries 1/**

	Low-Income Countries		Other Developing Countries	
	Number of shocks	Average size (percent)	Number of shocks	Average size (percent)
Real prices for commodity exports 2/				
1981-1983	13	-18.3	12	-14.1
1984-1986	50	-22.4	40	-21.6
1987-1989	36	-24.3	14	-22.6
1990-1992	23	-15.7	18	-16.8
1993-1995	19	-20.4	11	-19.8
1996-1998	31	-22.4	22	-21.6
1999-2001	32	-22.2	16	-16.1
Real prices for all exports 2/				
1981-1984	36	-20.4	12	-14.0
1985-1988	43	-20.3	45	-20.8
1989-1992	42	-19.0	20	-15.8
1993-1996	24	-19.6	3	-12.4
1997-2000	34	-16.1	5	-14.5
Overall terms of trade 2/				
1981-1984	40	-19.3	24	-16.0
1985-1988	28	-20.7	28	-22.3
1989-1992	41	-18.0	18	-17.8
1993-1996	32	-17.6	3	-18.8
1997-2000	26	-16.2	6	-12.3

Source: Staff calculations.

1/ A shock is defined as at least 10 percent decline in real price or terms of trade from the previous year's levels.
2/ Real commodity price data covers 52 developing countries, of which 30 are low-income. For real export prices, the sample consists of 74 developing countries, of which 42 are low-income. For terms of trade, the sample consists of 72 developing countries, of which 41 are low-income. Oil-exporting countries are excluded from this analysis.

Table 5. Total Humanitarian Assistance, 1990-2000

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
					(In US$million; 2000 prices)							
Total humanitarian assistance 1/	2766	5750	5142	6063	6530	5168	4766	4121	4746	5964	5878	5467
of which: ODA spent in donor countries for refugees	0	0	1224	1323	1119	911	707	694	1030	758	1361	...
UNHCR expenditures for refugees	764	1037	1362	1264	1220	1085	1032	848	824	889	680	...
Humanitarian assistance net of aid for refugees	2002	4714	2556	3476	4192	3172	3027	2579	2892	4317	3837	...
Emergency assistance recorded in UN-OCHA data 2/	...	...	2916	3107	2712	2252	1916	1404	2590	2239	1677	1940
CAP assistance for complex emergencies	...	...	2600	3015	2580	2134	1824	1079	1374	1932	1257	1617
Assistance for natural disasters	...	...	316	93	132	118	92	325	1216	306	420	322
(as percent of total assistance reported by OCHA)	...	...	11	3	5	5	5	23	47	14	25	17
					(As percent of ODA)							
Total humanitarian assistance	4.1	8.0	7.2	9.2	9.4	7.7	7.8	8.0	8.9	11.1	11.9	11.1
Humanitarian assistance net of aid for refugees	3.0	6.5	3.6	5.3	6.1	4.8	4.9	5.0	5.4	8.0	7.8	...
Emergency assistance recorded in UN-OCHA data	...	...	5.0	5.6	4.5	3.8	3.4	2.9	5.1	4.3	3.4	3.8

Sources: Macrae and others (2002), except for food relief, which is from the WFP (2002); and total ODA from DAC reports.

1/ Data on humanitarian assistance is available from two sources, which differ substantially in coverage. The first data source is the OECD DAC. Humanitarian assistance in this source has a broader coverage and is defined as total bilateral ODA for emergency and distress relief, including emergency food aid, total multilateral contributions to UNCHR and UNRWA, and multilateral contributions to WFP in proportion to its share of relief food expenditures.

2/ The second source of information for humanitarian assistance is the financial tracking database for complex emergencies and natural disasters from the UN-OCHA.

Table 6. Concentration of Emergency Assistance for Natural Disasters

Year	Total Assistance (US$ million)		Number of Appeals	Assistance to Top 3 Recipients (percent of total)
	Current Prices	2000 Prices		
1992	257	316	27	83.9
1993	78	93	42	45.6
1994	113	132	41	67.4
1995	105	118	44	63.9
1996	84	92	31	51.0
1997	303	325	45	49.0
1998	1151	1216	43	91.1
1999	296	306	50	63.4
2000	420	420	44	62.3
2001	332	322	50	65.3
Total	3139	3340	417	64.3

Source: Staff calculations based on OCHA database (2002).

Table 7. Characteristics of Emergency and Rehabilitation Assistance from Various Donors and Creditors

Characteristic	Institution				
	World Bank	World Bank	European Commission	AfDB	AsDB
Name of program/facility	Emergency Recovery Loans (ERLs)	Mitigation lending: Disaster Management Facility	ECHO	Special Relief Fund	Assistance to Small Developing Member Countries Affected by Natural Disasters
Humanitarian vs. Rehabilitaiton	Primarily Rehabilitation and Reconstruction	Mitigation	Humanitarian	Humanitarian	Rehabiliation projects
Grant or loan	Loans	Loans	Grants	Grants	Loans
Concessional loan	Yes if IDA-eligbile country	Yes if IDA-eligbile country	Not applicable	Not applicable	Yes if AsDF-eligible country
Disbursement speed	Quick disbursing elements for purchasing necessary imports	Unknown	Within 3 days to NGOs/ UN agencies. Unknown thereafter	Unknown	Projects finished within a year of disaster occurring
Funds channeled to:	Governments	Governments	NGOs and UN agencies	NGOs and UN agencies	Governments
Focus on mitigation for future disasters	Funds can be applied to mitigation activities	Focuses on mitigation, prevention, and reconstruction	Primarily no; but ECHO supports some prevention projects	No	None specified
Conditionality	Yes, at project level	Yes	No	No	...

Table 7 (concluded). Characteristics of Emergency and Rehabilitation Assistance from Various Donors and Creditors

	Institution			
	AsDB	IADB	CDB	IMF
Characteristic				
Name of program/facility	Rehabilitation Assistance After Disasters	Emergency Reconstruction Facility	Caribbean Disaster Emergency Relief Fund	Emergency Assistance for Natural Disasters
Humanitarian vs. Rehabilitaiton	Rehabiliation projects	Rehabilitation loans	Rehabilitation	General BOP support
Grant or loan	Loans	Loans	Grants and loans	Loans
Concessional loan	Yes if AsDF-eligible country	Concessional and non-concessional	Yes	No; regular GRA rate of charge
Disbursement speed	Projects finished within three years of disaster occurring	Loans approved within weeks and disbursement within twelve months		Usually approved and disbursed within 2-3 months of disaster occurring
Funds channeled to:	Governments	Governments	Governments	Governments
Focus on mitigation for future disasters	Mitigation is integrated in projects	Yes	No; but the Disaster Prevention Sector Facility provides loans	No
Conditionality	...	Yes, related to mitigation and prevention	Yes, related to rehabilitaiton	Limited, on macroeconomic policies level

Table 8. Characteristics of Major Compensatory Financing Mechanisms for Trade Shocks

	Institution			
	EU	EU	EU	IMF
Characteristic				
Name of program/facility	STABEX	SYSMIN	FLEX	CFF
Type of shocks covered	Agricultural export commodities[1]	Mineral export commodities	Sort-term fluctuations in export earnings (goods).	Exports, Cereal Imports, and selected services.[2]
Eligibility	A drop in the export value of eligible products.	A drop in the export value of eligible products.	A loss in export earnings combined with a worsening in the public deficit due to a loss in government revenue.	An export shortfall or cereal import excess compared to a trend value.
Grant or loan	Grant	Grant	Grant	Non-Concessional Loan
Disbursement speed	Frequently Delayed	Frequently Delayed	Within 6 months to 1 year of application.	On average within 3-4 months of end of shortfall or excess year.
Conditionality	Yes	Yes	Countries must sign a financial protocol with the EU as a prerequisite for use.	Concurrent upper credit tranche or PRGF arrangement unless BOP position satisfactory except for impact of the shock.

1/ Shocks in four products--cocoa/copra, coffee, groundnuts, and cotton--accounted for 80 percent of the money disbursed.
2/ The CFF also covered oil imports in 1990-91.

Table 9. Fund Involvement in Countries That Experienced Terms of Trade Shocks, 1981-1999

Country Group	Type of Fund Involvement												
	Number of Countries1/								Percentage Distribution			
		GRA											
	SAF/ESAF/ PRGF	SBA	EFF	CFF	Emergency Assistance	All GRA	None	Total	SAF/ESAF/ PRGF	GRA	None	Total
PRGF-eligible												
Prior to 1986	0	19	6	18	0	29	21	50	0	58	42	100
1986 to 2002	59	13	0	8	1	18	51	128	46	14	40	100
Other countries	0	24	9	18	1	35	51	86	0	41	59	100
Total	59	56	15	44	2	82	123	264	22	31	47	100

Source: Staff calculations.

1/ Countries may use more than one facility concurrently (*e.g.,* a country may have an SBA and use the CFF).

Table 10. Fund Involvement in Countries That Experienced Large Natural Disasters, 1977-2001

Country Group	Type of Fund Involvement												
	Number of Countries 1/								Percentage Distribution			
		GRA											
	SAF/ESAF/ PRGF	SBA	EFF	CFF	Emergency Assistance	All GRA	None	Total	SAF/ESAF/ PRGF	GRA	None	Total
PRGF-eligible												
Prior to 1986	0	6	2	12	3	14	7	21	0	67	33	100
1986 to 2002	18	6	1	3	7	12	16	46	39	26	35	100
Other countries	0	10	4	10	7	17	22	39	0	44	56	100
Total	18	22	7	25	17	43	45	106	17	41	42	100

Source: Staff calculations.

1/ Countries may use more than one facility concurrently (*e.g.,* a country may have an SBA and use emergency assistance).

Case Studies of Countries Affected by Exogenous Shocks

1.   Estimating the impact of a shock on overall economic performance (e.g., economic growth, macroeconomic balances, and poverty) is difficult, as it is difficult to identify all of the channels and to isolate the impact of the shock especially when more than one shock has hit or when the economy is recovering from a prior shock. Data are also frequently limited. For the country case studies in this annex, staff have attempted to describe some of the impacts of shocks using a variety of methods, including counterfactual scenarios, comparison of actual post-shock performance and that projected prior to the shock, comparison of economic indicators before and after shocks, and findings of other studies.

I.   CAMBODIA: FLOOD AND DROUGHT[1]

2.   **Background:** A flood followed by a drought in 1994 destroyed one-fifth of Cambodia's rice crop, its main staple, causing widespread food shortages and inflation. Prior to the cessation of internal hostilities and the election of a new government in 1993, Cambodia's two decades of civil war left its economy devastated. By the late 1980s, low revenues led to a reliance on currency issue to finance fiscal deficits, with resulting high inflation, currency substitution and exchange rate volatility. The economy was largely closed, and the country had very weak institutional and administrative capacity. Starting in 1993, a period of reconstruction and recovery began, which also affected macroeconomic balances and economic growth in 1994 in addition to the effects of the drought/flood. Tax revenues increased and domestic financing of the budget was reduced, but the government still relied heavily on external assistance for its massive reconstruction needs. A removal of international trade restrictions led to a strong increase in both imports and exports. In the April 1994 staff report, just prior to approval of an ESAF arrangement in May, IMF staff projected a 7-8 percent annual real growth rate over the medium term, with reductions in inflation and internal and external balances over the next three years.

3.   **Impact on the Balance of Payments:** A 23 percent increase in import volume in the year of the shock was largely due to aid-financed projects for post-conflict recovery and reconstruction, but was also, to an indeterminable degree, due to emergency food imports. The large increase in imports was partly offset by increases in log exports and tourism receipts, and the current account deficit (excluding grants) worsened from 9 percent to 14 percent of GDP between 1993 and 1994. External assistance financed most of this deficit; international reserves declined only slightly from 1.8 to 1.4 months of imports. About 30 percent of external financing was provided in the form of concessional loans from multilateral institutions.

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[1] This assessment of the 1994 flood and drought is based on data published before the recent (July 2003) revisions in National Accounts. These revisions may affect some of the assessments.

4.   **Impact on the Fiscal Balance:** The shock of 1994 had the unusual effect of causing a direct increase in expenditures for non-wage benefits for the military, partly due to the higher price of rice. Overall, military spending increased from 4 percent of GDP in 1993 to 6.5 percent in 1994. This was offset by more restraint on non-defense spending, including in health and education. Capital expenditures increased as a share of GDP, but were financed through project-tied external aid. Strong revenue performance due to forestry output and logging exports prevented a large budgetary shortfall (overall, the fiscal deficit rose from 5.7 percent of GDP to 6.8 percent between 1993 and 1994). Foreign financing increased sharply from 4 percent to 7 percent of GDP, mostly due to aid commitments for post-conflict recovery and reconstruction. The availability of external assistance allowed the government to abide by its commitment to avoid financing the budget through domestic credit. While detailed data are not available, the active role of the NGOs in distributing food aid suggests that food aid did not account for a large share of the increase in external financing of the budget. The government's response to the floods of 1996 was very similar to that in 1994.

5.   **Impact on Economic Growth:** Agriculture had accounted for just under one-half of GDP in 1993.[2] The rice crop declined by 20 percent in volume terms, and the overall share of agriculture in GDP fell 2 percentage points. Severe shortages of food were reported and the government had to import rice on a commercial basis in 1995; there was heavy disbursement of food aid in rural areas by the NGOs. It is difficult to ascertain the extent of damage to physical infrastructure due to the weather shock because of a paucity of data and information. Since energy generation in Cambodia in 1994 did not derive from hydro-electric sources, there was little impact on power output. However, given the damage to energy transmission, telecommunication, housing and transport infrastructure caused by the 1996 and 2000 floods, for which more detailed information is available, it is probable that the 1994 floods badly affected rural infrastructure.

6.   The lack of linkages between food agriculture and manufacturing helped prevent the transmission of the shock and despite the decline in agricultural growth, the forestry, industry (manufacturing and construction) and services sectors continued to register fairly robust growth. Timber output rose, largely due to a lack of enforcement of a ban on harvesting, while construction and services continued to benefit from the reconstruction boom. The opening up of the economy, which resulted in massive increases in imports and exports, also aided growth in manufacturing. As a result, overall growth remained high in 1994 despite a flood followed by a drought.

7.   With the return of normal rains in 1995, agriculture recovered quickly, growing 6.5 percent in real terms, with rice registering a 24 percent increase in volume terms. Aided by the sustained availability of external financing, increased openness and prudent economic policies, the rest of the economy continued to register robust post-conflict reconstruction and

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[2] There were two subsequent weather-related shocks. While the floods in 1996 were relatively mild, those in 2000 had a disruptive effect on the economy.

recovery; overall growth in real GDP was 7 percent in 1995. While the continued adverse weather shocks in the period (1994, 1996 and 2000) have not had severe generalized impacts on the overall economy, they appear to have prevented Cambodia from reaching higher overall growth rates than it did.

8.   **Impact on Poverty:** It is difficult to determine conclusively the effect of the shock on poverty by examining poverty statistics. Two estimates of the poverty level, based on surveys conducted in 1993-94 and 1997 are available, covering 1992 and 1996, respectively. Overall head-count poverty fell from 39 percent to 36 percent during the four-year period, and from 43 percent to 40 percent in rural areas. Rural households derived 40 percent of their incomes in 1993-94 from non-agricultural activities and, to the extent that such activities did not experience a large decline as a result of the shock, the impact on poverty may have been less pronounced than would be suggested by the decline in rice output. Although inflation increased slightly in late 1994, largely due to a weather-induced jump in food prices, annual inflation declined sharply from 107 percent for 1993 to 9 percent for 1994.

9.   However, the coverage of the 1993-94 survey was constrained because of security reasons and almost 35 percent of the population was not covered, particularly in areas with a high incidence of poverty. The 1993-94 survey did find a significant portion of population clustered close to the poverty line, and thus vulnerable to small changes in income.

10.   In sum, it is probable that poverty did increase in the immediate aftermath of the shock, but then fell with sustained growth in the economy after that. In other words, poverty improvements in the mid-1990s may perhaps have been even greater in the absence of a shock. Regardless, it can be safely concluded that the over the 1992-96 period, the shock effect did not dominate the growth effect and poverty fell.

11.   **External assistance:** Cambodia received significant external assistance in the 1990s to help it finance post-conflict recovery and reconstruction (US$2 billion by 1996), which ended up providing the country with a shock absorber against weather-related shocks in 1994, 1996 and 2000. Without the external assistance, the country would have had to resort to domestic financing and squeezing private sector credit, thus creating higher inflation and lower real growth. However, assistance began to diminish toward the end of the decade. World Bank and Asian Development Bank non-project lending ended in 1997, which partly contributed to a reduction in external financing from 7.5 percent of GDP in 1994 to 4.5 percent in 1999. Cambodia's arrangement under the ESAF, approved in mid-1994, went off track in 1995 due to poor policy performance including the lack of observance of a prior action on the forestry sector. Only one-half of the approved amount of SDR 84 million was disbursed.

II. MALI: COTTON PRICE SHOCK

12.   **Background:** After three years of relative price stability, world cotton prices fell in 1992 by almost 25 percent. They remained at this depressed level in 1993, before rebounding by over 37 percent in 1994. This two-year dip in cotton prices constituted a large

terms-of-trade shock for Mali, as exports of cotton had accounted for about 47 percent of total exports in the pre-shock year of 1991. Between 1980 and 1992, GDP per capita in Mali contracted at an average rate of 2.7 percent per annum. Following the droughts and famines in the 1980s, the early 1990s were characterized by civil strife and political unrest. By the time Mali emerged from this instability and held multi-party elections in June 1992, it was one of the poorest countries in the world, with a GDP per capita of US$320. It is against this background that Mali was hit by the fall in world cotton prices.

13.   **Impact of the Shock on the Balance of Payments:** The main impact of the commodity price shock fell on Mali's export revenues. Exports declined from CFAF 104.6 billion in 1991 to CFAF 95.8 billion in 1992, and stayed depressed in 1993. The share of cotton in total exports also declined noticeably, from an average of 47.1 percent over the period 1990-1991 to an average of 39.6 percent during the two years of the shock. In January 1994 the CFA franc was devalued by 50 percent (from CFAF 50 to CFAF 100 per French franc), ending a long period in which the currency was overvalued. World cotton prices also picked up. The result was a jump in exports in 1994, and the share of cotton in total exports rose to an average of just under 50 percent in the two post-shock years.

14.   Mali's current account deficit (including grants), increased from 1.7 percent of GDP in 1991 to 3.7 percent and 4 percent in 1992 and 1993, respectively. Part of this was certainly attributable to the terms-of-trade shock, although the overvaluation of the CFA franc was also a contributory factor.[3] The average deficit for the post shock years of 1994 and 1995 was 5 percent, higher than the 3.8 percent average during the shock period.

15.   The impact of the shock is measured here in terms of foregone exports using a simple methodology. The unit value of exports is assumed to remain constant at the pre-shock level of 1991, and export volumes and import values evolved according to their actual pattern.[4] On this basis, actual exports averaged 88 percent of counterfactual exports through 1992-93.

16.   The shock period coincided with a three-year ESAF arrangement with the Fund.[5] The World Bank supported Mali's economic program with various structural and sectoral loans, including a Structural Adjustment Loan approved in 1991. Bilateral assistance in the context

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[3] The countries participating in the CFA had been losing competitiveness steadily over the period 1986-1993, partly as a result of the appreciation of the French franc (against which the CFA franc is freely convertible at a given rate) against the currencies of major trading partners of the CFA franc zone.

[4] This closely follows Bevan and others (1999), "Anatomy of a Temporary Trade Shock: The Kenyan Coffee Boom of 1976-79" in *Trade Shocks in Developing Countries, Vol. I*, Oxford University Press, 1999.

[5] This arrangement was approved in 1992, with access set at 88.5 percent of quota. In 1994 the access level was increased to 115 percent in response to the devaluation of the CFA franc.

of the economic recovery program was also considerable. This allowed official reserves to remain at the comfortable level of 4.2 and 5 months of imports in 1992 and 1993, respectively.

17.   Mali's stock of external debt increased marginally from SDR 1,939 million at the end of 1992 to SDR 2,017 million at the end of 1993, which represented a fall in debt as a percentage of GDP. The country benefited from a concessional rescheduling of its debt by Paris Club creditors in October 1992, as well as bilateral relief from countries including China and the former USSR. Some external payments arrears were accumulated over the period. Although the terms-of-trade shock may have contributed to the accumulation of these arrears, the main cause was that external budgetary assistance did not materialize as programmed.

18.   **Impact of the Shock on the Fiscal Balance and Consumption:** Government revenue fell from an average of 16.6 percent of GDP in the pre-shock years to an average of 13.6 percent during the shock period, before recovering to an average of 14 percent in the post-shock years. In 1992 and 1993, there were shortfalls of revenues of about CFAF 10 billion and CFAF 14 billion compared to the programmed levels. Although the decline of world cotton prices is likely to have contributed to this performance, other factors included tax collection difficulties, the abolition of the lump-sum minimum poll tax, and the reluctance of economic agents to apply the VAT to retail sales. In the absence of data on the contribution of cotton taxes to total tax collection, it is difficult to quantify the effect of the shock on Mali's revenue shortfalls.

19.   On the expenditure side, spending was contained within program limits for both years. Because of the revenue difficulties, however, the budget deficit excluding grants exceeded the programmed amount by 0.5 percent of GDP in 1992 and by 1.9 percent of GDP in 1993. Delays in external aid disbursements in both years exacerbated the situation, and led to the accumulation of external payments arrears over the period.

20.   **Impact of the Shock on GDP:** An analysis of the impact of the shock in terms of growth rates is difficult because the pre-shock years were politically and economically turbulent ones. Additionally, GDP growth in Mali depends heavily on agricultural growth, which in turn is influenced by rainfall patterns. Average growth for the two years preceding the shock was close to zero. In 1992, favorable weather patterns led to GDP growth of 8.4 percent. Poor agricultural output in 1993, coupled with renewed civil strife, led to GDP contracting by 2.4 percent in 1993. It seems likely that the political situation, the economic reform program, and weather conditions were of more importance in determining this pattern of growth than the terms-of-trade shock. Trends in consumption and investment follow GDP quite closely. Since the variations in consumption over this period exceeded the variations in GDP, it is hard to find any evidence of consumption smoothing.

21.   An alternative to focusing on growth rates is to use estimates of foregone exports to calculate the effect of the shock on GDP in percentage terms. The marginal propensity to invest out of export income is assumed to be 0.21 (the ratio of gross domestic investment to

GDP in 1991). Capital is assumed to earn a return of 10 percent per annum, and also to depreciate at the same rate. This exercise indicates that the loss as a percentage of counterfactual GDP was relatively limited, averaging 1.8 percent over the shock period and becoming negligible thereafter.

22.   **Impact on Poverty:** The cotton crop accounted for only about 6.3 percent of GDP in 1991. However, although incomes in the cotton sector do not dominate trends in rural income or poverty, they are of at least some importance. An estimated 1.5 million rural people (out of a total population of 9.2 million) depend directly on cotton for their livelihood; most of the remainder are dependent on subsistence farming and food crops.

23.   Although a comparison of household surveys in 1988-89 and 1994 indicates that the poverty headcount ratio increased from 40.8 percent to 68.8 percent, such an exercise is fraught with problems of comparability of data. Also, the comparison cannot really be used as a measure of the impact of the trade shock, which only commenced in 1992 and had ended by the time the second survey was carried out. The worsening of poverty may have been mainly due to the civil strife that prevailed prior to 1991, and to the devaluation of 1994.

24.   A better way to form an estimate on the probable impact of the shock on poverty is to consider the institutional arrangements under which cotton producers in Mali were remunerated. The government-controlled Compagnie Malienne pour le Developpement des Textiles (CMDT) was the country's monopoly purchaser of seed cotton from farmers. During 1992 and 1993, cotton producers continued to receive the previously agreed floor price of CFAF 85 per kg. of cotton, but not the premium that they enjoyed in better years. The CMDT estimated that the real income of cotton farmers fell by 2 percent in 1992, followed by a larger collapse of 11.4 percent in 1993. Real incomes contracted even more after the recovery of cotton prices, falling by 16.4 percent in 1994. While the devaluation allowed the CMDT to revise the floor price upward to CFAF 125 per kg. of cotton, this was insufficient to counteract the consumer price inflation that followed in the wake of the devaluation.

III. HONDURAS: HURRICANE MITCH

25.   **Background:** Prior to Hurricane Mitch, which hit Honduras in October 1998, the authorities had made efforts to implement policies aimed at stabilizing the economy, achieving economic growth and reducing poverty. ESAF-supported programs during 1992-97 period were part of these efforts to revive the economy, though the third annual arrangement was not concluded and no disbursement was made after 1995. These efforts boosted real GDP growth, which averaged 3¾ percent over the 1990-97 period compared to only 2½ percent during the 1980s. However, the inflation averaged about 20 percent over the 1991-97 period compared to about 6 percent during the 1980s. The Honduran economy became more diverse in the 1990s as the agricultural sector share fell to about a quarter of the total output. Exports were relatively more concentrated in agriculture commodities, as bananas and coffee accounted for about 40 percent of the merchandise exports in the first half of 1990s. However, export diversification was improving owing to

manufactured exports in the maquila sector, which grew from nothing in 1992 to US$300 million or 20 percent of total exports in 1997. Generous access to foreign assistance during the 1980s allowed the authorities to run large fiscal and current account deficits. However, when bilateral foreign aid contracted following peace in the region, Honduras started to borrow from the multilateral financial institutions. Consequently, external debt rose to 77 percent of the GDP and external debt service was at 30 percent of total government revenue in 1997.

26.   **Direct damages:** The hurricane caused catastrophic floods and landslides. It was one of the worst natural disasters in the recent history of Honduras, affecting most of the country, including the two largest cities. Human costs were enormous: over 13,700 people were dead or missing and another 12,500 were injured, about half a million people lost their housing. Overall, 1½ million people were estimated to be affected by Hurricane Mitch. Direct damages were estimated at US$2.2 billion, or about 47 percent of the 1997 GDP.

27.   **Impact on balance of payments:** The trade account deteriorated substantially in the post-Mitch period, but the overall current account position did not show any significant change, owing to large transfers from abroad and the steady performance of maquila sector exports. Merchandise exports, which were growing by 25 percent in the first three quarters of 1998, shrank by 25 percent in 1999 as the hurricane destroyed most of the export crops. Consequently, the trade deficit increased from 10¼ percent in 1997 to 23¾ percent of GDP in 1999, and remained above 20 percent of GDP in the two subsequent years. This persistent large trade deficit was offset by a large increase in official and private transfers, which more than doubled to 14 percent of GDP after the hurricane, and by maquila exports, which increased from about US$300 million in 1997 to US$540 million in 1999.

28.   In addition to more grants, the international community disbursed more loans and provided debt relief both immediately after the disaster and later under the HIPC Initiative. The Fund also quickly provided a significant amount in emergency assistance (50 percent of quota instead of the usual 25 percent). Strong support from donors and creditors led to higher international reserves. However, continued weak trade balances and higher aid dependency increased external vulnerability. At the same time, external competitiveness, as measured by the real effective exchange rate, worsened, partly owing to a crawling band exchange rate system. The real appreciation was estimated to be about 45 percent during the 1997-2000 period.

29.   **Impact on fiscal balance:** Current expenditures of the central government increased from an average of 18.5 percent of GDP in the three years before the hurricane to an average of 22 percent of GDP in the three years after the disaster. Most of this increase was due to public spending for health, education and safety net programs, which increased by 1.6 percent of GDP in 1999 and by 2.6 percent of GDP in 2000. However, the o*verall fiscal balance* was not seriously affected by the hurricane for various reasons. First, public sector revenue did not decline after the disaster, partly because of a hike in the sales tax rate implemented just before the hurricane. Second, a combination of debt relief and additional grants in the

post-Mitch period helped the budget. As a result, the government improved its net position with the domestic banking system by about 10 percent of GDP in 1999-2000.

30.   **Impacts on economic growth:** Severe damage to infrastructure and other capital lowered real GDP growth in the post-Mitch period. While real GDP grew by 5 percent in the first three quarters of 1998 (prior to the hurricane), growth for the whole year was only 2.9 percent. Real GDP contracted by 2 percent in 1999. A major source of this decline in output was the agriculture sector, which suffered most of the destruction; the production of banana and plantains, for example, shrank by over 75 percent. Following the hurricane, output growth remained below the levels projected prior to the shock.

31.   **Impact on poverty:** Honduras, being one of the poorest countries in Central America, was less capable of coping with large natural disasters than were other countries in the region. The incidence of poverty was high prior to the hurricane (March 1998), with about 63 percent of the population below the poverty line and 46 percent of the population in extreme poverty. The extreme poverty rates were almost twice as high in rural areas (60 percent) as those in urban areas (35 percent). Evidence from a March 1999 survey suggests that both extreme poverty and moderate poverty increased to 49 percent and 66 percent, respectively. Moreover, the poverty impact of hurricane Mitch might have been larger than reported, as the survey did not capture well some of the population at risk (e.g., small farmers).

32.   **External financing:** Substantial additional external assistance was provided by the international community after Hurricane Mitch. Significant humanitarian assistance was provided to address the urgent food and health care needs (the OCHA appeal alone collected over US$650 million in humanitarian assistance for countries affected by Hurricane Mitch). The Paris Club agreed in early 1999 to defer all debt service due during the 1999-2001 period and, at the same time, bilateral donors placed about US$116 million into a Trust Fund to help Honduras lower the cost of servicing its multilateral debt. At the Consultative Group meeting in May 1999, almost half of the US$2.7 billion in assistance pledged by the international community was in grants. By September 2000, a total of US$1.2 billion was committed, but only US$400 million (about one-third of the total committed grants) was disbursed. Out of the pledged concessional loans of US$1.3 billion, a total of US$856 million was signed by September 2000. Fund financial assistance was first provided under Emergency Natural Disaster Assistance (US$67 million) in December 1998 and, then, under a PRGF arrangement that was approved in March 1999. This quick and substantial Fund financial assistance provided within six months of the hurricane was indicative of the Fund's emphasis on making serious efforts to promote a quick recovery.

IV. UGANDA: COFFEE PRICE SHOCK

33.   **Background:** The period between 1962 and 1986 saw eight changes of government in Uganda, four of them by military force, and included a prolonged period of dictatorship under Idi Amin. By the time country achieved political stability under President Museveni's NRM government in 1986, it was one of the poorest countries in the world, with a per capita

income that was 42 percent below its 1970 level. At that time an ambitious program of economic reform was launched, supported by international donors, the IMF and the World Bank. It was in the context of economic and social recovery from the conflict of earlier years that the terms-of-trade shock occurred.

34.   **Impact on the Balance of Payments:** The primary impact of the shock fell on Uganda's balance of payments. Total exports declined from US$384 million in 1986 to US$157 million in 1992, and the share of coffee in these revenues declined from over 95 percent to less than two-thirds. The fall in exports caused the current account deficit to rise sharply, from 1.8 percent in 1986 to an average of 7.6 percent over the shock period. Excluding grants, the current account deficit averaged 15.3 percent during 1987-92. This deterioration occurred despite import values in dollars registering only modest growth over the period. The recovery in coffee prices saw an improvement in the current account, with the deficit averaging 3 percent (including grants) and 10.9 percent (excluding grants) from 1993 to 1995. Foreign financing allowed gross reserves to improve from 0.7 months of import coverage in 1987 to 1.8 months of import coverage in 1992. [6]

35.   Two simple counterfactual exercises reveal that the cost to the economy in terms of foregone export revenues was substantial. Assuming that the unit value of exports remained unchanged at its pre-shock level, actual exports averaged only 48 percent of counterfactual exports over the six-year shock period. [7] Assuming that there was a linear structural decline in coffee prices between 1986 and 1993 (since coffee prices never recovered to their pre-shock levels), then the shock's impact is reduced, although it is still substantial, with actual exports averaging 70 percent of counterfactual exports over the period.

36.   The collapse of exports aggravated Uganda's external debt problem. The stock of external debt increased from 22.1 percent of GDP in 1986 to 88.5 percent in 1992. Debt servicing suffered with the collapse of exports, with external arrears increasing from US$30 million in 1986 to US$609 million in 1992. However, it is difficult to estimate how much of this debt burden can be attributed to the terms-of-trade shock. First, as part of the post-conflict recovery program, there were large inflows of credit from bilateral donors and IFIs. Second, during the shock period, Uganda reached debt-rescheduling agreements with a number of creditors, and it is hard to assess whether these agreements would have been reached in the absence of the shock. Finally, the shock coincided with a period of import

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[6] Both the IMF and the Word Bank provided assistance. In 1987 and 1988 two disbursements were made to Uganda under the IMF's Compensatory Financing Facility (CFF). From 1989 onwards the government's economic program was supported under three annual ESAF arrangements amounting to 180 percent of quota. In late 1992, in response partly to the continuing toll of the terms-of-trade shock, the Board approved an additional annual arrangement amounting to 20 percent of quota. The World Bank approved two Economic Recovery Credits in 1987 and 1990, an Agricultural Sectoral Adjustment Loan in 1990, a Sectoral Adjustment Loan in 1991, and several project-related loans.

[7] Using the methodology of Bevan and others (1999).

liberalization and currency reform (in 1987 the currency was devalued by 77 percent, and a series of smaller devaluations followed).

37. **Impact on the Fiscal Balance:** The shock led to a substantial loss of revenue for the government. In the two years preceding the shock, the coffee tax contributed an average of 43.7 percent to total government revenues. This fell to 6.1 percent by 1990.[8] The collapse of coffee revenues led to persistent shortfalls in revenue compared to the budgeted amount from 1987-1990. Consequently, the budget deficit excluding grants registered a large increase, from 4.6 percent of GDP in 1986 to 12.6 percent in 1992 (peaking at 14.5 percent in 1991).

38. Public consumption rose from 5.7 percent of GDP in 1986 to 9.9 percent in 1992, and public investment increased from 4.1 percent to 5.8 percent. Although the rise in public spending was substantial, there is evidence that a wide range of government programs, including some connected with the rebuilding of social and economic infrastructure, suffered from under funding. How much of this was due to inefficiency and poor implementation, and how much was due to the shortfalls in revenues is difficult to establish.

39. Government expenditure rose steadily over the shock period, and grants became increasingly important for financing the deficit. Grants as a percentage of GDP increased from 1.6 percent in 1986 to 6.9 percent in 1992. The importance of grants is evident from the fact that, despite the large increase in the budget deficit excluding grants, the deficit including grants remained comparatively stable, averaging 4.7 percent over 1987-1992.

40. **Impact on Economic Growth:** The terms-of-trade shock almost certainly had a negative impact on GDP, but it is difficult to ascertain this directly from real rates of growth. In the three years leading up to the shock, growth averaged under 0.5 percent per annum, whereas during the shock period, growth averaged 6.2 percent per annum. As noted previously, the Ugandan economy was in a post-conflict reconstruction phase, and these high rates of growth occurred from a very low initial level.

41. Rather than examining growth rates, the effect of the shock on GDP is estimated based on foregone exports. The marginal propensity to invest out of the additional export income is assumed to be 0.11.[9] In 1987, the only additional income is assumed to be from foregone exports. In subsequent periods, however, the income stream from the additional investment is included.[10] Capital is assumed to depreciate at a rate of 10 percent per annum.

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[8] In 1991 the Coffee Marketing Board's monopoly on buying and marketing coffee was removed, and therefore data on the coffee tax are unavailable for this year. In 1992 the coffee tax was abolished.

[9] In lieu of any estimates of the marginal propensity to invest, we simply use the ratio of gross domestic fixed investment to GDP in1986.

[10] Note that this methodology is equivalent to assuming that all additional export revenues are spent on imports, and 11 percent of the imports comprise investment goods. This simplifies the analysis

(continued)

Using the first counterfactual (see paragraph 35), the foregone output averaged 9.9 percent of counterfactual GDP between 1987-1992. These figures seem very high due to the fact that this counterfactual probably conflates the price shock with the secular decline in coffee prices. But even the more realistic estimates of the second counterfactual point to a substantial loss of income, averaging 3.5 percent over the period.

42.   **Impact on Poverty:** Neither direct data on poverty nor indirect evidence support the contention that the terms-of-trade shock worsened poverty in Uganda. A comparison of household surveys in 1989 and 1992 reveals few changes other than a widening gap between rural and urban poverty.[11] Other social indicators also indicate that there was no worsening of non-income poverty. Between 1989 and 1992, there was a real increase of 49 percent in locally funded expenditures on primary education. Adult illiteracy declined from about 57 percent in 1986 to about 46 percent in 1992. Although health indicators deteriorated markedly, this was a consequence of the HIV/AIDS epidemic rather than the terms-of-trade shock.

43.   A number of factors helped to limit the impact of the terms-of-trade shock on rural incomes. One is the currency reform carried out over the period, which took the form of large successive devaluations of the exchange rate. Second, until 1991, producer prices for coffee ("farmgate prices") were fixed by the Coffee Marketing Board, which had a monopoly over procurement and marketing. As a result of social pressure, the government did not allow real farmgate prices to decline as steeply as export prices for coffee. In fact, in 1991, real farmgate prices were slightly higher than their level in 1986. The farmers' share of the international price of coffee in 1991 was more than double their share in the mid 1980s. The subsequent abolition of both the Coffee Marketing Board and the coffee tax led to real farmgate prices staying constant in 1992 and, from 1993, onward they resumed their upward trend with the improvement in world coffee prices. Finally, cash crops, a category that includes cotton and tea apart from coffee, comprised only 4.7 percent of agricultural output in 1986, limiting the extent to which rural incomes were dependent on coffee prices.

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greatly by allowing us to abstract from the changes in domestic aggregate demand and price level that may have occurred with an increased flow of export revenues.

[11] This is attributable to migration to the cities by some relatively affluent rural persons rather than to falling incomes in rural areas. In fact the World Bank estimates that the real wage rate for casual labor (which tends to come from the poorest sections of the rural population) almost doubled between 1986 and 1992.

V. ZIMBABWE: DROUGHT

44.   **Background:** In late 1991 and early 1992, Zimbabwe was hit by a severe drought that devastated production of maize, the staple food crop (production declined 83 percent), as well as cotton (72 percent decline) and sugarcane (61 percent decline). These three crops had accounted for about one-third of agricultural output for the previous year. Over 1 million cattle (or 23 percent of the national herd) died or were slaughtered. Prior to the shock, sluggish growth in the late 1980s had contributed to internal and external imbalances, with the fiscal and current account deficits at 7 and 10 percent of GDP, respectively, at the end of the decade. Inflation had reached 29 percent at the end of 1990 and, in 1991, the authorities undertook a 44 percent nominal devaluation. Fiscal policy in the 1980s had centered on removing social inequities through budgetary support and direct price controls, which deterred growth and investment, impeded needed structural reform and weakened the performance of public enterprises. In January 1992, Fund staff had projected an improvement in the economy over the medium term, assuming successful adherence to a Fund-supported reform program, which was ultimately approved in September 1992.

45.   **Impact on the Balance of Payments:** The current account deficit increased from 6 to 12 percent of GDP between 1991 and 1992, largely as a consequence of the drought. The sharp reduction in cotton output also affected the export of textiles and related manufactured goods. The tobacco crop was spared by the timing of the drought, but water shortages led to a deterioration in the quality of processed tobacco and market prices of Zimbabwean tobacco were significantly reduced.[12] The effect on tobacco prices lingered for a few years, since tobacco crops of 2-3 years are typically blended together for export. Water shortages also reduced hydro-electricity generation, and power cuts severely affected industry. The water and energy shortages impacted the mineral export sector as well, including, importantly, gold. At the same time gold (and cotton) prices were falling in the international market. During 1992 and 1993, these combined price declines amounted to an effective terms-of-trade decline of 7 percent. A recovery in mining and manufactured exports in 1993 increased overall exports somewhat, and exports returned to pre-drought levels by 1994. Food shortages led to emergency imports of food, causing a 62 percent increase in food imports in 1992 and a significant fall in non-food imports. Higher transportation costs into landlocked Zimbabwe resulted in a worsening of the services account as well.

46.   The higher current account deficit was primarily financed by a combination of an increase in official (mostly drought-related) transfers and concessional credit to the government. As a result, gross international reserves fell only slightly in 1992 from 2.2 to 2 months of imports, and recovered quickly in the following year. Perhaps the largest impact of the drought was on Zimbabwe's external indebtedness; external debt rose as a percentage

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[12] Maize exports, which had been small in the past relative to the exports of other crops, largely due to high domestic consumption, were driven to zero, and did not recover until the government stopped restocking its emergency grain reserve.

of GDP from 36 percent in 1991 to 60 percent in 1992, and continued to increase over the medium term to reach 75 percent by 1995. However, most of the new borrowing was on concessional terms, in keeping with the adjustment program with the Fund.

47.   **Impact on the Fiscal Balance:** The fiscal deficit worsened as a consequence of the drought, increasing from 7 percent in 1991-92 to 10 percent by 1992-93. Revenues fell sharply in 1992-93 due to drought-induced losses of incomes, a slump in business activities, and a slowdown in non-food imports. However, non-drought factors also played a role, as an ongoing tax reform had reduced the top marginal tax rates. Current expenditures rose 2 percentage points of GDP in 1992-93, largely due to drought-related emergency outlays. While the prices of most imported foods were passed on to consumers, official distribution of maize at low domestic prices required a high subsidy. Also, utility revenues fell due to increased non-payment; water and electricity parastatals were particularly badly hit.

48.   Domestic budgetary financing was dictated largely by the timing of external financing. Drought relief grants from abroad did not arrive in time. While aggressive efforts by the authorities to muster support from bilateral donors covered some of the shortfall, there was a gap of about Z$1 billion in the second half of 1992, which the government filled by borrowing from the central bank. While the fiscal deficit improved in 1993-94, largely due to a reduction in drought-related expenditures, it remained vulnerable to shocks and the 1995 drought worsened it again.[13]

49.   **Impact on Economic Growth:** By the end of 1992, real GDP had fallen by 9 percent and inflation had jumped to 46 percent, with an increase in food prices of 72 percent, largely due to the higher prices of imported food. The drought also strongly affected industrial production because of close linkages with agriculture. Agro-processing and textiles were badly hit due to a combination of weak demand, input shortages, power cuts and tight credit. By end-1992, manufacturing output had fallen by about 9 percent and high interest rates affected sectors in which working capital requirements had increased sharply. Agricultural growth fell by about 23 percent in real terms in 1992. Moreover, the exchange rate, which had been devalued in the year before the drought, became overvalued in 1992 and 1993 as a result of high inflation.

50.   Weak demand was characterized by declines in private consumption and investment, though public consumption rose due to drought-related public expenditures. Private consumption, which accounted for more than two-thirds of GDP in 1991, fell dramatically by 16 percent of GDP in 1992. Public consumption rose 46 percent in real terms in 1992, and while it fell back in 1993, remained above pre-drought levels until 1996. Following a high rate of investment in manufacturing, commercial agriculture and mining over the 1986-91

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[13] The 1994-95 drought was milder than its predecessor in 1991-92. Even though agricultural output fell sizably (maize output alone declined by about 40 percent) a buoyant mining sector, aided by an increase in international prices, prevented a large decline in real GDP, which fell by just 1 percent.

period, gross fixed capital formation fell sharply in 1992 with declines in both public and private investment.

51.   With adequate rains in 1993, agricultural output increased closer to normal levels, with maize registering a bumper crop. Exports also recovered, rising 17 per-cent in volume terms, with tobacco and gold growing by 22 and 43 percent, respectively. However, a combination of continued weakness in demand due to falling private consumption in real terms and tight credit to the private sector affected non-agricultural activities. Manufacturing, construction, electricity and water continued to decline in real terms in 1993. While real GDP growth recovered to 6 percent in 1994, before being affected by another relatively mild drought in 1995, private consumption continued to decline in real terms, falling to about two-thirds of its pre-drought level.

52.   **Impact on Poverty**: Few direct measures of poverty impacts of the 1992 drought are available, but available evidence indicates that there was an appreciable increase in poverty, especially in rural areas. The following indirect indicators also point to a fairly severe poverty impact of the drought:

•   Employment was relatively stable over the course of the crisis, but real wages declined by 23 percent in 1992 (declined by 42 percent in agriculture and by18 percent in manufacturing).

•   Households cut expenditures on health and education to make room for food purchases. Government expenditures on health and education were also reduced (as a share of the budget), with a particularly high reduction in allocation for primary education. School dropout rates increased.

•   Both child malnutrition and the number of children with low birth weight worsened.

•   Higher import prices of food were passed on to consumers (although the government continued to subsidize maize).

•   Government drought relief programs increased their distribution substantially and, in light of the severity of the food shortages, free distribution was preferred over food-for-work programs. However, evidence suggests that such transfers covered only 15 -25 percent of the household food needs at the height of food shortages and were not well targeted to the poor.

53.   **External Assistance:** The drought elicited a significant response from the international community. Net ODA inflows (both grants and loans) jumped from 5 percent of GDP in 1991 to 12 percent in 1992 and remained at or above 8 percent in the two subsequent years. Most of the inflows were on concessional terms. The World Bank approved an IDA Emergency Drought Recovery and Mitigation Project of US$150 million and the IMF augmented the ESAF arrangement by 17 percent of quota. However, external help arrived too late in 1992 to have been effective in reaching the needy and supporting the budget, so

the government had to resort to bank financing. As of end-1992, only 17 percent of the IDA emergency loan had arrived and significant amounts of relief food aid did not arrive until the end of the subsequent year. The delays can be partly attributed to coordination problems within the government—the Ministry of Finance, in seeking to maintain its relatively tight controls on expenditure, may have held up disbursements of additional external assistance.

Annex Figure 1. Real GDP Growth: Program Targets and Outcomes
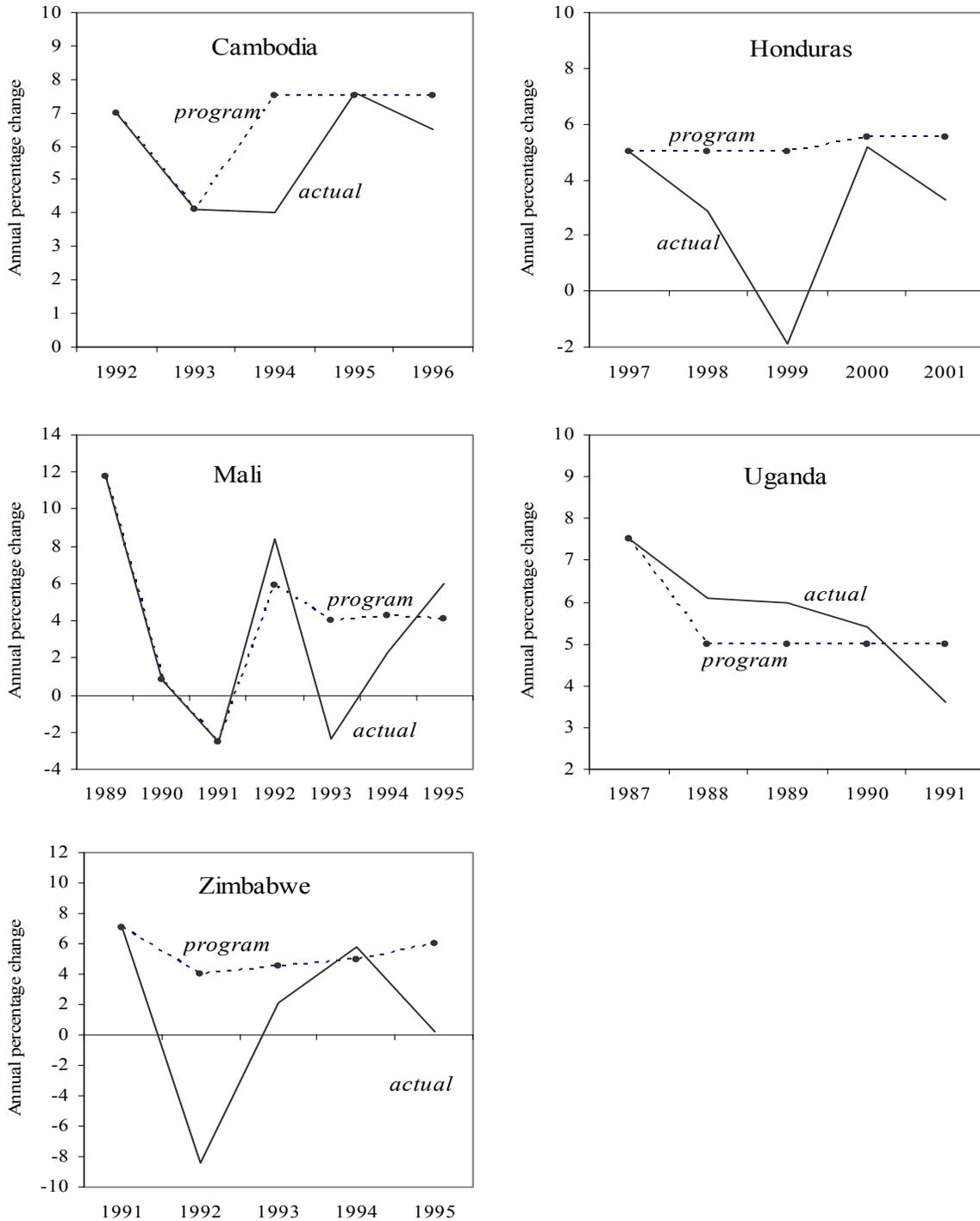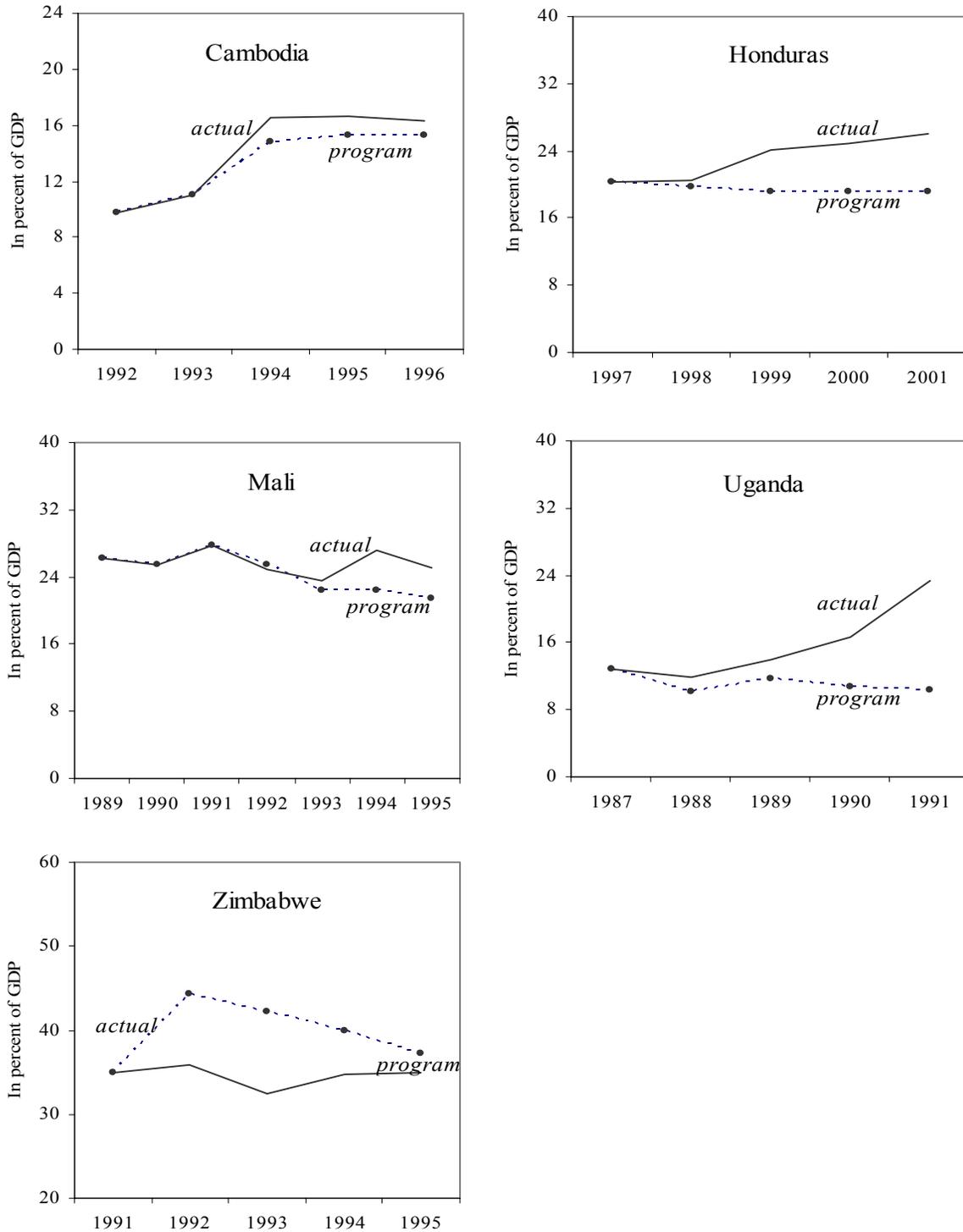

Source: Staff Reports.

 1/ Growth rates for Cambodia are based on data published before the July 2003 revisions in National Accounts. The revised data indicate a higher rate of GDP growth in 1994 but comparable data for 1993 is not available.

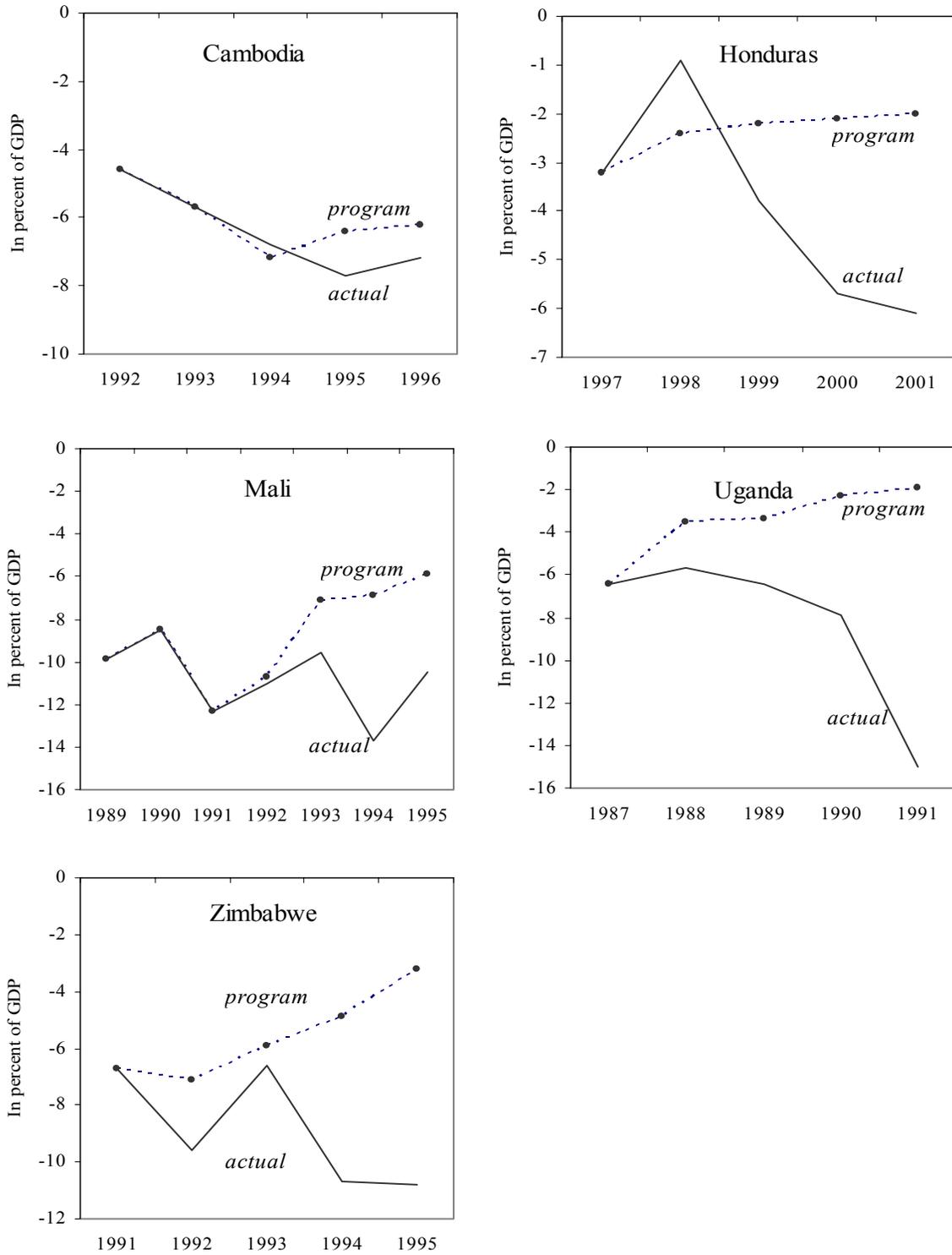**Annex Figure 2. Government Revenues: Program Targets and Outcomes**
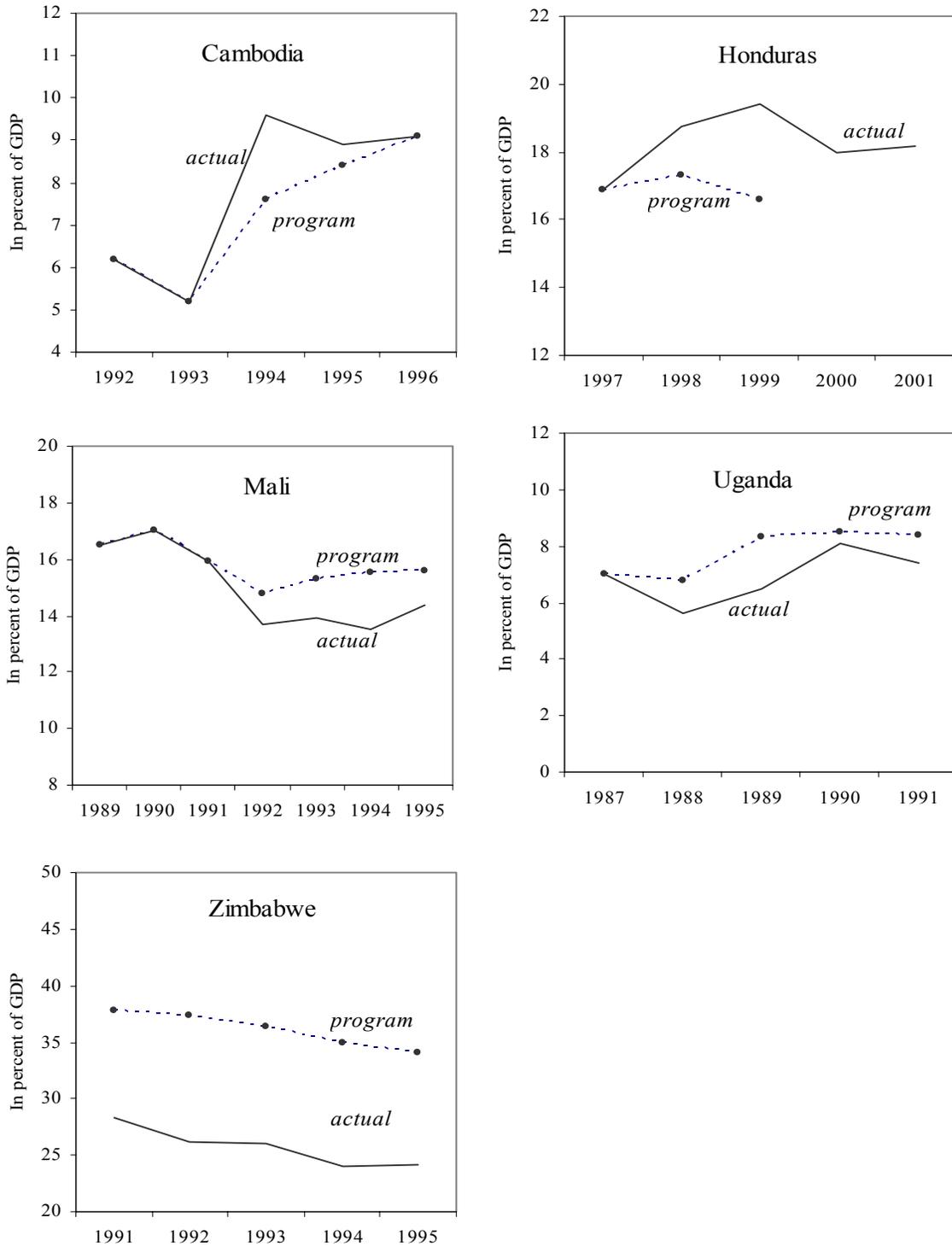
Source: Staff Reports.

Annex Figure 3. Government Expenditures: Program Targets and Outcomes
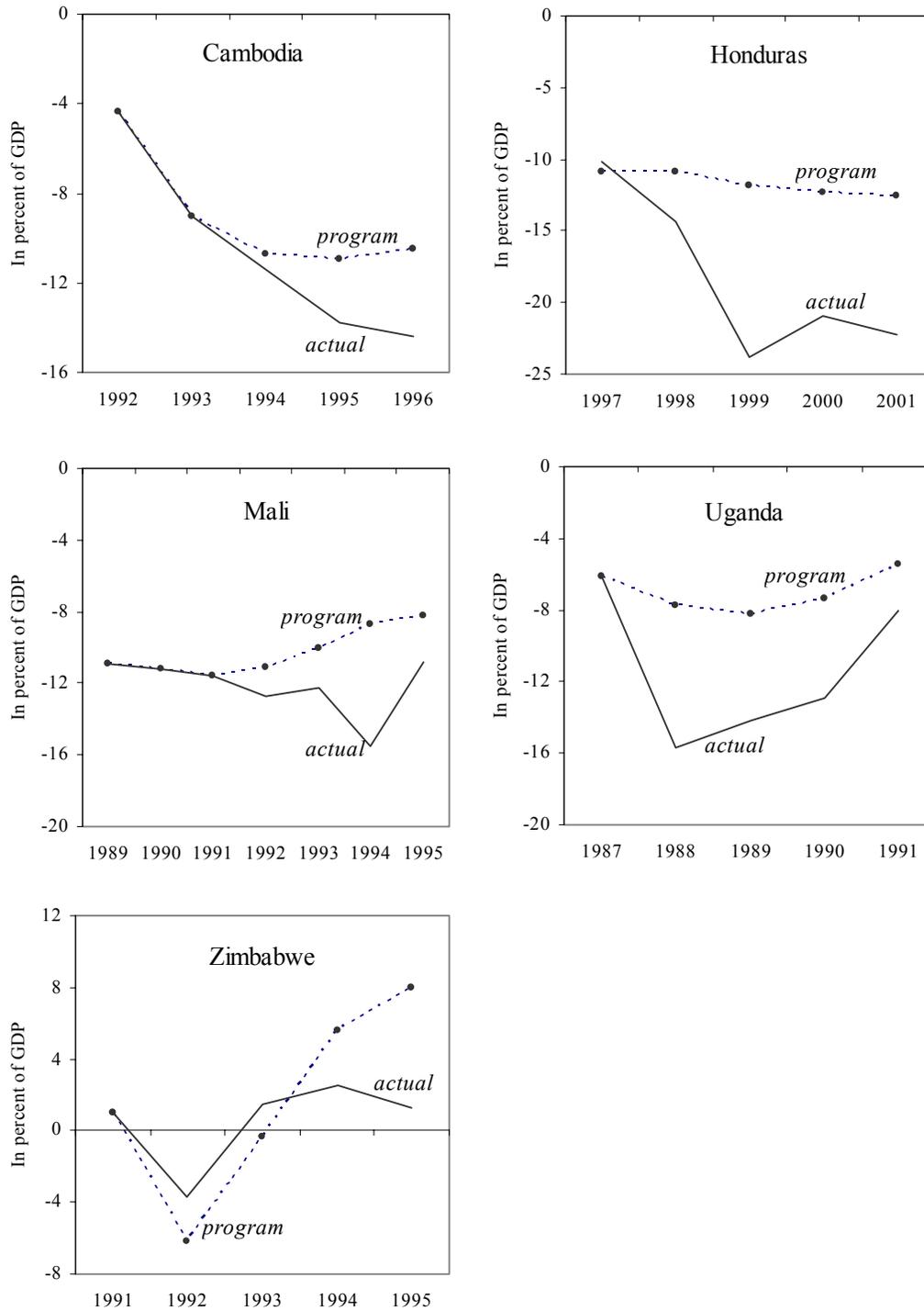

Source: Staff Reports.

**Annex Figure 4. Fiscal Balance of the Central Government :
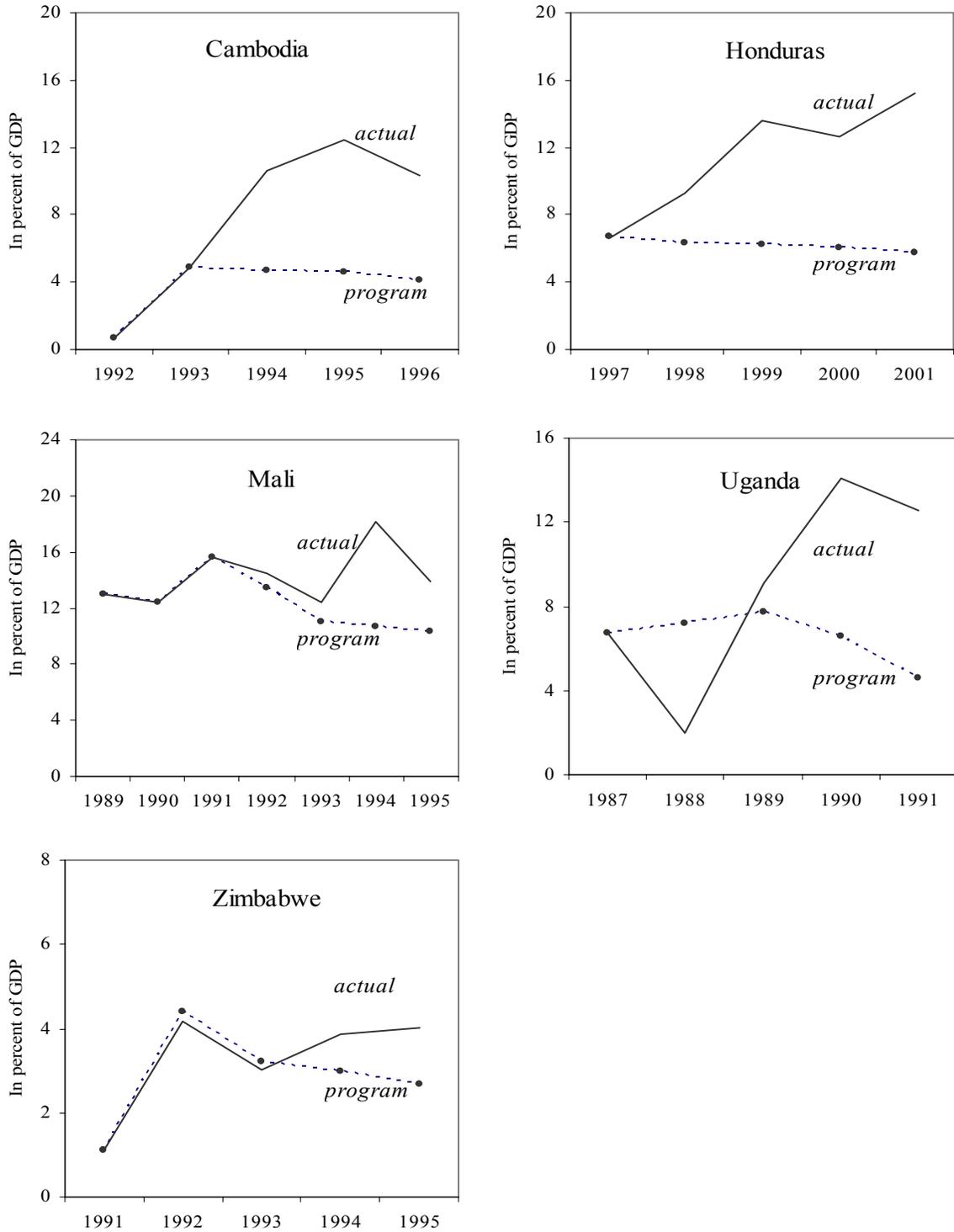Program Targets and Outcomes**

Source: Staff Reports.

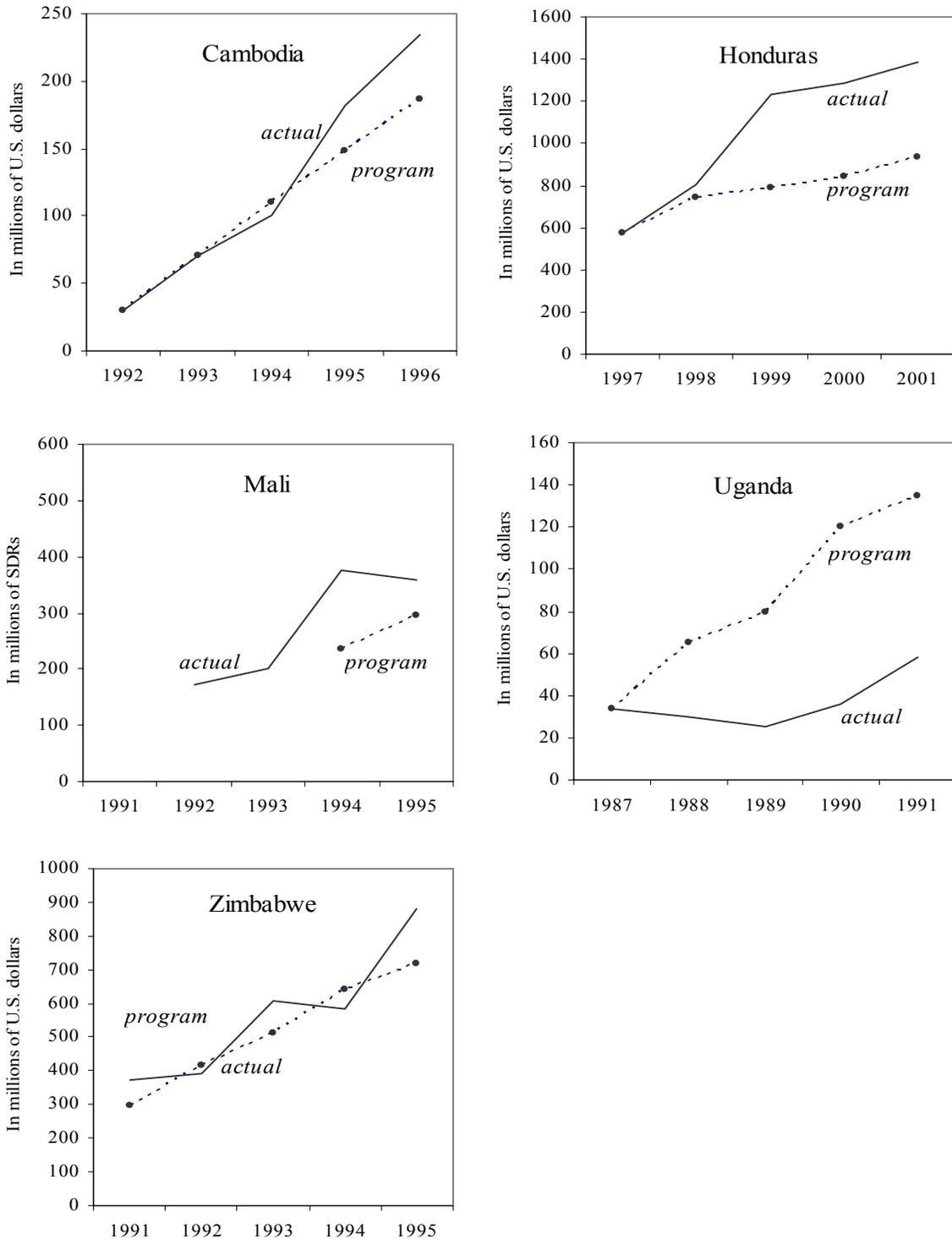**Annex Figure 5. Trade Balance: Program Targets and Outcomes**

Source: Staff Reports.

Annex Figure 6. Current Transfers From Abroad: Program Targets and Outcomes

Source: Staff Reports.

Annex Figure 7. International Reserves: Program Targets and Outcomes

(In millions of U.S. dollars or SDRs)

Source: Staff Reports.

Annex Table 1. Selected Fiscal and Balance of Payments Indicators in Shock-Affected Economies
(In percent of GDP, unless otherwise indicated)

	Shock	t-3	t-2	t-1	t=0	t+1	t+2	t+3	t+4
GDP in agricultural sectors (percentage growth)									
Cambodia	1994	6.7	1.9	-1.0	0.0	6.4	2.4	2.1	2.5
Honduras	1998	8.8	2.5	4.3	-1.9	-8.5	9.5	2.3	0.3
Mali	1992	17.4	-1.2	-5.4	15.2	-8.5	7.5	6.7	-1.8
Uganda	1989	1.7	5.7	6.6	7.0	5.6	2.4	9.8	4.6
Zimbabwe	1992	3.4	12.2	1.0	-23.2	27.1	7.3	-7.6	19.8
Current account, including official transfers									
Cambodia	1994	...	-2.2	-2.0	-3.9	-5.4	-1.8	-1.4	-1.9
Honduras	1998	-4.0	-4.1	-3.1	-2.4	-4.4	-4.2	-4.1	-2.9
Mali	1992	-4.4	-5.6	-1.7	-3.7	-4.0	-3.8	-6.2	-5.6
Uganda	1989	-1.8	-9.6	-9.8	-10.5	-8.1	-4.8	-3.1	-1.8
Zimbabwe	1992	0.0	-1.7	-5.2	-8.9	-2.1	-2.0	-2.8	-1.1
Current account, excluding official transfers									
Cambodia	1994	...	-2.5	-9.4	-13.7	-16.7	-15.5	-7.9	-8.0
Honduras	1998	-8.0	-7.5	-6.1	-7.1	-11.5	-9.3	-10.5	-6.9
Mali	1992	-14.4	-14.7	-14.8	-16.3	-12.9	-16.9	-15.3	-14.7
Uganda	1989	-1.8	-14.0	-16.9	-16.7	-19.4	-13.3	-11.7	-8.8
Zimbabwe	1992	-1.0	-2.9	-6.3	-12.5	-4.7	-4.6	-5.2	-2.1
External debt									
Cambodia	1994	...	...	20.4	20.3	18.0	19.0	66.0	73.0
Honduras	1998	99.8	92.3	76.8	72.1	79.1	71.6	67.8	64.1
Mali	1992	99.9	90.9	109.7	98.4	105.6	141.0	115.4	109.3
Uganda	1989	22.1	20.2	29.1	39.8	106.8	104.5	88.5	73.6
Zimbabwe	1992	33.3	36.9	36.3	59.2	64.6	69.8	74.6	63.6

Sources: Various Staff Reports; Occasional Papers; and other Fund documents.

1/ Data from different years for these five countries is aligned to shock year, which is labeled as (t=0) year.
2/ For Cambodia, the GDP data reported in this table do not reflect the July 2003 revisions in the National Accounts.

Impact of Shocks on Poverty—A Summary of Recent Research

54.   *Large natural disasters* can increase poverty by destroying assets and causing income losses. Evidence from a number of country-specific studies clearly support the conclusion that disasters have generally increased the poverty headcount. For example, a climatic change caused by El Niño (combined with an oil price shock) during 1997-98 period increased headcount poverty in Ecuador by 12 percentage points—from 34 percent in 1995 to 46 percent in 1998. Similarly, a severe El Niño weather shock in Peru in 1983 may have been responsible for a significant worsening of poverty from 46 percent to 52 percent.[14] *Terms-of-trade shocks* can also have a significant impact on poverty, particularly when these shocks are highly persistent and where a significant portion of households participate in cash crop agriculture and mining. For example, in the Dominican Republic, headcount poverty increased from 36 percent to 40 percent after a combination of drought and terms-of-trade shocks in 1990.[15]

55.   In addition to their direct impact through asset damage and income loss, exogenous shocks can impact poverty through their effect on growth, inflation, and fiscal position. A slowdown in income growth after a shock is an important source of increased poverty. Growing research shows that one of the most effective ways to reduce poverty is to ensure sustained economic growth.[16] Also, if the macroeconomic imbalances caused by a shock result in high inflation and/or lower spending for social services, the poor would be disproportionately affected.[17]

56.   Exogenous shocks generally hurt the poor disproportionately, though they can also drive the non-poor into poverty. First, shocks can cause disproportionate losses in the relative income and assets of the poor; for example, following a weather-related shock in El Salvador in 1997, the income of the bottom quintile declined by 32 percent, but the income of the richest quintile increased by 9 percent.[18] Second, employment retrenchments in post-shock

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[14] "Crises and the Poor: Socially Responsible Macroeconomics," Lustig, Nora (2000), Sustainable Development Department Technical Paper (Washington, Inter-American Development Bank).

[15] Ibid.

[16] For example, "Growth is Good for the Poor," Dollar, David and Aart Kraay (2001), World Bank Working Paper 2587 (Washington, World Bank).

[17] "Inflation and the Poor," Easterly, William and Stanley Fischer (1999), Policy Research Working Paper 2335 (Washington, World Bank); "Are Governments Pro-poor? A Test based on Targeted and Social Spending During Booms and Busts," Wodon and others (2000), World Bank Draft (Washington, World Bank).

[18] "Managing Economic Insecurity in Rural El Salvador: The Role of Assets Ownership and Labor Markets Adjustments," Conning and others (2001), Williams College, Department of Economics, Working Paper.

periods can disproportionately affect the poor as firms respond to a shock-induced contraction by hoarding skilled workers and laying off unskilled, among whom the poor tend to be concentrated.[19] Third, the poor are generally less able to cushion their consumption in the post-shock period owing to limited savings and access to credit; thus, consumption smoothing in low-income countries remains below optimal. In India, 40 percent of the income shock is transmitted to the current consumption of the poorest decile, but only 10 percent of the income shock is transmitted to the richest households.[20] Fourth, a significant loss of income and assets due to an adverse shock can have an irreversible impact on the human and physical capital of the poor and, thereby, limit the benefit of a recovery for them. For example, distress sales of assets such as cattle and land—which are used as precautionary saving instruments, but also serve as physical inputs in the farm production—can lead to long-term declines in households' productive capacity.[21]

57.   This disproportionate effect of shocks on the poor is partly responsible for the asymmetric impact of growth on poverty, which implies that a one percentage point contraction in per capita income tends to increase poverty by more than an equivalent increase in per capita income generates a decline in poverty. Empirical evidence supports the existence of this asymmetric effect of fluctuations in economic growth on poverty.[22] For example, in Latin America, a 1 percentage point decline in aggregate income eliminated earlier beneficial effects on poverty of a more than 2 percentage point increase in income.[23] These finding suggests that, if poverty reduction is a goal, then avoiding sharp declines in income is important to achieving a higher growth.

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[19] "Business Cycles, Economic Crises, and the Poor; Testing for Asymmetric Effects," Agenor, Pierre-Richard (2001), World Bank Working Paper 2700 (Washington, World Bank).

[20] "Are the Poor Less Well-Insured?," Jalan, Jyotsna and Martha Ravallion (1997), World Bank Working Paper 1863 (Washington, World Bank).

[21] "Changes in Consumption and Savings Behavior Before and After Economic Shocks: Evidence from Zimbabwe," Ersado and others (2001)—paper prepared at the conference on 'Crises and Disasters' organized by the IADB and IFPRI.

[22] "Global Economic Prospects and the Developing Countries," Chapter 2, World Bank (2000), Lustig, Nora (2000).

[23] "Growth, Poverty, and Inequality in Latin America: A Causal Analysis, 1970-94," de Janvry, Alain and Elisabeth Sadoulet (2000), *Review of Income and Wealth*, Vol. 46(3).

Ex-Ante Mechanisms for Mitigating Exogenous Shocks

58.   This annex provides an overview of ex-ante mechanisms that have been, could be, or are currently in place to help prevent or mitigate the effects of exogenous shocks in low-income countries.

I. EX-ANTE MECHANISMS FOR MITIGATING NATURAL DISASTERS

59.   **Preventative vs. Mitigating Actions:** Many of the costs associated with natural disasters can be mitigated by prudent *ex ante* public or private action. A distinction can be drawn between those actions that reduce the probability of a disaster **(preventative)**, and those that minimize the impact of the disaster once it occurs **(mitigating)**. An example of a preventative action would be the building of dykes along a river or irrigation channel that is known to flood. Mitigating actions comprise a larger class. The simplest example of a mitigating action is the act of private or public saving, resulting in funds that can be drawn down in the event of a natural disaster to smooth consumption. Both private and public saving, however, are often difficult in poor countries. This is especially true for the most vulnerable sections of society in low-income countries that often subsist beneath the poverty line. On the other hand, government revenues face competing and urgent uses in social and economic spheres, which can make the accumulation of funds for disaster relief difficult. Social safety nets, such as unemployment insurance and disability payments, are scarce in poor countries where they could play an important role in mitigating income loss arising from natural disasters. Other mitigating actions are tailored to a specific type of natural disaster, e.g., land use restrictions and building codes to minimize the impact of earthquakes in a seismically sensitive area.

60.   **National buffer stock schemes:**[24] Buffer stocks at the national level have been maintained by many countries, both rich and poor. Many of the schemes have proven ineffective, such as the large accumulations under U.S. farm programs in the 1980s, and the buffer stock policy in Malawi.[25] In developing countries, much depends on the capability and credibility of the government, since a successful buffer stock policy relies on good early-detection systems and timely interventions to stabilize prices.[26] Some developing countries

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[24] Buffer stocks can, in principle, be used to protect against supply shocks like natural disasters, as well as to stabilize commodity prices, thereby reducing the severity of a terms-of-trade shock. National buffer stock schemes are described in the sub-section on natural disasters and international schemes in the sub-section on terms of trade, but this division is somewhat arbitrary.

[25] In Malawi the government's food security policy had provided for a physical buffer stock of 30,000 to 60,000 tons. However, due to a failure in its early detection systems, the government sold almost all the maize in the buffer stock prior to the food crisis, and maize imports could not be accelerated due to transportation bottlenecks.

[26] As an example of the role of expectations, Martin Ravallion argues that the 1974-75 famine in Bangladesh was exacerbated by a belief that the government (which maintained buffer stocks) would

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have implemented at least partially successful buffer-stock policies, e.g. there is evidence that between 1970-90 India successfully used buffer stock-policy in conjunction with trade to achieve credibility in the sphere of primary commodity market interventions. However, India's buffer stocks are maintained at a considerable cost. Due to the generous minimum support price offered to producers, the Food Corporation of India (FCI) has for several years bought more grain than it can manage. For example, in 1995, the FCI had a grain stock of 36.5 million tons relative to the target of 22 million tons.

61.   **Insurance Mechanisms:** The natural risks faced by poor countries are small relative to world reinsurance markets, so risk-spreading should not in itself pose great difficulties. However, the percentage of insured property—both private and public—remains very low in most developing countries, reflective of low levels of income, poor access to world insurance markets, restricted flows of information, and in some cases a "Samaritan's Dilemma" (i.e.*,* the expectation that the international community is likely to provide ex-post assistance following a disaster).

62.   In countries for which per capita income is under $10,000, insurance coverage is less than 10 percent, and in countries with per capita income under $760, it is less than 1 percent. Asia, which suffered one-half of all the damage caused by natural catastrophes in 1997 and two-thirds of the casualties from such events, owned only 8 percent of the insurance coverage for catastrophes purchased in the world market, whereas the USA, UK and Japan together accounted for 55 percent. Even within developing countries, disaster insurance is largely confined to large enterprises, such as hotels and utilities. Small farmers in poor countries are disadvantaged by lack of access and information, and low levels of income. Private insurers are reluctant to enter the market because of problems such as monitoring and unclear property rights.

63.   **Traditional crop insurance:** Traditional crop insurance is sold by insurance companies to farmers in many parts of the developed word, but there are no examples of successful crop insurance programs without heavy reliance on government subsidies. For developing countries, private insurers face particularly acute problems. Moral hazard and adverse selection are more prevalent than in rich countries, largely due to the prohibitive monitoring costs for small landholdings. Moreover, crop insurance is always tied to the growing of a particular crop, so that it cannot protect large segments of the rural poor who earn most of their income from agricultural labor rather through growing crops on their own farm.

64.   **Non-traditional insurance schemes:** Some non-traditional insurance arrangements, comprising cooperative arrangements among farmers and/or private-public partnerships, have achieved modest success in low-income countries, e.g., the **Mexican fondos de**

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not be able to implement a suitable stabilizing response to reported crop damage, thereby fueling a speculative spike in prices (Ravallion, Martin (1977), "Markets and Economics," *Journal of Economic Literature*, Vol. 35, No. 3, pp. 1205-1242).

aseguramiento (fondos), non-profit civil associations, comprised of groups of farmers, formed for the purpose of providing mutual crop insurance. Collected premiums form a reserve fund sufficient to pay indemnities and cover operational costs. There are about 200 fondos in operation in Mexico, with about 70,000 members. However, fondos do not adequately respond to natural disasters, as such events affect all members simultaneously.

65.   The **Mexican Fund for Natural Disasters (FONDEN)** shares some characteristics of privately provided insurance. Payments are made for many perils covered by traditional crop insurance, such as storm, drought and frost. Coverage of a region requires a co-payment by the state government, and claims of loss automatically trigger field inspections. FONDEN covers only small holders, and pays out only after the federal government declares a disaster. Payments for agricultural losses from the fund amounted to almost one billion pesos between 1997-1999. On average, nearly 80 percent of the irreversible investments made by farmers were covered by these payments, although there is large variability by crop and region.[27] However, FONDEN payments were much less successful in compensating for income-loss—on average covering only 8 percent of expected revenue.

66.   **New Capital Market Instruments:** A number of capital market instruments for weather and disaster risk-management have become available recently, though currently their use is restricted to developed countries.

•   **Catastrophe Bonds** pay high yields but are subject to default if a covered catastrophe occurs during the life of the bond. Funds obtained from sale of the bond are usually invested in risk-free instruments to reduce the net cost of the bond to the issuing agent. By providing a way to securitize catastrophe risk, this enables risk to be spread beyond the insurance and reinsurance markets to the wider capital markets. Catastrophe bonds have been issued mainly by insurance companies in order to spread risks and enter into insurance contracts that would have been too risky at the margin in the absence of such a mechanism. If the catastrophe occurs, the insurance company can default on the principal of the bond and the interest payments on it, giving it the resources necessary to make payments to the catastrophe-affected agent.

•   **Contingent Surplus Notes** confer a "put" right on the issuer. The buyer commits to purchasing debt in the event of a catastrophic event, and the issuer pays a fee to the buyer for this commitment. Similar to this are Contingent Equity Puts, which permit the issuer to sell equity shares to the buyer in a catastrophe.

•   **Exchange-Traded Catastrophe Options** currently trade on the Chicago Board of Trade and entitle the buyer of the option to payment under an option contract if the

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[27] Skees and others (2002), "Can Financial Markets be Tapped to Help Poor People Cope with Weather Risks?", World Bank Working Paper 2812 (Washington, World Bank).

claims index (reflecting insurance industry aggregate reported claims) exceeds a specified level.

- **Catastrophe Swaps** are a transaction in which the insurer undertakes to make payments to an investor on a specified portfolio of securities, and, in return, the investor assumes the insurer's liabilities in the event of a catastrophe.

- **Weather Derivates** are contracts that make payments if a trigger with respect to some weather outcome (such as rainfall, temperature or snow) is exceeded over a specified period. It is generally used by utilities and other enterprises with weather exposure, e.g. ski resorts. The market in weather derivates has grown rapidly in recent years, with a market value of $4.5 billion in the USA in 2001. The market for weather derivatives has also spread to Europe and Japan. The IFC is investigating the feasibility of developing such a market in Ethiopia, Morocco, Tunisia and Nicaragua.

67.   While currently the capital market instruments noted above are available only in developed countries, in principle the widening of the market for risk that they embody represents an opportunity for developing countries. For example, one could envisage a developing country government or agency issuing catastrophe bonds to cover a natural disaster. The success of this kind of operation would depend partly on how the market priced the bonds. In addition to the risk of natural disaster, markets would presumably price-in the sovereign risk of debt-default that would apply to any developing country bond. Also, if it is difficult for agents in the capital market to obtain information about the likelihood of a natural disaster in a particular developing country, or to estimate the degree of moral hazard that the insurance might engender, then the market might be very thin, and the premiums on the catastrophe bond so high that the bonds are uneconomical.

68.   Currently the only private provider of insurance against natural disasters for poor countries is the Commonwealth Disaster Management Agency (CDMA). In 2000, the CDMA, along with Lloyd's Syndicates, launched the Commonwealth and Small States Disaster Management Scheme (CDMS). This aims to provide insurance cover for small states (with a population under 1.5 million) in the form of covering a specified portion of a country's debt service in the case of natural disaster, in return for recurrent premium payments. However, the scheme has been slow to take off. To date only Belize has committed to buying insurance, with dialogue reportedly continuing with four other states. A major reason for the slow progress has been the political reluctance of small economies to pay a regular premium for coverage which may never actually be needed. This is especially true in times of fiscal difficulty. For example, Antigua and Barbuda, and St. Kitts and Nevis expressed interest in the scheme, but then withdrew after September 11 led to a steep decline in revenues from tourism.

II. EX-ANTE MECHANISMS FOR MITIGATING COMMODITY PRICE SHOCKS

69.   **Preventative vs. Mitigating Actions:** As with natural disasters, we draw a distinction between those actions that reduce the probability of a terms-of-trade shock **(preventative)**, and those that minimize the impact of the shock once it occurs **(mitigating)**. Preventative actions for commodity shocks are few, since most low-income countries are price takers in international commodity markets. The most effective preventative action is to strive to diversify the country's export base, so that volatility in the price of a few commodities does not constitute a terms-of-trade shock for the country.

70.   Most of the ex-ante mitigating mechanisms for natural disasters apply equally to terms-of-trade shocks. Public and private saving are again important for consumption smoothing. Building adequate reserves of foreign exchange is useful in preventing imports from having to decline too sharply as export revenues shrink. Adequate reserves also cushion the country against accumulating external debt or incurring external payments arrears in case of a shock. Social safety nets can be crucial in insuring that the rural population's loss of income is limited. Several developing countries, such as Uganda and Mali, have had procurement agencies that guaranteed a price floor to producers. This mechanism provides relief to vulnerable sections of society in the case of short-lived shocks, but cannot be sustained indefinitely for shocks of a longer duration. If the shock reduces reserves to the point where the import of essential primary commodities is jeopardized, then having a stock of the commodity can help stabilize prices.

71.   **International Buffer Stocks:** International buffer stocks have usually proved to be an ineffective mechanism for stabilizing commodity prices. Any modest price stabilization achieved has typically been outweighed by the interest and carrying costs of the buffer stock. Failed international agreements that employed buffer stocks as a price stabilization device include the International Sugar Agreement (lapsed in 1984), the International Tin Agreement (collapsed in 1985), the International Cocoa Agreement (suspended in 1988), and, most recently the International Rubber Agreement (terminated in 1999).

72.   The International Rubber Agreement was created with the objective of stabilizing the prices on the international market for natural rubber around the medium/long-term market trend. It provided for a buffer stock of a total capacity of 550,000 tons as the primary instrument to pursue this objective. The purchase and selling of the buffer stock was based on a reference price that was periodically adjusted in accordance with the development of the medium/long-term market trend of natural rubber prices. As time progressed, the adjustment procedure for the reference price was increasingly made automatically in response to market trends to avoid political discussions on a desired price development. Natural rubber exporting countries were never pleased with the concept of making adjustments based solely on the market trend, and were in favor of some room for directing the market process. The importing countries, on the other hand, considered this concept to be in conformity with the market development, and therefore the only possible way for bringing more stability to the market (all international buffer stock agreements were signed by both exporting and importing countries). This difference in view finally led to the agreement's termination.

73.   **Insurance:** The market for insurance against terms-of-trade shocks is much larger and better developed than for insurance against natural disasters. However, this market is also dominated by developed countries, large corporations, and government monopolies. The same factors that impede the access of small farmers in poor countries to disaster insurance also impede their direct access to insurance against price volatility.

74.   **Hedging Instruments:** The two main instruments available to hedge against commodity price-risk are forward and futures contracts. In general, however, non-corporate agents in commodity-dependent countries have little or no access to price risk management instruments. This is especially true for agricultural products. It is estimated that less than two percent of the volume of futures and options instruments can be attributed to developing countries.

75.   **Forward contracts** are agreements to purchase or sell a specified amount of a commodity on a fixed future date at a predetermined price, thereby eliminating price-related risk for both buyer and seller. While many forward markets for commodities are not very liquid, a few, such as the forward markets for crude oil and several fuel products do experience a large volume of trading.

76.   Forward contracts are widely used for all commodities and in all regions, and are primarily transacted over the counter. For instance, a large part of the world's cotton is traded through three- to twelve-month forward contracts. Ghana sells a large part of its cocoa forward. Following a World Bank program, two-thirds of Côte d'Ivoire's cocoa crop was sold forward from 1992 onwards. Colombia sells most of its coffee through one-year forward contracts with coffee roasters. Rubber-exporters from countries such as Malaysia and Indonesia now sell principally through forward contracts. Other examples of developing countries with organized forward markets include China and the transition economies.

77.   **Futures contracts** are similar to forward contracts. But a futures contract need not imply physical delivery in fulfillment of the agreement. Usually, the contract is offset on or before maturity by an equivalent reverse transaction. Futures contracts are available for a number of mineral and agricultural commodities and are traded mainly on organized commodity exchanges.

78.   Companies from developed countries account for the bulk of commodity exchange futures activity. The use made by developing countries, directly or through intermediaries, is limited, but growing. A small number of companies from developing countries are members of exchanges in developed countries.[28] Some companies have their representatives close to

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[28] Zambia Consolidated Copper Mines (ZCCM), Chile Copper Ltd (Codelco) and Gecamines (Democratic Republic of the Congo) are Associate Trade Members of the LME, and the Banco Nacional de Mexico, active in the silver trade, is a member of NYMEX. The Chinese state-owned company CIFCO, one of China's largest brokerage houses, has become member of several American exchanges. Latin American and Caribbean exporters have become significant users of commodity exchanges, hedging about a quarter of the cocoa, coffee and sugar exports from that region on the

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the exchanges to arrange their risk management business.[29] However, most users from developing countries are far away from the exchanges and rely heavily on intermediaries.

79.   **Exotic risk management instruments** based on sophisticated modeling techniques, and **synthetics** combining simple instruments with a variety of options and swaps, are also available, and are widely used by the same corporate entities who dominate the futures market.

80.   **Market-based insurance facilitators:** The instruments described above are not utilized in any significant way by small- and medium-sized producers in commodity-dependent countries. However, some developing countries have recently attempted to rectify this using innovative market-based techniques. An instructive example in this regard is **Guatemalan Asociación Nacional de Café's (ANACAFE) hedged coffee loan system**, which facilitates contact between coffee producers, banks and exporters, and maintains an information network with many terminals and telephone links throughout the country to inform producers on cash prices for different types of coffee, the costs of futures and options contracts, currency rates, premium differentials and other market information and analysis. ANACAFE staff provide credit-related training to farmers, and facilitate bank loans to them. The loans are tied to obtaining a hedge against coffee prices from an exporter, so as to ensure that the loan can be repaid.

81.   ANACAFE was introduced in 1994 and covers about 60,000 coffee producers from all over Guatemala. In the crop year 1996/97, the hedged program mobilized US$16.5 million. ANACAFE charged coffee producers a service fee of 1 percent of the credit amount, and used this fee to fund research and information services for the coffee producers. Since ANACAFE is a facilitator rather than a market participant, it does not require any type of subsidy from the government.

82.   **International Task Force on Commodity Risk Management (ITF):** A promising recent development in the provision of insurance to vulnerable sections of society in low-income countries is the establishment of the ITF. This is a partnership of private and public sector institutions exploring market-based approaches for assisting small-scale producers in developing countries to better manage their vulnerability to commodity price fluctuations. The World Bank is taking the lead in the development of this market-based approach, which is partially supported through the contributions of donor countries. Other stakeholders

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CSCE in New York. The Mexican Ministry of Finance has been a major participant in the oil futures and options markets since 1990, and smaller participants include Brazil, Chile, Ecuador and Honduras.

[29] For example, the oil companies of Brazil and Mexico, Ghana's Cocoa Marketing Board, and Cuba's sugar export organization have offices in London or New York which are responsible for futures and options transactions.

include international institutions, farmers' organizations, commodity exchanges, and other private sector entities.

83.   The ITF's work on improving commodity risk-insurance in developing countries is currently at an incipient stage, and primarily includes desk reviews and case studies for a number of developing countries (by January, 2002, eight complete case studies had been prepared). The implementation phase of the ITF's operations will consist of providing technical assistance to farmers and local organizations in developing countries in designing programs that provide a short-term price floor for producers/exporters and a price ceiling for consumers/importers. The ITF will also seek to bring together agents in the developing world with international providers of price insurance in the private sector. The ITF is gradually entering its implementation phase by setting up pilot projects; in 2002, pilot projects designed to ensure stable incomes for a small number of coffee producers were established in Nicaragua and Uganda. Because of the ITF's phased approach, its success in creating market-based risk management schemes for poor countries cannot yet be assessed. But the projects it is undertaking are potentially significant developments in helping such countries to deal with exogenous shocks.

III. Conclusions

84.   Although there are a large number of ex-ante measures that are available for dealing with both natural disasters and terms-of-trade shocks, in practice few of these measures are adopted by developing countries. Buffer stocks, which in principle could serve as a stabilizing measure for both crop-loss in the case of natural disasters and price volatility in the case of terms-of-trade shocks, have in practice been beset by problems at both the national and international levels. While many of the risks associated with natural disasters and commodity price shocks are insurable in principle, market-based instruments for managing these risks are dominated by developed countries. Although some large corporations within developing countries hedge against commodity price risk, this is not true for small producers and landholders in the primary sector. Recently there has been some progress in developing innovative institutional arrangements to counter these problems in some developing countries. But at the national level, these remain isolated examples, and at the international level such efforts are at an incipient stage, as with the ITF.

International Financing Mechanisms for Addressing Exogenous Shocks

85.   This annex provides an overview of the major international financing mechanisms designed to respond to natural disasters and terms-of-trade (mainly commodity price) shocks. Assistance can be for humanitarian, reconstruction, or preventative purposes, and thus, there is no sharp distinction between whether it is an *ex-post* or an *ex-ante* response. While NGOs (e.g., International Red Cross) play an increasingly important role, data are difficult to collect, and therefore they are not covered here.

I. FINANCING MECHANISMS FOR NATURAL DISASTERS

86.   *Ex-post* financing for natural disasters is provided for two broad purposes, although the distinction between the types of assistance is not always clear. **Humanitarian aid** is immediate relief provided so that a country might address the most critical problems caused by a natural disaster, such as food shortages and population displacement. **Rehabilitation/reconstruction aid** is provided for longer-term rebuilding of the physical and economic infrastructure damaged by the disaster.

87.   **Bilateral Aid:** Bilateral aid, primarily grants, accounts for the bulk of international emergency assistance for natural disasters. Recently, bilateral emergency aid has increased in absolute terms and as a percentage of total official development assistance (ODA). Average annual bilateral emergency aid rose from US$2 billion in the early 1990s, to an average of US$3.8 billion in 1999-2001 (Table 1). About one-third of this assistance is spent for natural disasters while the rest is used for complex emergencies.

Table 1. Bilateral Emergency and Distress Relief from OECD/DAC Countries: 1990-2000
(in US$ million)*

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Emergency and Distress Relief	1058	2418	2586	3250	3468	3062	2963	2165	2787	4414	3574	3276
As percent of ODA	2.1	4.2	4.4	5.9	5.8	5.2	5.3	4.5	5.5	8.5	7.2	6.5

Source: OECD/DAC Development Co-operation Reports.
*Data also include post-conflict relief.

88.   **Multilateral Assistance:** Assistance from multilateral agencies and financial institutions includes both humanitarian and rehabilitation activities. This annex examines formal instruments used by various multilateral institutions to respond to disasters, but does not cover other mechanisms of assistance in post-disaster situations, such as reprogramming existing loans, that may also be used to respond. In general, the UN agencies and the EC

provide grants for immediate relief purposes, and international and regional financial institutions provide concessional loans for rehabilitation and reconstruction purposes.

89.   **The United Nations (UN):** The UN's approach to financing natural disasters is complex. A number of UN agencies are involved in humanitarian operations and longer-term developmental projects. Two agencies, the **Office for the Coordination of Humanitarian Assistance (OCHA)** and the **UN Development Program (UNDP)**, hold the primary responsibility for coordinating humanitarian and rehabilitation/development assistance, respectively. The emergency assistance channeled through these organizations is financed mainly through bilateral contributions to the UN agencies.

90.   Created in 1998, OCHA holds the primary responsibility for coordinating and mobilizing humanitarian aid for natural disasters and "complex" emergencies.[30] OCHA makes an international appeal for aid when requested by the affected government; such appeals have occurred, on average, 27 times per year. While OCHA itself has provided only $4 million dollars in cash grants to developing countries, it has mobilized about $904 million in cash and in-kind contributions since 1998. OCHA also manages the bilaterally-financed **Central Emergency Revolving Fund (CERF)**, which may lend to humanitarian agencies at the outset of an emergency before donor contributions are available. The agency must repay the loan within a year. The CERF was modified in 2002 to cover natural disasters. Since 1992, the CERF has been used 51 times with a total of US$127.7 million disbursed. About 80 percent of this was lent to UNICEF, UNHCR, and WFP. While the CERF, despite its limited resources, is regarded as a success, OCHA more generally has apparently run into difficulties because of a lack of clear authority, lack of cooperation from other UN agencies, and uncertain funding. At times, its response to crises has been viewed as slow.

91.   The UNDP coordinates development assistance within the UN system and provides a channel for bilateral aid targeted at development and transitioning from basic humanitarian aid to development aid in cases of disaster. While it is difficult to draw a discrete line between assistance provided in response to disasters and that for longer term development, the UNDP generally picks up where humanitarian relief leaves off and puts into place early recovery initiatives. It focuses its attention on disaster mitigation and preparedness in the rebuilding process. In terms of channeling resources, the UNDP is moving more in the direction of establishing a set of "trust funds" tied to specific purposes, to which donors can contribute up front, and from which the UNDP can disburse quickly.

92.   Of the other UN agencies involved in emergency-related humanitarian and developmental projects, three are notable for the levels of aid that they disburse: the World Food Programme (WFP), the United Nations Children's Fund (UNICEF), and the United

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[30] OCHA is the successor to the Department of Humanitarian Assistance (DHA), which was created in 1992. The Inter-Agency Standing Committee was also created in 1992 to ensure coordinated and effective humanitarian response to both complex emergencies and natural disasters.

Nations High Commissioner for Refugees (UNHCR). Between its inception in 1963 and 2001, the WFP has disbursed over US$27.8 billion and more than 43 million metric tonnes of food toward providing emergency relief and promoting longer term development projects. The share of aid allocated to emergency operations has been increasing over time.[31] UNICEF provides emergency assistance targeted toward relieving the suffering of children and those who provide their care. In 2001, UNICEF spent approximately US$1.2 billion on its programs throughout the world. The UNHCR targets emergency assistance toward operations intended to protect refugees in the event of a crisis. In recent years, the UNHCR has also focused on the mitigation of conflict-related disasters by establishing an early monitoring presence in troubled areas to confront problems before conflict breaks out. The UNHCR's budget for 2001 was approximately $925 million. Bilateral donors are the principal source of funding for these agencies.

93.   **The European Commission (EC):** The European Commission is the largest multilateral emergency aid donor, having distributed an average of EU 607 million per year between 1995 and 2001 (Table 2). The **European Commission's Humanitarian Office (ECHO)**, established in 1992, coordinates and administers grants for humanitarian relief for natural disasters and conflict situations, rehabilitation and reconstruction work, and future disaster prevention and preparedness. Under "Primary Emergency Aid" established in 2001 as a response to a 1999 review, funds of up to €3 million can be distributed within two or three days of a crisis. ECHO is authorized to approve emergency aid funds up to €10 million within six months. For further Emergency Aid, or a long-term project requiring funds in excess of €10 million, ECHO seeks the agreement of a Committee composed of member state representatives. ECHO distributes funds via partners in the field, mostly small international NGOs. By end 2001, ECHO had signed 208 such agreements. This allows the disbursement to avoid the governance problems in some countries.

Table 1. ECHO's Humanitarian Aid, 1995-2001
(In millions of Euros)

	1995	1996	1997	1998	1999	2000	2001
Humanitarian aid	692	657	442	518	813	492	544

Source: ECHO website.

94.   **The World Bank:** The World Bank has approved more than 500 operations related specifically to disaster management since 1980, amounting to more than $38 billion. Since 1998, the Bank's assistance for natural and man-made disasters has been overseen by the Bank's *Disaster Management Facility* **(DMF),** created to provide a more strategic and

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[31] For example, in 2001, the WFP delivered 4.2 million metric tonnes of food, 2.7 million of which was allocated to emergency operations.

rapid response and better integrate disaster mitigation into Bank activities, e.g., the DMF also helps incorporate disaster-prevention measures into Country Assistance Strategies.

95.   The Bank's primary mechanism for ex-post financing for natural disasters is **Emergency Recovery Loans (ERL).** ERLs focus primarily on rehabilitation and reconstruction—supporting restoration of assets, production levels, and social activities immediately after a crisis (e.g., war, civil disturbance, and natural disasters). They can be used to develop disaster-resilient technology and early warning systems. Conditionality is focused on emergency recovery activities and preparedness/mitigation measures. Loans are concessional for IDA countries. Criteria for approval include the urgency of the financing requirement, the impact on the country's economic priorities and investment programs, and the expected benefits of the loan, and an ERL is accommodated within a country's CAS. While ERLs are normally disbursed over 2-3 years, they may contain "quick-disbursing components" to finance up to 100 percent of imports identified as immediately necessary. ERLs are being focused increasingly on quick-disbursing import financing, and other components of the loan are being phased out. US$5.6 billion in ERLs were provided to distressed countries between 1992 and 2001 (Table 3), mostly for natural disasters, with a large amount directed to the aftermath of Hurricanes Georges and Mitch in 1999, and Turkey's earthquake in 2000.

Table 3. Emergency Recovery Loans
(US$ million; fiscal years 1992-2001)*

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total ERL lending	316	840	387	240	110	171	516	1,099	1147	82
Number of ERLs	3	8	3	4	3	8	9	11	7	5

Source: *Poverty Reduction and the World Bank: Progress in Operationalizing the WDR 2000/0.*
*Data includes post-conflict loans

96.   Much of the Bank's project lending related to natural disasters is provided through its traditional lending mechanisms, subject to normal conditionality and terms, with 379 disaster mitigation projects financed in low- and middle-income countries since 1980. The scope of activities is broad, ranging from a $19 million loan to reform the cotton sector in Benin (2002) to a $150 million loan to improve low-income housing in flood-prone Algeria (1998).

97.   **The African Development Bank (AfDB):** Since 1979, the AfDB has provided assistance focused on short-term relief and longer term reconstruction and rehabilitation. To address delays in the Bank's procedures for mobilizing and making funds available, the

AfDB adopted policy guidelines in 1998 to guide its operations. The AfDB also created a "Special Relief Fund" in 1998 to provide short-term grants up to US$500,000 for humanitarian purposes to countries hit by natural disasters and complex emergencies. The grants are channeled through field agents, such as UN agencies, and NGOs. The grants can be provided even to members in arrears to the Bank. Though it can distribute quickly, the Special Relief Fund is relatively small: for 1999-2001 only SDR 7.52 million was disbursed. (Table 4).

98. **The Asian Development Bank (AsDB):** The AsDB has one mechanism specifically targeted to assisting natural disasters in small states and one for more general disasters. The facility for ***Rehabilitation Assistance to Small Developing Member Countries Affected by Natural Disasters*** was created in 1987 and is intended for rehabilitation projects of less than one year, such as infrastructure repair and replacement of basic utilities and services, rather than longer-term reconstruction projects. The ceiling on individual loans, originally set at $0.5 million, was raised to $2 million in 1997. The facility for ***Rehabilitation Assistance After Disasters*** was created in 1989 to finance projects to improve infrastructure and to develop disaster mitigation measures. There is no cap on the size of loans, but projects must be implemented within three years. For these facilities, eligible countries receive concessional lending under the Asian Development Fund, while other countries receive nonconcessional assistance through the ordinary capital resources (OCR).

99. Between 1987 and 2001, the AsDB provided $3.1 billion in emergency assistance loans (91 percent for natural disasters) through these mechanisms, and $45 million in technical assistance. The AsDB is currently reviewing its disaster response policy. As its lending goes directly to governments, there are concerns in some cases about governance and absorptive capacity. Moreover, the review is looking at whether the focus should be reoriented to disaster prevention, and at the timeliness of the response. On average, loans have taken five months to process, with some delays resulting from problems in damage assessment. Moreover, projects have been taking, on average, almost twice as long as originally envisaged.

100. **Inter-American Development Bank (IDB):** Between 1996 and 2000, the IDB approved $1.5 billion in new disaster financing, a substantial increase over previous years. In 1998, the IDB set up the ***Emergency Reconstruction Facility* (ERF)** to shorten the IDB's response time for designing and approving financial operations for disasters. So, far only five ERF-supported loans have been undertaken. In order to qualify for a loan, a country must "provide solid assurance of a commitment to strengthen in-country capacity in the areas of preparedness, prevention, and organizational set up to manage disaster mitigation and relief efforts." ERF resources can be used to purchase goods and services required for the temporary reconstruction, stabilization, and repair of physical entities damaged by the disaster. These can lay the foundation for more extensive reconstruction operations that make use of traditional IDB loan facilities. The ERF can provide up to US$10 million on concessional terms, and an additional US$20 million on nonconcessional terms. ERF requests are processed quickly, within 3-4 weeks, and resources are disbursed over a year.

101.   In the aftermath of Hurricane Mitch, the IDB recognized the need to increase its focus on ex-ante mitigation, and in March 2001, the Bank established the ***Disaster Prevention Sector Facility***, aimed at natural disaster prevention and risk management systems. Individual operations can be financed up to US$5 million, and count against a cumulative upper limit on lending of US$150 million. These loans can be approved more quickly than normal lending operations.

102.   **Caribbean Development Bank (CDB):** Post-disaster rehabilitation and reconstruction is one of the primary focuses of the CDB's assistance. The CDB devised a new strategy for responding to natural disasters in 1998, which provided the framework for 27 operations totaling $976,000 in grants and $49.8 million in loans between 1998-2001. The strategy was enacted following a review of the CDB's disaster management policies in the early and mid-90s, which revealed a number of problems with the existing policies, including inadequate focus on disaster preparedness and mitigation activities, delayed response times, and less concessional terms than other lenders. A number of other requirements were also relaxed in order to access post-disaster assistance, such as the official declaration of a national disaster and obtaining a backup line of credit with a commercial bank. The CDB's strategy also provides for restructuring of existing loans for rehabilitation purposes.

103.   The ***Caribbean Disaster Emergency Relief Fund (ERF)***, composed of contributions from CDB member countries, provides assistance for disaster relief, mitigation, and preparedness projects. This fund provides grants of up to $100,000 for emergency relief following a disaster, and further financing can be provided through a concessional ***Immediate Response Loan*** of up to $500,000 for the clearing and cleaning of affected areas and for emergency restoration services. Loans under the ERF are subject to conditionality linked to rehabilitation rather than to long-term macro and socio-economic policies. The grant and concessional elements of the ERF may be a factor in the increased utilization of CDB funds since the new strategy's inception. The CDB provided $53 million in post-disaster funding from 1969-1998, and $49.8 million from 1998-2001.

104.   In September 2000, the CDB and USAID jointly established the ***Disaster Mitigation Facility for the Caribbean (DMFC)***, a grant-funded initiative to promote the reduction of natural hazard risk in CDB member countries. The primary objectives of this initiative are to adopt and institutionalize mitigation policies and practices at a country level and within the CDB's own work program. USAID has provided a grant of $3 million to complement the CDB's resources.

II. FINANCING MECHANISMS FOR COMMODITY PRICE SHOCKS

105.   **European Commission's STABEX:** Between 1975-2000, the European Community provided assistance for stabilizing commodity prices important for the exports of African, Caribbean, and Pacific (ACP) countries called STABEX. STABEX came to an end with the 2000 expiration of the Lome Convention between the EC and ACP countries. However, while there is no new financing for STABEX, there are still uncommitted funds, and disbursements under the mechanism continued in 2001 and 2002. A transfer to a country was

triggered by a drop in the export value of eligible products compared with a reference value based on a multiple-year average of export earnings. Once a loss was identified, compensation under the mechanism—in the form of grants since 1990— was automatic. STABEX disbursements were not conditional on the existence of other financial support from the EC. Over the period 1975-1995, STABEX transfers totaled about €3 billion, and four products (coffee, groundnuts, cotton, and cocoa/copra) accounted for 80 percent of effective transfers.

106.   There is evidence that STABEX payments were pro-cyclical. Of 311 STABEX disbursements analyzed over the period 1975-1995, 60 percent occurred in periods of increasing government revenues. Massive statistical analysis needed to justify payments sometimes delayed disbursement as much as twelve months after the shortfall. Moreover, export earnings shortfalls in STABEX-approved commodities were not necessarily correlated with shortfalls in overall export earnings. Another issue with the scheme was that, during the 1980s, countries were required to reinvest STABEX payments in the specific commodity sector, thereby aggravating their commodity dependence.

107.   **SYSMIN**: The STABEX counterpart, SYSMIN, was established in 1980 by the second Lome Convention, and applied to all minerals except oil, gas, and precious metals, . Disbursements under SYSMIN were granted if an important mining input was under threat or there was a drop in export earnings of an eligible commodity. Technical and financial assistance for preparatory research, exploration, and investment was also provided under SYSMIN. Over €1.7 billion in payments was disbursed over the life span of the scheme, and it was funded at the level of €575 million for the final five year period of its existence (1995-2000). The mechanism was dismantled following the expiration of the Lome Convention in 2000, with grandfathering for projects already under preparation. As a result, projects are still underway in several ACP states. Moreover, disbursements under SYSMIN were sometimes received by multinational mining corporations.

108.   **FLEX:** Established under the Cotonou Agreement in 2000, and operational since June 2002, FLEX is a mechanism for providing "fast-disbursing" support to ACP countries coping with fluctuating export earnings. In contrast to STABEX and SYSMIN, disbursements under FLEX are triggered not by losses in the export value of a specific commodity, but by government revenue losses due to declines in exports of goods. Countries are eligible for financing if they have experienced a 10 percent—2 percent in the case of least-developed countries: (a) loss of goods export earnings compared with a three-year prior average, or (b) loss of export earnings from agricultural or mineral products compared with a prior three-year average, combined with (c) decrease in the programmed public deficit due to losses in government revenue. Support under FLEX is limited to four successive years. Currently, €2.2 billion are available for the non-programmable needs, for which FLEX is one of the triggering mechanisms, with varying portions of this amount allocated to each ACP country. Evaluations of requests are to be completed in the first semester of the year following the application year. At this point, requests for financing under FLEX have been evaluated for those countries who applied on the basis of application years 2000, 2001 and 2002.

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