DISASTER RISK MANAGEMENT
WORKING PAPER SERIES NO. 6

Bangladesh

Disasters and Public Finance

Charlotte Benson
Edward Clay

The World Bank

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Bangladesh: Disasters and Public Finance

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Acronyms

ADAB	Association of Development Agencies in Bangladesh
ADB	Asian Development Bank
ADP	Annual Development Programme
BIDS	Bangladesh Institute for Development Studies
BRAC	Bangladesh Rural Advancement Committee
BWDB	Bangladesh Water Development Board
CAS	Country Assistance Strategy (World Bank)
CDMP	Comprehensive Disaster Management Programme
CHAD	Conflict and Humanitarian Aid Department (DFID)
CPD	Centre for Policy Dialogue
CPF	Counterpart funds
DFID	Department for International Development (UK)
DIA	Disaster impact assessment
DMF	Disaster Management Facility (World Bank)
ERD	External Resources Division (GoB)
EU	European Union
FAP	Flood Action Plan
FCD	Flood Control and Drainage
FCDI	Flood Control, Drainage and Irrigation
FFW	Food for Work
FPCO	Flood Plan Co-ordination Organisation
FY	Financial Year
FYP	Five Year Plan
GDP	Gross Domestic Product
GoB	Government of Bangladesh
GSK	Gono Shastha Kendro
HRA	High Risk Area
HYV	High yielding variety
IDA	International Development Association (World Bank)
IFPRI	International Food Policy Research Institute
IGPCC	Intergovernmental Panel on Climatic Change
IMED	Implementation, Monitoring and Evaluation Division (GoB)
IMF	International Monetary Fund
IPP	Import parity price
ISPAN	Irrigation Support Project for Asia and the Near East
LGED	Local Government Engineering Department (GoB)
MFI	Microfinance Institution
MRDM	Ministry of Relief and Disaster Management
NCB	Nationalized Commercial Bank
NGO	Non-Governmental Organization
NK	Nijera Kori

NWMP	National Water Management Plan
O&M	Operation and Maintenance
ODA	Overseas Development Assistance
ODI	Overseas Development Institute
PER	Public Expediture Review
PFDS	Public Food Distribution System
PKSF	Palli Karma Sahayak Foundation
R&R	Relief and Rehabilitation
RIBEC	Reforms in Budgeting and Expenditure Control
RM-SM	Revised Minimum Standard Model
SCF	Save the Children Fund
SOE	State-owned enterprise
Tk	Taka
UNDP	United Nations Development Programme
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
US$	United States dollar
VAT	Value added tax
VGD	Vulnerable Group Development Programme
VGF	Vulnerable Group Feeding Programme
WASA	Water and Sewerage Authority
WFP	World Food Programme

Bangla Terms

aman	Main monsoon rice crop
aus	Late dry season, early monsoon rice crop
boro	Rabi season rice crop
char	Land newly-formed by accretion of river
khal	Channel
parishad	Council
paurashava	Municipality
pukka	Solidly built (construction)
rabi	Winter cropping season
thana	Sub-District administrative area

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Preface

As part of its efforts to promote disaster prevention and mitigation as an integral part of development activities, the World Bank's Disaster Management Facility (DMF) is undertaking a study on the economic and financial consequences of natural disasters, with the support of the United Kingdom's Department for International Development (DFID) provided through its Conflict and Humanitarian Aid Department (CHAD). The principal researchers for the study are Charlotte Benson and Edward Clay of the Overseas Development Institute (ODI) in London. Study team members from the World Bank's Disaster Management Facility include Alcira Kreimer, Margaret Arnold, Jonathan Agwe, Hager Ben-Mahmoud, Zoe Trohanis and Maria Eugenia Quintero.

The study entails a state-of-the art review and three country case studies. The first case study was conducted on Dominica, a small island economy. The second study on disasters and public finances in Bangladesh is reported in this document. The third case study will focus on a drought- sensitive southern African economy. A final synthesis report will draw together new evidence with that from the researchers' previous studies and other relevant literature.

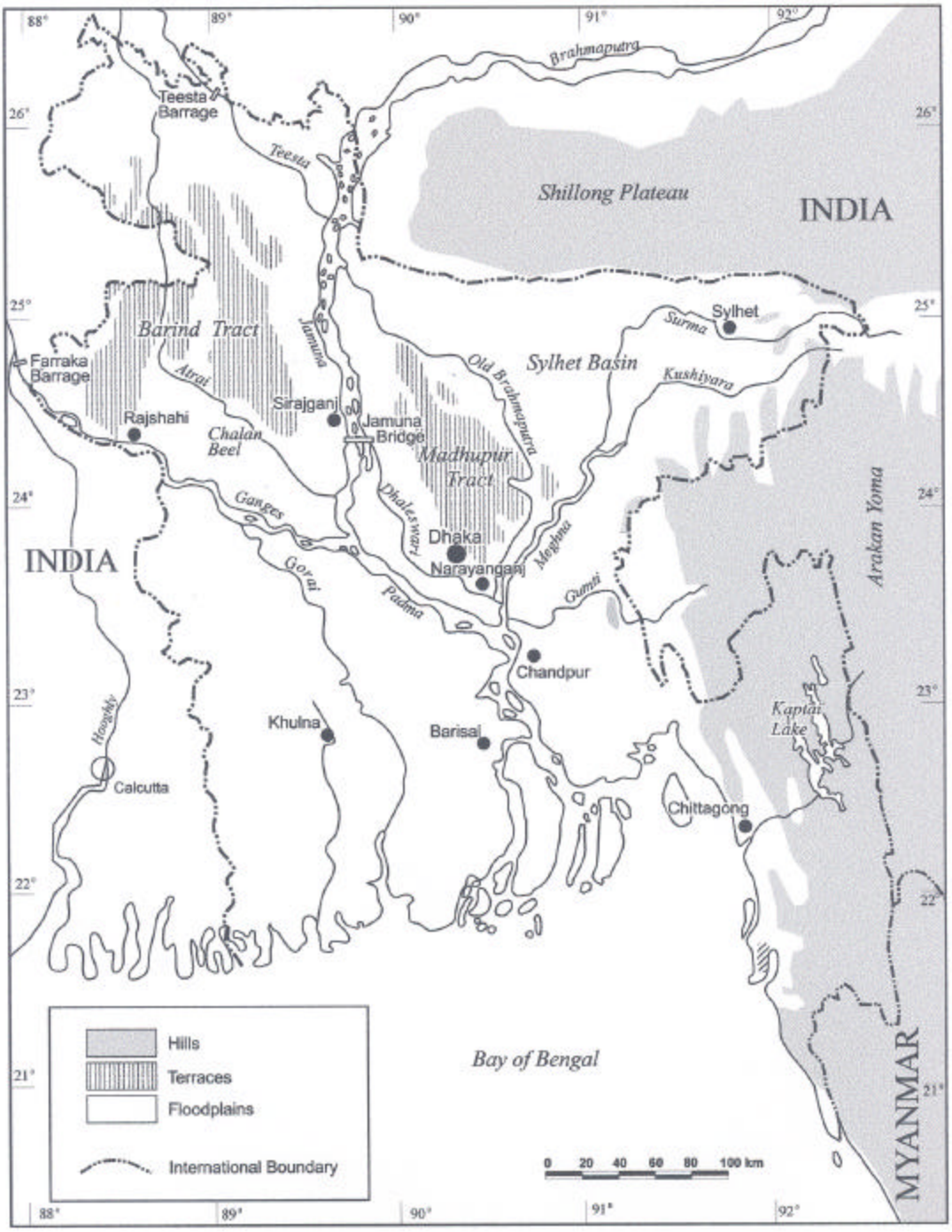
This report is based on a selective desk review of the extensive published literature and official documentation on Bangladesh's economy, public finances and natural disasters, as well as visits by the authors to Dhaka from February 2-13, and from September 1-6, 2001. In this connection, the authors would like to thank Bangladesh Government and Bangladesh Bank officials as well as many other people in Dhaka, hopefully all listed in Annex B, who generously gave their time and provided invaluable ideas and information without which this report could not have been completed. The practical assistance provided by Socioconsult, in particular Clement Perris, who quickly and successfully completed a brief survey of NGOs, and Alamgir Chowdhury is much appreciated. Mavis Clay assisted with the preparation of the report. The maps were prepared by Jim Dempster. The constructive comments on the draft report made by Dr Q.K. Ahmad, Mr Hugh Brammer, Dr. Omer Haider Chowdhury, Dr. Paul Dorosh, Mr. Alistair Fernie, Dr. Nabiul Islam, Mr Kazi Fazlur Rahman and Dr. Quazi Shahabuddin were especially helpful.

The study team also extends its thanks to Fred Temple, World Bank Country Director for Bangladesh, for his support and collaboration on the study. Many World Bank staff members provided helpful contributions to the study, including Chingboon Lee, Tercan Baysan, Ashoka Mody, Kapil Kapoor, Robert Epworth, Imtiazuddin Ahmad, S.A.M. Rafiquzzamman, Rezaul Islam and Sarwat Chowdhury.

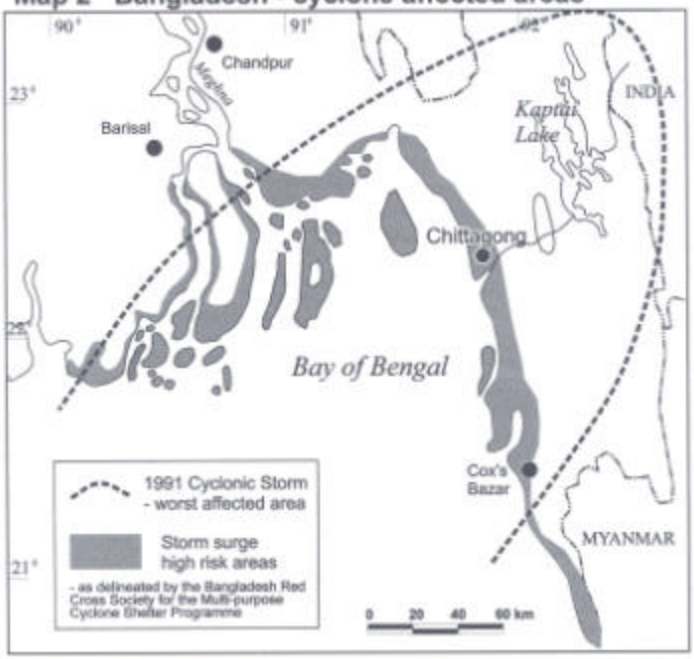
As far as the authors are aware, this is the first economic study to focus specifically on disasters and public finance for a single developing country, covering an extended period and not just a single event. The subject has therefore proved to be challenging, and this report presents what the authors prefer to regard as the results of a preliminary investigation. There is scope for further work on this subject both in Bangladesh and more generally for developing and developed countries. It is hoped that this report will provoke discussion on both analytic and policy issues, and also stimulate others to undertake further investigations. The authors of course accept full responsibility for all errors and omissions in this report.

Funding for the study was provided by the Conflict and Humanitarian Department of DFID. The study team thanks them for their generous support to the initiative.

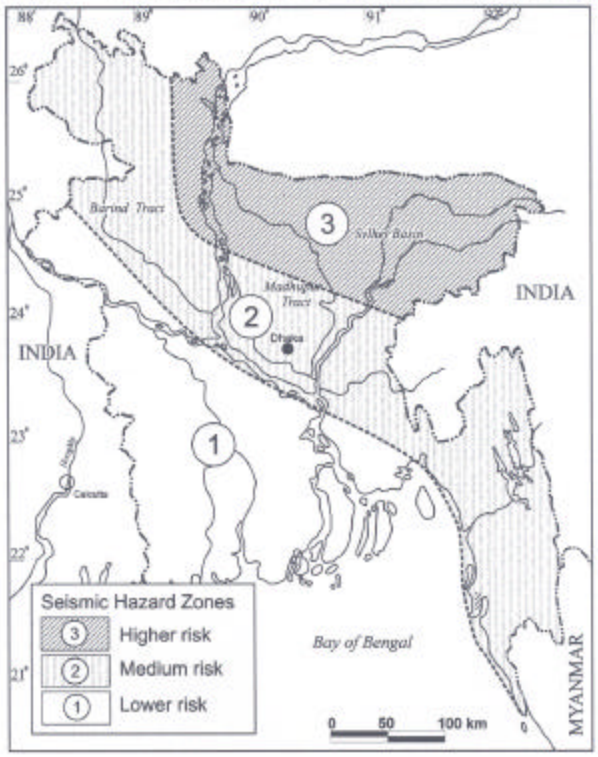
Map 1 Bangladesh - generalised physiography and urban centres



Map 2 Bangladesh - cyclone affected areas



Map 3 Bangladesh - seismic hazard zones



Executive Summary

1. Bangladesh is one of the most disaster-prone countries in the world. Physical hazards that could *potentially* cause considerable loss of life and catastrophic physical damage and disruption to society and the national economy include exceptionally widespread riverine flooding, severe tropical cyclones and associated coastal storm surges, drought and earthquakes. In addition, rapid on-set flash flooding, tornadoes and riverbank erosion are frequent causes of more localized, but nevertheless intense human suffering and losses.

2. Because of Bangladesh's large, densely settled population, low income and widespread poverty, the impacts of disasters have been the focus of considerable international attention and a substantial body of investigations from environmental, social and wider economic perspectives. However, this study is the first systematic investigation into the implications of disasters on the public finances in Bangladesh, apart from assessments of short-term impacts of individual events such as the extreme floods of 1998.

3. Major disasters have had massive human and social impacts: official estimates are that 139,000 people were killed during the 1991 cyclone, whilst 31 million were directly affected by the 1998 floods. These extreme events also have clearly demonstrable negative impacts on the Bangladesh economy. However, the *relative* severity of these economic effects of disaster shocks has considerably diminished since the 1960s and highly vulnerable post-conflict 1970s. This is largely due to structural change in the economy:

- agriculture still suffers severe losses, but sectoral output has become more resilient with the spread of dry season irrigation;
- non-agricultural sectors are more important and less severely affected than agriculture was in the past;
- the integration of food markets, linked with liberalization of internal and external trade, is a factor reducing price effects of shocks.

There have been improvements in response by government, donors and civil society including:

- the rapid short term increase in food safety net operations;
- better targeted relief and rehabilitation by NGOs;
- the refinancing (in 1998/9) of micro-finance.

There have also possibly been improvements in mitigation, such as protection of urban areas and some infrastructure.

4. The 1998 floods were handled better than earlier major disasters by government and NGOs, with substantial and mostly timely support by the international community. Improved and timely assessment of losses facilitated these responses. Some newer critical areas of increasing vulnerability were exposed, including the garment industry's production and exports and the microfinance sector. Many continuing weaknesses in disaster management were underscored.

5. The public finance effects of major disasters are complex and impacts are difficult to isolate and quantify. The immediate disruptive effects of a major disaster on both central government spending and revenue collection have been progressively contained. Instead in the 1990s some short term increases in recurrent spending began to buffer the economy-wide effects of disaster shocks. Disasters appear to largely involve reallocations of expenditure to relief from the Annual Development Plan (ADP) and reallocations within categories of expenditure. The prevailing view is that reallocations are made largely on an 'equal pain principle', cutting expenditure uniformly across the board without regard to negative longer term effects on development activity.

6. There is little additional aid in the medium term (2 to 3 years), as many donors largely respond to a crisis by reallocating and bringing forward commitments. There is also apparently reallocation between categories from project to food aid and commodity (short term BoP/budgetary support) and between channels from direct aid to government to NGOs. These effects merit further investigation. Some donors felt they were able to shift funds from non-performing projects to meet rapid short-term requirements. But concerns were expressed that some have resisted allocations away from their bilateral priorities, without regard for wider implications.

7. There are intrinsic difficulties in examining issues of public finance, especially where there are widely recognized problems of governance that may affect the quality of data and the transparency of the budgetary process. Some reorganization of public finances reporting, such as integration of the food account into the budget proper would contribute to transparency and possibly improved budgetary practice.

8. If the response to disasters largely involves reallocations of public expenditure and development assistance, then the effects will require examination of spending and activity at a project level, both to detect negative effects and to identify ways in which these can be minimized in the future.

9. Disaster mitigation, especially the effectiveness of river and coastal flood protection has been weakened by inadequate recurrent expenditure on operations and maintenance (O&M). The decentralization of responsibility for O&M to local government and community level and cost recovery from protected communities need to be seriously explored.

10. The practicality of newer forms of spreading the financial costs of disasters merits further careful consideration. The sensitivity of micro credit to disasters is another indication of the need to incorporate insurance into *all* formal lending to the rural sector. At a national level the scale of reallocations by government and short term borrowing at high cost after the 1998 floods suggest the need for risk spreading, including disaster-earmarked contingency reserves and, possibly, market based instruments for risk spreading.

11. The complexity of the physical environment and concerns about the changing risks resulting from climatic change and human intervention in Bangladesh and neighboring states justify continued investigation into hazards and improved risk assessment. Better risk assessment is a necessary condition for developing newer forms of risk spreading mechanisms. The limitations of flood forecasting again exposed in 2000 and weakness in seismic monitoring illustrate the need for ensuring adequate investment in hazard risk assessment in Bangladesh and strengthening regional cooperation.

Chapter 1.

Introduction

This chapter explains the background, objectives and scope of the overall study, which includes three country studies, Bangladesh, Dominica and Malawi. It then highlights issues specific to disasters and public finance examined in this study on Bangladesh. Finally the methods and scope of the investigation are explained.

1.1 Background

There is a growing awareness of the economy-wide significance of natural disasters and the problems they pose for long-term development. However, recognition of these issues has been largely amongst those working within the field of disaster management and there is still limited wider appreciation of their potentially serious implications. This in part reflects the fact that most assessments of the economic impacts of disasters have concentrated on the most easily measured *direct* losses - that is, the financial cost of visible physical damage. This emphasis, in turn, reflects particular concerns to meet the short-term humanitarian needs of affected communities in the aftermath of a disaster and pressures to determine replacement investment requirements and insured losses. It also reflects difficulties in analyzing *indirect* and *secondary* impacts. The latter two types of impact could include, for example, effects on the flow of goods and services and changes in income distribution and the incidence of poverty as well as balance-of-payments and budgetary consequences. A further bias in the existing body of evidence relates to the fact that the relatively few studies that have examined indirect and secondary impacts have focused on the impact of a particular, often recent disaster event. The longer-term cumulative consequences of a series of disasters on a particular country's development are more difficult to determine and are typically over-looked. Yet, in reality, most disasters are recurrent rather than one-off events, striking a country at infrequent intervals over the course of time and potentially affecting cumulatively both the rate and pattern of development (Benson and Clay, 2000).

These biases have effectively limited the extent of information available to policy-makers on the nature and scale of a country's economic vulnerability to natural hazards. More fundamentally, they have contributed to a widespread failure to address natural hazards as a potentially serious threat to sustainable development, or to appreciate the potentially high economic and social returns to mitigation, despite the fact that high hazard vulnerability is by no means inevitable. Instead, national, and to some extent international, efforts to promote disaster mitigation have often been confined to statements of intent.

1.2 Objectives and scope of the overall study

The overall study seeks to increase understanding of the wider economic and financial impacts of natural disasters, factors determining the vulnerability of hazard-prone economies, opportunities for mitigation and factors inhibiting their adoption. It builds on previous research by the primary investigators and related evaluations in this area, including drought in sub-Saharan Africa, and disasters in Asia and the Pacific and Caribbean regions (Benson and Clay, 1998; Benson, 1997a, 1997b, 1997c; Clay and others, 1995; Clay and others, 1999). The study entails a state-of-the-art review and three country studies. The final synthesis report will draw together the findings from the case studies with those from the researchers' previous studies and other relevant investigations. The study findings are intended to contribute towards the development of

guidelines on the assessment of natural hazard vulnerability from an economic perspective. There are considerable methodological difficulties in isolating the economic impacts of natural disasters from other internal and external factors. The study adopts and seeks to refine further an eclectic approach used in previous studies by the authors, involving a mixture of quantitative and qualitative analysis to examine the economic impacts of natural hazards (Benson and Clay, 1998; Benson, 1997a). The quantitative aspect is partial, involving a combination of regression analysis, the use of charts to examine movement around trends, and comparisons of `before-and-after' impacts of disasters and of forecast and actual performance. A qualitative political economic analysis is also undertaken to place findings within the economic and social policy context of each case study country.

Three countries have been selected to provide a range of hazard experiences in economies of varying size and complexity from different regions of the world, and also to explore distinct but complementary methodological and policy issues. The first study was on Dominica, one of the highly disaster-prone, small island Caribbean states, providing an economy-wide study of the impact of disasters (Benson & Clay, 2001). This second study is on Bangladesh, a large disaster-prone Asian economy, and focuses particularly on public finance. The third study on Malawi, a low-income Southern African economy, focuses on the use of climatic forecasting in disaster reduction and its value from an economy-wide and sectoral perspective (Clay and others, 2002).

The choice of Bangladesh and the subject of natural disasters and public finance for the second study are based on several considerations. Bangladesh is widely recognized as one of the most disaster-prone countries in the world. Because of its large densely settled population and low income it has been the focus of considerable international attention. There is already a substantial body of investigations into the way disasters impact on Bangladesh from environmental, social and wider economic perspectives. There has also been a quite recent major disaster, the floods in 1998. Because of the substantial importance of external aid or official development assistance (oda) to the Bangladesh economy, this event gave rise to a substantial body of documentation that would provide a useful basis for a more focused investigation.

As regards the focus of the Bangladesh study, the public financial consequences of natural disasters are seldom explored systematically, except in the narrow context of a single major disaster such as the recent earthquake in Gujarat in India, the 1998 Marmara earthquake in Turkey and, of course, the 1998 Bangladesh floods. Indeed, the authors have so far been unable to identify a single in-depth analysis on disasters and public finance, apart from single event studies.

1.3 Public finance issues

Natural disasters may have several potentially significant impacts on public finance. They can result in either additional expenditure or partial redeployment of planned expenditure from other purposes, both to meet the costs of repair and rehabilitation of public property and to provide support to the victims of disasters. This may in turn reduce public services, defer wage and salary increases and staff appointments, and postpone or abort planned investment. Disasters can also cause a fall in domestic revenue, reflecting reduced economic activity. Although such losses may be partly offset by increased flows of official external assistance, they are unlikely to be entirely so. Publicly owned enterprises may also experience disaster-related losses, placing an additional burden on government resources.

In consequence, the government may face increasing budgetary pressures which it will be obliged to meet by increasing the money supply, running down foreign exchange reserves or increasing levels of domestic and/or external borrowing. These financing options, in turn, have potentially significant knock-on effects. The creation of base money is inflationary. Domestic borrowing exerts upward pressure on interest rates and can result in a credit squeeze, crowding out private investment. Foreign borrowing can result in an appreciation of the exchange rate, reducing the price of imports and increasing that of exports, and create future economic pressures via higher debt-servicing costs. Natural disasters can also trigger an increase in

interest rates charged on external debt by increasing the risk premiums associated with a country's assets. Another option, the run down of foreign exchange reserves, is limited by the very size of those reserves and entails an appreciation in the exchange rate, with possible associated risks of capital flight and a balance-of-payments crisis (Fischer and Easterly, 1990).

Disasters can also impose more permanent pressures on public finance to the extent that governments undertake disaster mitigation and preparedness measures - that is, costs which governments in less disaster-prone countries do not have to bear.

On the positive side, post-disaster investment may result in high levels of economic activity. Rehabilitation and reconstruction also provide an opportunity for necessary but neglected repairs, Operation and maintenance (O&M). There is also upgrading of facilities, as illustrated in the first country case, Dominica, in this study (Benson and Clay, 2001).

Further questions concern the extent to which successive disasters have thwarted the attainment of longer-term government objectives; and whether there are measures that could be taken to cushion the impact of disasters as defined according to these criteria.

The challenge, of course, is to respond to hazard risk and disasters in such a way that economic recovery is rapid; that poorer and more vulnerable sectors of society receive particular support; and that the attainment of longer-term development objectives is not significantly delayed. In sum, this is a tall order by anyone's books. There is a further challenge to find practical and economic ways to reduce vulnerability to relevant hazards, so that the national economy and development activities are not periodically set back by disaster impacts.

1.4 Method and scope of investigation

This study is a preliminary exploration of a complex set of issues that concern public policy. Whereas the immediate, emergency and short-term financial implications of a disaster are frequently considered, recurrent longer-term aspects have not been investigated before. As such, there are no previous studies that can be drawn upon as a basis for comparison or to glean experience on methodology. The study is also constrained by the very limited resources and time available. Therefore it was decided to use only simple forms of analysis that could be readily adopted in other cases, based on experience in undertaking previous studies. This approach was intended to provide provisional findings that should indicate whether more sophisticated forms of analysis would be useful or practical in this or other cases. Most fundamentally, it would also indicate whether commonly available types of data on public finances actually allow an investigation of the issues outlined above.

These issues also imply possible connections or relationships that can be looked for in the time series data on the public finances. The earlier studies by the authors and other studies show that impacts of major natural disasters on broad aggregates, such as GDP and agricultural sector product, are usually quite apparent in a visual inspection of national accounts times series and that the association is readily quantifiable through regression analysis. So, again, the approach in this study has been to look for evidence of such impacts. The implied null hypothesis is that there is no direct link between disaster shocks and broad public financial aggregates – total expenditure, total revenue or gross external aid flows. Such analysis cannot be definitive, but the results provide the basis for further reflection and investigation. If impacts are not apparent at an aggregate level, then perhaps impacts are to be found in the composition of expenditure or revenue. Again there may be difficulties in isolating these effects if they occur in varying proportions.

This deliberately simple approach, which is, after all, only an extension of the approach typically employed to look at a single shock, relies heavily on judgment. Most obviously, it was necessary to select the 'major'

natural hazard events to be included in the analysis, as discussed in Chapter 2. The study has also involved a review of available official documentation and the recent literature, complemented by interviews with selected present and former officials and administrators, who have been involved in specific hazard events, on how the financial aspects were handled within government, domestic and international financial organizations. Because public financial issues are inevitably sensitive, the account provided of specific events reflects the authors' attempt to make sense of much highly selective, oblique and often opaque documentation and off the record discussions. There are also, as discussed below, huge gaps in the official data, which restrict analysis.

The study has had to be highly selective, not only because of because of data constraints. In particular, the study focuses largely on the period since 1980, thus providing around 20 years of statistical data. Within this period there have been five events which, at the time, were considered to be major disasters, justifying a national emergency response, international emergency aid and assistance for post-disaster rehabilitation – the extreme monsoon season floods of 1984, 1987, 1988, 1998, and the cyclone and associated storm surge that devastated south-eastern coastal districts in May 1991. Earlier and arguably more catastrophic events – the cyclone in November 1970 prior to Independence, the floods and famine in 1974 and the agricultural drought in 1978/79 – are outside the period of analysis, a decision reflecting discontinuities in the reporting of public finances and other statistical problems for the period prior to 1980/81. For example, the time series for GDP have been re-estimated (Chapter 3) and the composition of annual development spending massively redefined in 1983/84 (Chapter 4).

The subject is complex and multi-faceted, and this preliminary investigation serves only to highlight many areas worthy of further investigation and which ought to be considered in a more comprehensive study. This study has not attempted more formal regression analysis of the relationships between disasters, GDP aggregates and the main components of the public finances. Others, for example Islam (2000a), have investigated the relationships between floods and GDP aggregates, and a fresh quantification of these relationships, especially incorporating data from the mid 1990s up to 2000/01, would be worthwhile.

Chapter 2.

Natural Hazards and Disasters

This chapter first points to the relationships between the complex physical environment, state of development and widespread poverty that make Bangladesh extremely disaster prone. Next, the four main types of disaster since 1970 - flood, cyclone, river bank erosion and drought - as well as potentially catastrophic earthquake hazard are described. Finally, particular difficulties in making an assessment of future risks are emphasized.

2.1 A disaster-prone environment

Natural disasters are a characteristic feature of Bangladesh's physical environment and have featured dramatically in its history. They are accepted as a normal hazard of social and economic life by what was, until very recently, a largely rural population, dependent on agriculture and other renewable natural resource based activities.

Bangladesh became independent in 1971, having been the geographically separate eastern province or wing of Pakistan since the partition of India in 1947. It includes the confluence and the greater part of the deltaic flood plains of three massive and seasonally highly variable river systems – the Brahmaputra (locally known as the Jamuna below the old Brahmaputra off-take), Ganges (Padma) and Meghna, as well as the country's Northern and Eastern Hills, part of the young and geologically active Arakan Yoma, which is mostly within Myanmar (Burma). (Map 1)

The country is physically relatively compact – almost 145,000 km^2, of which approximately 9,700 km^2 (7%) is occupied by the main rivers and estuaries. It is one of the most densely settled states with an estimated population of around 130 million in 2000 (close to 1000 per km^2 of land area).[1] The urban population, only 6.3 million, or 8.8% of total population, in the first post-Independence census of 1974 has been expanding rapidly to around 21 million, 21% of total population, in 2000. The largely rural agriculture based structure of Bangladesh's economy and society prior to the 1980s was strongly reflected in economic development and disaster mitigation policy (see Chapter 9).

The issues raised by natural disaster 'shocks' and their severe human consequences are closely intertwined with those of widespread and intense poverty. Bangladesh is classified as a least developed, low income economy with per capita income of some US$370 in 2000, with around 50% of the population classified as poor and around 34% as living in extreme poverty (19% in urban areas and 37% in rural areas).[2] Female-headed households account for over half of the poor. Agriculture, including crops, livestock, fisheries and forestry still account for over 60% of employment, with 2% in mining, 8% in manufacturing, and 29% in the service sector in 1995/6.

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[1] The preliminary estimate of the 2001 census is a population of 129.2 million in January 2001 with an implied population density of 834 per km^2 of total area and 956 per km^2 of land area. Other 2001 Census figures, such as urban population are derived from the unadjusted estimate of total population – 123.15 million (BBS, 2001).

[2] This poverty assessment is made on the 'cost of basic needs', a level of per capita expenditure at which members of a household can be expected to meet minimum calorie requirements and non-food consumption needs. Other poverty criteria imply broadly similar overall estimates of the proportion of the population categorized as poor. The 2000/1 Bangladesh Bureau of Statistics Household Expenditure Survey shows a 9% reduction in both the proportion of poor and extremely poor households - from 59% to 50% and from 43% to 34% respectively between 1991-2 and 2000/1 (GoB, 2002; World Bank, 2002).

Pressure of population has pushed farming and increasingly other economic activity, as well as settlement, onto much marginal and sub-marginal land, where large numbers of people, especially the poorest, are almost continuously exposed to risks of crop damage, other disruption to livelihoods, loss of assets and lives. Two important examples are cultivation and settlement of the highly unstable *chars* (temporary lands within and adjoining the major rivers) as these are formed by accretion of sediments, or *bustees* (urban and peri-urban slum communities) on land subject to annual flooding of uncertain depth and duration.

It is important to examine the complexity of the physical environment in order to understand the ways in which different physical processes result in extreme disastrous events. This account of the physical aspect of natural disasters is restricted to a brief description of the different types of disaster and, in particular, those recent major events which were the focus of emergency response and rehabilitation measures on a widespread or national scale by government and the international donor community. This description is based on recently published studies that are extremely comprehensive and well documented – the Bangladesh National Water Management Plan Project Draft Development Strategy Main Report (NWMP, 2000), several of the Bangladesh Flood Action Plan studies from the early 1990s and 'Agricultural Disaster Management in Bangladesh' by Hugh Brammer (1999). Issues of disasters and poverty are explored further in, for example, Pantelic and others (2000) and Kelly and Khan Chowdhury (2002). There is also a considerable and impressive body of investigative and reflective documentation following the 1998 floods, indicated in the list in Annex C.

The state of Bangladesh is possibly the single largest concentration of people in a highly disaster-prone environment, with most of its 130 million people at significant risk to more than one form of natural hazard. In terms of area, number of people directly affected, losses of output and disruption to economic activity, productive and non-productive assets damaged and destroyed, four types have been most important since Independence in 1971 – floods, cyclones and associated storm surges, river bank erosion and drought. There are also disasters that have more localized impacts, tornadoes and line squalls, landslides and hailstorms. From an economic perspective, pests and diseases are threats to agriculture and other activities based on renewable natural resources. Finally, severe earthquakes have been rare, but are a potentially catastrophic hazard. Salinity and the recently identified arsenic concentrations in ground water are environmental hazards, but are excluded from consideration as being slowly developing, insidious problems, rather than the source of a natural disaster as a time-bound, physical shock to the economy and society.

2.2 Major disaster types

Flooding

Much of Bangladesh is flooded every year, and human settlement and agriculture have adapted to the normal flooding cause by rainfall or the overflow of riverbanks.[3] But severe monsoon floods, like those of 1998, cause significant damage to crops, disruption to economic activity and damage to productive assets, including infrastructure, and non-productive assets, housing and personal effects[4].

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[3] There are multiple crop seasons in Bangladesh. Pre-/early monsoon *aus* and the least important rice crop is effectively rainfed and vulnerable to early floods. The main monsoon season *aman* produced the largest rice crop until the late 1990s, is largely rainfed and adapted to a 'normal' flood. For example, widely cultivated deep water rice (broadcast *aman*) which is adapted to water depth of 1-5m and slowly rising water is sensitive to low flood as well as to rapidly rising water and excessive depth. Irrigated *boro* (dry season) rice has expanded rapidly to become the major rice crop and is vulnerable in some areas to flash floods.

[4] A distinction is made in Bengali: *bonna* indicates a damaging flood, whilst *borsha* indicates normal flooding (Brammer, 1999: 239). The distinction is important because the land area subject to damaging floods is considerably less than the total area subject to flooding. A comparatively low flood year is typically associated with low agricultural production.

There are four main types of flood outside the cyclone affected coastal areas: monsoon floods, when the major rivers overflow, cause the tributaries to back-up and prevent drainage of ponded rainwater; local flooding, due to intense rainfall, sometimes associated with tropical cyclones; flash floods in the eastern and northern rivers; and localized floods from the sudden onrush of water when embankments are breached.

The normal sequence of floods in a year starts with flash floods in the eastern regions caused by pre-monsoons storms in April and May, before the onset of the monsoon in June. The Meghna and the Jamuna normally reach their flood peaks during July and August, the Ganges during September, but the peaks coincide, on average, every six years. When they do, as in 1988, they produce higher than normal flood levels. Two severe floods in succession, as happened in 1987 and 1988, occur every decade or so. Despite the three severe floods of 1987, 1988 and 1998, there is no evidence of any significant trend towards increased flood discharges, either natural or man-made. However, the damage caused increases each year as crops are cultivated more intensively and new housing, commercial activities or industries are established on the flood plains.

Table 1: Flooded area of Bangladesh for different return periods

Return Period (years)	2	5	10	20	50	100	500	Mean
Flooded Areas (%)	20	30	37	43	52	60	70	22

Source: NWMP, 2000, Table 9.1

Flood flows in the major rivers are the complex results from flows from outside Bangladesh, plus ex-country and in-country rainfall. At least since 1988 they have been subject to careful investigation, using state-of-the-art technologies. For example, the 1998 floods were a '100 year event' on the Jamuna, but they represented only a 1 in 20 year event on the Ganges and Meghna. The 1988 and 1998 floods were in turn considered the most severe in recent experience. These floods covered around 56% and 62% respectively of land area, implying that they were 50 and 100-year events. The higher floods often last longer when drainage is impeded due to higher water levels. The rate at which the floods rise is a further factor determining the severity of impact on agricultural production and scope for damage limitation.

The 1988 flood caused over 1,500 deaths and damage variously estimated at about US$1200m. The lower death toll in the 1998 flood of less than 1,000 and a considerable reduction in livestock deaths (down from 350,000 in 1988 to 27,000 in 1998) possibly reflect improvements in flood preparedness over the intervening period. The 1998 flood forced over a million people out of their homes, damaged 16,000 km of roads and 4,500 km of embankment, and destroyed crops on over 500,000 hectares of land. Many households defaulted on their loans and became further indebted for rehabilitation of housing and essential productive assets. Others suffered from lack of employment and loss of purchasing power over a long period. The 1987 and 1988 floods established urban flooding as a national issue, reflecting the recent rapid growth in urban population and economic activity. In Dhaka in 1998, prolonged flooding of the city again caused severe losses to property and to business revenue through interruptions to government activities and commercial enterprise. The main monsoon aman rice crop in 1998 was severely affected, but partly as a result of favorable post-flood conditions, the following winter boro season produced a record crop, and within 18 months, Bangladesh had reached self-sufficiency in rice. Overall, the government estimated the cost in lost output and damaged infrastructure of US$2 bn and public rehabilitation costs were put at about US$1.5 bn. The public financial aspects of these 1988 and 1998 events are considered in Chapter 5.

Cyclones and storm surges

Tropical cyclones are associated with unusually low atmospheric pressure, producing winds of 240 km per hour, storm surges of up to 6 –7m (and even 9m in extreme cases) and intense rainfall. Cyclones are liable to strike coastal districts in the pre-monsoon and post-monsoon seasons, often causing heavy loss of life and destroying large areas of crops and assets. In November 1970 between 300,000 and 500,000 people were lost.[5] During the more severe storm in May 1991 about 140,000 people died and damage and dislocation caused estimated losses of US$2.4 bn (Map 2).

Over 5,500 km of coastal embankment have been built since 1959 as a series of dykes and floodplain polders to protect crops from saline tidal flooding. However, some embankments are now used to retain saline water for shrimp farming. These embankments are not designed to provide protection against extreme surges. This would require major raising and foreshore protection, and it has been estimated that as a consequence of such embankments a storm surge would force its way up the estuaries some 30-50 km further than it does now.

Over 5 million people live in 'High Risk Areas' (HRAs) from cyclones, especially to storm surge, along the coasts of Bangladesh, including 4 million in 'Very High Risk Areas' (Map 2). However, only 50% of the actual population in the HRAs could be accommodated in existing safe havens and cyclone shelters.

The majority of those living in the HRAs are low-income agricultural workers of whom 70% are 'landless' and relatively asset-poor, deriving their livelihood from fishing, sharecropping or day labor, or as workers on shrimp or salt farms. Seasonal migrants who move into these HRAs at times of harvest and fish processing, swell the resident population by as much as 30% and they are amongst the most vulnerable. The main economic assets at risk from cyclone are household possessions and large numbers of livestock. As a result, residents are reluctant to leave their homesteads. They also give high priority to placing their cattle, goats and poultry on *killa* (earth-raised platforms) before taking refuge in cyclone shelters. Since the 1970 cyclone there have been programs of public shelter construction, but these are still only able to accommodate perhaps half of those who might be affected by a cyclone and storm surge in a HRA (see Chapter 9).

A further critical economic issue is, as demonstrated in 1991, the cyclone vulnerability of Chittagong, the main port and second commercial and industrial center.[6]

River bank erosion

Some of the most vulnerable communities live on or near the riverbanks. There is also widespread settlement and cultivation of chars. These people are at constant risk from erosion, which occurs on the banks of all the rivers, but is most marked along the major rivers and their estuaries. This is more a continuing rather than an intermittent disaster problem.[7] The Jamuna is highly unstable and has occupied its

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[5] More precise estimates are not available. A high proportion of those killed were seasonally migrant workers who had come for the rice harvest. Soon afterwards, the country was caught up in conflict and no post-disaster survey of missing people was possible.

[6] Port facilities, including cranes, were damaged, ships sunk in the river, and warehouse stock damaged. Restoration may take several months, thus interrupting the supply of food, fertilizers, etc.

[7] The approximate numbers affected is indicated by the FAP 16/19 charland study: "Analysis of population data, combined with the satellite image analysis, indicates that during the period 1981-92/93 an average of almost 64,000 people were displaced by bank erosion every year, or 728,000 people over the whole period. More than half the displacement was along the Jamuna." Later on the same page it states: "197,000 people permanently left the Jamuna charlands, 19,000-44,000 left the Ganges, 123,000 departed the Padma, and about 120,000 left the Meghna. Hence, an estimated 462,000 people were displaced over an 11-year period, or 12 percent of the 1981 charland population." (ISPAN, 1993: xi)

present course for approximately only the last 200 years. Although over the last 25 years there has been a negligible net westward migration overall, both banks are eroding at an average rate of about 70m per year and that shows no sign of abating.[8] The Lower Meghna is extremely active as is the entire area of the main delta islands. The expansion of modern communications infrastructure up to and including the Jamuna Bridge and the growth of riverine urban centers such as Chandpur and Sirajganj also pose additional problems of economic activity and key assets that are vulnerable to erosion.

Flood protection

Traditional methods of riverbank protection can reduce the impacts of flooding only on minor rivers. The main form of public intervention has been construction of earth embankments to provide protection against high floods. The practice probably began by strengthening natural river levees.[9] By the late 1980s virtually the whole river system was embanked for flood control, including considerable structures along the major rivers. Those on the Ganges have proved to be relatively stable because the river is less aggressive. In contrast, those along the more active and unstable Brahmaputra, although set back to allow for erosion, have been subject to repeated breach, erosion and retreat. River training and construction of groynes to protect embankments have high capital and maintenance costs and often cause erosion to occur at unprotected points along the bank. Equal protection of all points along the riverbank, therefore, is very difficult. Riverine flood protection is the most contentious aspect of public expenditure on disaster mitigation (see Chapter 9). In addition, there is a vast complex network of local embankments, drainage channels and roads. These have been constructed by food-for-work projects and reflect no overall plan but decentralized decisions. In aggregate, local action probably exacerbates problems of drainage congestion and the effects of high monsoon floods.

Droughts

The high rainfall brought by the southwest monsoon from May to October is quite variable. There are also months without rain in the dry season.[10] This can bring hardship to people living in areas with poor access to surface water and groundwater resources. There were reported droughts in Bangladesh in 1973,1979, 1981, 1982 and 1989 and 1994. Such repeated reports of drought suggest widespread problems of lower than average rainfall causing moisture stress and limiting crop growth. Drought as a disaster category should be restricted to highly uncommon events associated with extremely low rainfall, especially in the monsoon season, but also in pre- and post-monsoon periods (Benson and Clay, 1998).

Because of the rapid spread of irrigation and irrigated Boro rice becoming in the late 1990s the main crop, agriculture may be less sensitive to rainfall variability within a wider range than previously. But streams and water bodies used for low lift pumps dry up, and shallow tube wells reach their suction limit of 7m. When farmers draw the water down, there is a corresponding fall in the village hand pumps, which are also suction mode pumps, set generally on higher land and consequently more vulnerable. Women seek water from contaminated surface water sources as a result, with corresponding risks to public health and welfare. Thus water supplies, the environment, crops and navigation are all under threat during an extreme drought. Another source of uncertainty is the co-variant risk of drought – the possible 'upstream' in Assam, North Bengal and even Bihar. This may lead to diversion of water to their own pump sets and to maintain river flow below Farakka, adversely affecting Bangladesh.

Taking all these consideration into account, it was concluded that only the most recent major droughts were in 1978/79, just before the period understudy, and possibly 1994/5. It is recognized that there have been

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[8] The erosion occurs mostly in discrete local bites rather than as a steady process of attrition (Thorne and others, 1993)

[9] Rennell, in undertaking the first modern survey, refers to embankments 12ft high and 14 yds. wide on the Ganges near Kushtia and Padma in the 1760s (Rennell, 1910).

[10] For example, between November 1998 and April 1999 there were 150 days without rainfall, but almost all of this is normal dry season.

other years in which some areas and also the *aman* crop in particular had been quite severely affected. Furthermore, the overall effect of low rainfall is now possibly more uncertain than previously. That makes forecasting of future drought impacts on the basis of historic data on rainfall and crop production extremely difficult.

Earthquakes

Bangladesh lies in the intensely active seismic zone at the foot of the Himalayas and the Arakan Yoma. Six earthquakes with magnitudes between 7.0 and 8.8 on the Richter scale were experienced in areas close to or within Bangladesh in the last 250 years, in 1762, 1885, 1897, 1918, 1923 and 1950 (Khan, 1991). The Great 1897 Assam earthquake produced a record Richter scale 8.8, with an uplift of 11m in the Shillong Plateau immediately to the north (Bilham and England, 2001), and causing liquefaction of floodplain sediments across a wide area in the north of present day Bangladesh (Brammer, 1996). The 1950 Assam earthquake (Richter 8.5) caused massive landslides in the upper Assam valley which brought huge sediment loads into the Brahmaputra river, raising its river bed for a number of years (thereby probably contributing to the serious floods in the mid-1950s) and creating large areas of new alluvial land in the Meghna estuary. Earthquakes of this extreme magnitude could not only demolish buildings but also destroy sections of the country's system of roads, railways and flood protection structures that are largely supported by elevated earthworks.

The assessment of earthquake hazard in Bangladesh has been relatively neglected.[11] It also reflects an institutional failure at a regional level to provide scientific information on a serious natural hazard as a public good. The historical record implies an average of more than one extreme Richter (7.0+) event every 50 years. But the fragmentation of the seismic monitoring systems in 1947 and again in 1971 left Bangladesh with little monitoring capacity. This was highlighted in February 2001 when a tremor of 4.2 on the Richter scale was identified by Indian sources as centered in NE Bangladesh. The reinterpretation of the causes of the 1897 Assam earthquake shows the challenges in undertaking relatively accurate risk assessment in the region because of possibly large buried faults. Positively, the recent Gujarat earthquake, extensively reported and shown on television in Bangladesh, appears to have transformed attitudes within government and civil society about earthquake hazard. This has implications for public expenditure on seismic monitoring and risk assessment as a public good. Incorporating earthquake resistance into design will also increase investment costs for public and private construction of key infrastructure and commercial property.

2.3 Future disasters

A question regularly posed about natural hazards is what are the risks of the re-occurrence of a disastrous event that was recently experienced or of an even more extreme event. There are related issues of whether extreme events are becoming more frequent as a result of direct human intervention in the environment, e.g. deforestation or flood protection, or indirectly because of global human activity (the greenhouse effect). But perhaps there are no simple unambiguous answers (Warrick and Ahmad, 1996).

This brief summary of the four major hazards that have severely and frequently affected Bangladesh since around 1970 illustrates the complexity of these natural processes. There is still much more to understand about the river systems and tropical storms and about the implications of the interaction of rainfall and hydrology for agricultural and human water supplies. Consequently, risk assessments are possible, but estimates of the frequency and form of events as well as associated physical and social impacts must be subject to enormous errors of estimation. This exceptional complexity of the natural environment in Bangladesh is therefore likely to preclude the use of any single or even a small group of indicators as a measure of expected levels of physical damage and losses from disruption to economic activity. Simple

[11] Three national risk zone maps have been produced since 1967, and the latest 1993 version is reproduced in Map 3. Local geologists acknowledge the tentative nature of these assessments which are based on the inadequate available data (Ali and Choudhury, 2000).

weather-derived indicators, such as rainfall or storm wind speed, are unlikely to provide a satisfactory basis for loss assessment (Chapter 9).

There is evidence that hazard risks are changing because of underlying exogenous physical processes. The triple river deltaic system overlays part of a highly active tectonic structure, so that some parts of the country are sinking whilst others are rising because of plate movement, and there is the compensating massive deposition of sediment from the uplifted mountains.[12] Direct human intervention is also affecting risks in a number of ways that require further systematic and extended investigation. The implications of lift irrigation for drought hazard involve interactions of extraction rates and water use with hydrology and rainfall. So past drought impacts are probably unsatisfactory predictors of future impacts of rainfall variability.

Flood protection interventions and urbanization are altering flooding patterns, effects and costs. For example, the Dhaka-Narayanganj-Demra polder southeast of the capital was constructed primarily to allow more intensive agriculture. Urbanization has caused greater internal congestion and localized flooding to be associated with high flood levels. Industrial and domestic effluent also makes that congestion more polluted and costly. There is also an extended network of new roads requiring protection. The higher human and economic costs of flood damage also probably require higher standards of protection – perhaps 1 in 100 rather than the only 1 in 20-year events that might be economically justifiable for agricultural land.

Upper riparian interventions, such as flood embankments that direct greater volumes of water more quickly downstream, or barrage diversion as at Farakka, are also changing river flow and flooding patterns. The combination of longer term and immediate actions in India as far away as the Damodar Valley, along with the effects of local interference with drainage contributed to the unexpected, extreme 2000 flood in SW Bangladesh, an area usually least affected by major riverine floods, as shown in 1988 and 1998 (Akhtar Hossain, 2001). This experience again highlights the growing need for regional co-operation in disaster reduction

Global climatic change could also exacerbate some of the physical consequences of natural hazards (Warrick and Ahmad, 1996). There is so far no statistically significant evidence that tropical storms in the Bay of Bengal are increasing in frequency or intensity. There is also no evidence that major floods are increasing in intensity or frequency, or of any changes in rainfall amounts or distribution. Unfortunately, such changes will only be clearly demonstrated after the event! The Intergovernmental Panel on Climate Change (IGPCC) conclude in their latest report that there is likely to be increased frequency of what are usually regarded as extreme climatic events – temperature, rainfall, storms. However, the quantification of change through models suggests a wide range of potential impacts (IGPCC, 2001).

The effects of rising sea level on low lying coastal areas where there is elevation in progress and in interacting with high flood levels are also clearly complex and uncertain. All these dynamic processes will determine the form of future disastrous events within the rapidly changing socio-economic context of Bangladesh. As the review of disasters and macro-economic performance in Chapter 3 suggests, there is some evidence of positive development to set against apparently gloomy implications of environmental change.

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[12] For example, Bilham and England (2001) infer that the Shillong plateau uplift is reducing seismic risk in Bhutan but increasing the risk in northern Bangladesh. This uplift is a part of the mountain building process that is also continuously feeding the processes of erosion in the upper Meghna and Brahmaputra river basins. Inside Bangladesh parts of the Madhupur and Barind Tracts have apparently been uplifted and the outer islands are rising. Chalan Bheel, the north eastern Sylhet Basin and lower Meghna estuaries are sinking.

[13] Growth rates for the 1970s are highly sensitive to the choice of base year, reflecting severe economic disruption caused by the cyclone in late 1970, the War of Independence and immediate post-independence dislocation and internal political difficulties. Khan and Hossain (1989), for example, note that the pre-independence peak in per capita GDP in 1969/70 was not equaled again until 1980/81.

Chapter 3.

Major Disasters and the Economy

This chapter examines evidence of the impacts of disaster shocks on the economy since Independence. After considering salient features of the economy that may affect sensitivity to disaster, performance in terms of growth rates of GDP, the agricultural sector and the rest of the economy are contrasted. The economy's better performance in face of the 1998 floods is scrutinized more closely.

3.1 Macroeconomic performance since Independence

Over the past 30 years, the Bangladesh economy has achieved relatively impressive rates of growth. First, there was the quite rapid recovery in the late 1970s from the devastating effects of natural disasters, war and famine in the years 1970-75. Then GDP (at market price) averaged a real annual growth rate of 4.2% between 1980/81 and 1989/90 and of 5.0% in 1990/91 to 1999/2000. Annual per capita GDP growth averaged 1.7% in the former period and 3.3% in the 1990s, as higher GDP growth was associated with declining population growth from about 2.5% to 1.6%.[13]

There has been a significant change in the structural composition of the economy, as reflected in differing rates of growth of the various sectors. Agriculture's share in total GDP has declined from an average 34% of GDP in 1977/78 to 1979/80 to 24% in 1997/98 to 1999/2000, despite rising 3.1% growth in real absolute terms between 1979/80 and 1999/2000.[14] Meanwhile, both the industrial and services sectors have expanded, resulting in a sharp shift in the composition of the country's exports (see Section 3.2).

Since the early 1980s, the Bangladesh economy has also undergone a gradual process of structural adjustment and trade liberalization, in part aimed at restructuring the industrial sector, strengthening fiscal and monetary management, and encouraging private sector investment. By the early 1990s, this process had resulted in relative macroeconomic stability, although not reflected in a significant increase in GDP growth. From the late 1970s to late 1980s, the annual rate of inflation remained steady at around 12%, primarily due to a rise in level of monetary demand. However, disciplined monetary management contributed to a substantial slowdown in the rate of inflation by the early 1990s, whilst also preserving the competitiveness of the real exchange rate and maintaining positive real interest rates (Ahmad, 2000). Since then, inflation has been kept in single digits and the annual current account deficit has been kept below 2.5% of GDP (World Bank, 2000a). The reforms have also had a positive impact on private sector development and the country's ability to attract foreign direct investment, the latter particularly in power generation and natural gas production (World Bank, 2000a).

However, overall management of fiscal policy since Independence has been more problematic, with large fiscal deficits, a low tax-to-GDP ratio and poor quality of spending, according to a recent report by the World Bank (Ahmad, 2000). These criticisms are voiced too by independent Bangladeshi economists (Sobhan, 1998). So, it is particularly appropriate to examine the additional budgetary pressures brought to bear by natural disasters and the options open to government in mitigating their impact on public resources.

[14] The World Bank reports sectoral GDP data at factor cost dating back to 1964/65. However, total GDP at factor cost is only reported from 1984/85. Sectoral (factor cost) percentages are therefore calculated relative to total GDP at market cost. The agricultural sector is broadly defined to include crops, livestock, fisheries and forestry, in effect the whole renewable natural resources sector.

3.2 Salient features of the Bangladesh economy

Several features of the broader Bangladesh economy are particularly relevant to an examination of the public finance impacts of disasters.

First, there is a high level of public sector involvement in the economy, implying that the government ultimately bears a substantial part of any disaster-related losses. There was an initial unsuccessful attempt at reconstruction as a largely planned economy. This included massive nationalization of the industrial sector in 1972, partially necessitated to sustain abandoned enterprises. In an extremely unfavorable international environment, this experiment was abandoned after hyperinflation, famine, and internal political instability (Islam, 1977). Since the mid-1970s successive governments have emphasized deregulation, liberalization and private enterprise development. Structural reforms on-going since the early 1980s have also included some privatization and restructuring of state owned enterprises (SOEs). However, progress has been slow and a significant level of public sector involvement remains, including in infrastructure provision and maintenance. Within the industrial sector, the only real success with privatization has occurred in the garments sub-sector whilst the banking sector remains dominated by nationalized commercial banks (NCB). Moreover, many state-owned enterprises are operating at a loss whilst the NCBs have seriously infected portfolios (see Chapter 4). In a study of this nature, it is therefore pertinent to consider not only central government budgetary operations but also to extend the analysis to explore the implications of natural disasters for the performance of the broader public sector.

Second, as discussed in further detail below, a substantial part of government revenue is generated from import earnings. This implies that the performance of imports and thus exports, as well as levels of foreign exchange availability more generally, are important factors determining the level of resources at the government's disposal. It should also be borne in mind that the relationship between the level of imports and import-related government revenue is non-linear. This implies that the greater the shortage of foreign exchange resources, the lower the proportion of dutiable imports (as essential imports are more lightly taxed) and the lower the receipts from import taxes and sales taxes levied on imports (Islam, 1977).

Over the last 30 years, the composition of exports has changed dramatically as a consequence of rapid growth in the domestic production of ready-made garments and shrimps for export, encouraged by a substantial improvement in incentives. These two items accounted for 30% of total exports by the mid-1980s, compared to just 1.5% at Independence (Khan and Hossain, 1989). Since then, growth of ready-made garments has continued to be particularly rapid, and by 1998/99 this sector alone accounted for 56% of total exports in value terms. Traditional exports such as jute and jute goods (previously Bangladesh's primary export), tea, hides, skins and leather have correspondingly declined in relative importance.

It is beyond the scope of this study to explore the hazard vulnerability implications of these changes in the composition of exports. However, more general concerns have been expressed that the export base remains narrow and, by implication, potentially vulnerable to a range of external shocks. Moreover, the shift from agricultural to manufacturing exports and thus, at first sight, to an apparently less hazard vulnerable form of economic activity, may not in fact have reduced the potential vulnerability of export earnings to natural disasters. Bangladesh faces severe global competition in the export of ready-made garments. In contrast, it was the world's primary jute producer and, as such, was a price setter on the international market. Thus, lower disaster-related production of jute and jute goods may have been partially offset by higher international export prices, to some extent mitigating the impact of disasters[15]. In contrast, disruption to the production of ready-made garments could result not only in direct loss of export revenue but also in subsequent loss of markets overseas. The shift away from agricultural exports could also imply increasingly lagged delays in recovery of the export sector to disasters, as illustrated below in the context of the 1998 flood.

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[15] This may be a subject for further investigation.

Flows of external remittances provide another significant source of foreign exchange and, moreover, these may actually increase during times of crisis. Most migration is temporary, with migrants eventually expecting to return to Bangladesh (Ahmed and Chowdhury, 1998). Thus, family ties could be assumed to be particularly strong, implying that remittances might be expected to show a particularly sharp increase in the aftermath of a disaster, as again illustrated below in the context of the 1998 flood.

The level of foreign exchange reserves more generally has periodically emerged as a critical issue since Independence, with implications for both fiscal and monetary policy and, by implication, resources available at the disposal of the Bangladesh government. Indeed, the fragility of the foreign exchange situation was acknowledged in a World Bank/ADB (1998) economic review just before the 1998 floods. This fragility is seen as in part owing to the country's vulnerability to natural hazards and other external shocks, as well as to its narrow export base and heavy dependence on imports for industrial investment and production. The review concludes that 'building reserve levels will therefore necessitate continued prudent fiscal and monetary management backed up by pro-active exchange rate policy. It will also require action to accelerate the pace of aid utilization' (World Bank/ADB, 1998: 9). It recommended that reserves sufficient to finance at least three months' imports of goods and services should be established and, partly in view of the country's particular vulnerability to external shocks, subsequently augmented further. Instead, as discussed in further detail below, the 1998 floods occurred, resulting in the adoption of more expansionary fiscal and monetary policies.

Third, external assistance has played an important role in funding a major share of public investment since Independence, as well as in meeting the country's consistently large trade gap. External assistance flows were equivalent to 60% of total government tax and non-tax revenue in the 20 years 1980/81 to 1999/00, and as much as 90% during the 1980s. They also accounted for 45% of resources on the ADP between 1980/81 and 1998/99. Public investment, in turn, has also represented a large share of total investment, implying that external assistance has met a significant share of total investment as well. Domestic savings have been consistently low, averaging 11.9% during 1979/80 to 1988/89 and 14.6% between 1989/90 and 1998/99, although the savings to GDP ratio has gradually picked up through the 1990s.[16] Over the same period, the gross domestic investment to GDP ratio has remained approximately constant, averaging 18.6% from 1979/80 to 1988/89 and 19.5% between 1989/90 and 1998/99, although again rising in more recent years to 24% by 1999/2000. The difference between the domestic savings and gross domestic investment ratios to GDP have been accounted for primarily by external assistance. By implication, external assistance has also played a significant role in meeting the costs of post-disaster relief and rehabilitation.

The food aid and what Bangladesh classifies as commodity aid, including program type foreign exchange and budgetary support, represented the greater part of foreign assistance in the 1970s. These forms of aid have usually been quickly and completely disbursed. In contrast, disbursements of project aid (now by far the largest form of external assistance received by Bangladesh since 1986) have consistently been below commitments. This raises questions about the possible role of natural disasters in delaying disbursement of funds, either directly or by indirectly exacerbating other factors hampering implementation. The extent to which disasters have resulted in additional flows of assistance is also relevant: if disaster-related assistance effectively displaces planned development flows, then the net rate of growth of total capital stock may be reduced, slowing the country's long-term rate of growth.

Finally, looking ahead to the financial implications of future disasters, Ahmad (2000:8) notes 'some worrisome signs of strain on the macroeconomic balances in the late 1990s', including a growing debt to GDP ratio. Bangladesh is still rated as a moderately indebted low-income country, with long-term official

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[16] Data reported are based on the revised national accounts series (see footnote 9). These figures are more encouraging than the old ones, suggesting both higher domestic saving and domestic investment ratios to GDP and that a higher proportion of investment is being financed from domestic savings.

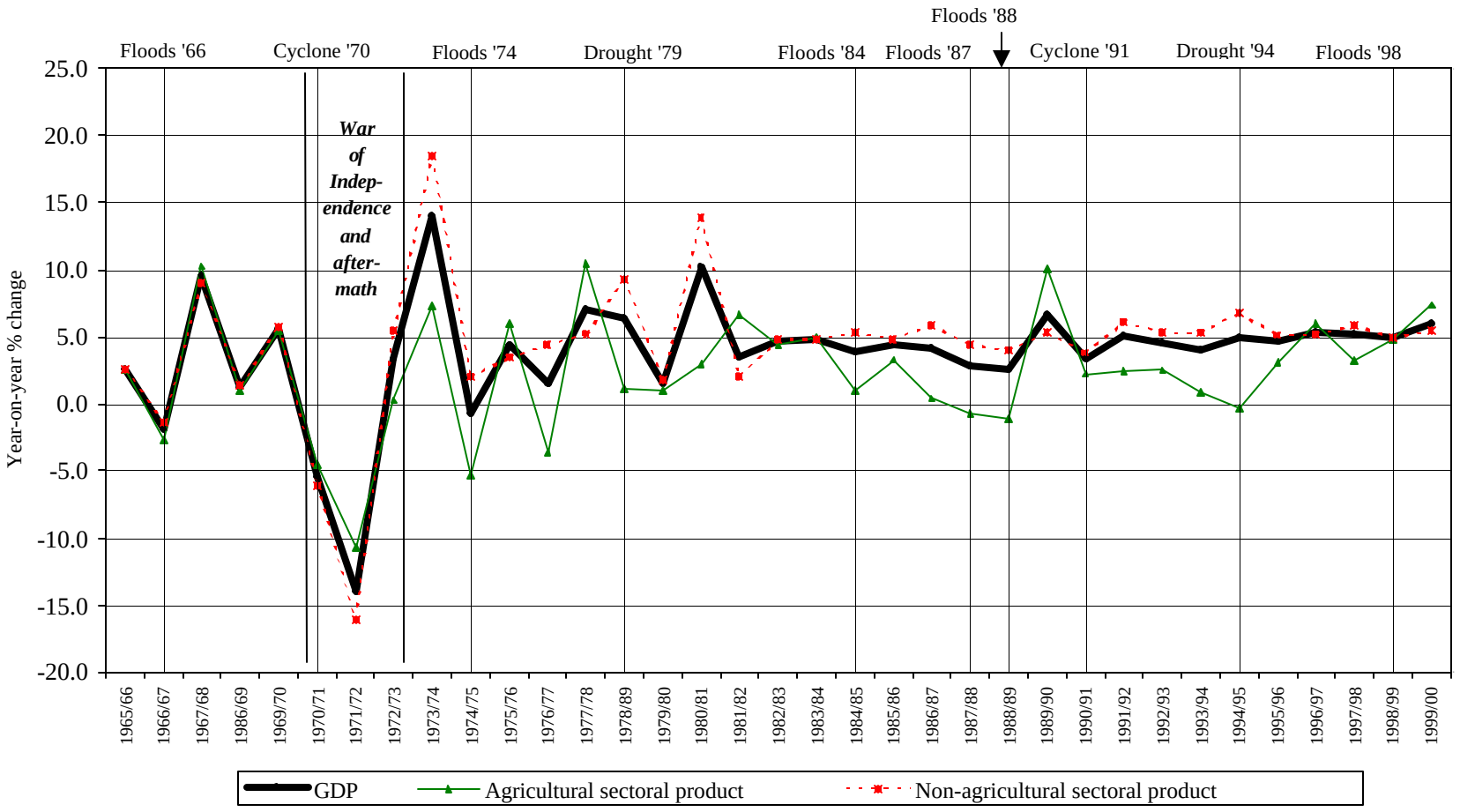
bilateral and multilateral debt accounting for well over 90% of total external debt. Exposure to short-term foreign debt is very limited. However, the total debt to GDP ratio increased from 6% in 1973 to 47% in 1998 as the government has increasingly financed its fiscal deficits through borrowing. Domestic financing of the central government deficit had increased to 3.7% of GDP by 1999/2000. The sharp increase in government borrowing from the banking system has already led to a rapid acceleration in broad money growth. Within the total debt stock, domestic government borrowing has also increased significantly, rising from 4.6% of GDP in 1989/90 to 9.9% by 1999/2000. The total level of debt is still sustainable but any further growth in domestic borrowing – for example, arising as a consequence of disaster-related budgetary difficulties - would create pressure for cuts in discretionary areas of recurrent expenditure, such as O&M and projects on the ADP. Moreover, there has been a recent decline in external assistance globally while the level of flows to Bangladesh, although holding constant in real terms since the mid-1990s, has begun to decline in relative terms and could also begin to fall in absolute terms in the near future.[17] This raises critical questions about the future financing of programs of post-disaster rehabilitation (see below).

3.3 Natural disasters and macroeconomic performance

The sensitivity of Bangladesh's economic performance, simply defined in terms of annual rates of growth, to successive major disasters over the period 1979/80 to 1999/2000 is illustrated visually in Figure 3.1. It was beyond the scope of this study to examine the impact of disasters on economic performance more formally, using quantitative regression techniques. Nevertheless, the graphical analysis of growth rates highlights some key issues.

[17] Rahman (2000) provides some evidence on the declining importance of external assistance. He reports that in 1990 export earnings amounted to 0.8 times that of aid disbursed; in 1999 export earnings were 3.5 times that of aid disbursed.

Figure 3.1: Bangladesh - real annual fluctuations in GDP, agricultural and non-agricultural sector product, 1966-2000



Source: World Bank, various.

First, the extreme volatility in the economy between 1965 and 1975, and the relationship with catastrophic natural disasters, is readily apparent. These disaster shocks were compounded by conflict and internal disorder during the War of Independence in 1971 and its aftermath. The contrast between the effects of these massive shocks and subsequent natural disasters also gives the impression of the economy becoming less sensitive to natural hazards. This is especially so since subsequent natural disasters, in particular the floods of 1987, 1988 and 1998, were of greater physical severity. However, because of the difficulty of distinguishing the confounding effects of the conflicts and natural hazards in the 1970s, the decision was made to consider the economy's changing vulnerability to natural hazards largely in relation to the period since 1980/81. That restriction also highlights the sensitivity of such an analysis to the choice of base period. The agriculture sector in particular was severely affected by drought in 1979/80 and so 1980/81 is then the next 'normal' or favorable year for rain fed agriculture.

Second, with the notable exception of the 1998 floods (see below), major disasters have resulted in a downturn in the agricultural sector annual rate of growth, including negative rates of change as a consequence of both the 1987 and 1988 floods. The drought in 1994/95 is included in the graphical analysis. But after an initial scrutiny of the statistical evidence on impacts, it was excluded from further analysis as having been a less severe event largely restricted in its economic impacts to agriculture and because of doubts about the reliability of production data.[18].

Third, at first glance the impact on non-agricultural sectors appears far less significant, with much less pronounced disaster related fluctuations. Non-agricultural GDP has consistently maintained a real annual growth rate of 4% or more over the period 1979/80 to 1999/2000, except in 1990/91 when it dropped marginally to 3.8%. However, it should be borne in mind that analysis of inter-yearly fluctuations in growth rates does not capture the longer-term impacts of disasters. As explored in further detail below in relation to public finance, disasters potentially divert resources away from productive investments needed to support long-term growth, with potential consequences for both the pace and nature of development. It would be naïve to conclude, based on an analysis of flow effects alone, that the non-agricultural sector is largely insensitive to natural hazards.

Fourth, although the economic impact of the 1991 cyclone was far less severe than that of the 1987 and 1988 floods, it inflicted a far higher death toll, estimated at a staggering 138,000 deaths. In contrast, the 1987 floods resulted in 2,055 reported deaths, the 1988 floods in over 1,500 estimated fatalities and the 1998 floods in 1,100 deaths (Pantelic and others, 2000).

Finally, and setting aside the extreme fluctuations of the early 1970s, related to both disaster and conflict, the sensitivity of both agricultural and non-agricultural sector components of GDP appears to be declining over time. This encouraging trend towards greater resilience is apparent in contrasting the floods of 1987 and 1988 with those of 1998.

3.4 1998 floods

The economic impacts of the 1998 floods merit further exploration. Although this event was extreme, widely seen as the 'worst' floods in fifty years (see Chapter 2), its impact on overall economic performance was much less severe than previous major floods, and also less than initially feared. An annual GDP growth rate of 4.9% was achieved in 1998/99, somewhat lower than the pre-flood government target of 6.3% but only slightly below the previous year's rate of 5.2%. Indeed, the annual rate of agricultural growth actually increased year-on-year (Table 2).

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[18] The reliability of agricultural production statistics is a much debated issue; and it would be unwise to base analysis of disaster shocks on small differences in annual growth rates for crop production (see for example Boyce, 1987). Both the apparent stagnation in rice production between 1991/92 and 1995/96 including a large fall in 1994/95 and the implied decline in foodgrain availability have been called in question (Sobhan, 1998).

A more detailed examination of this particular disaster event is also instructive in illustrating how assessments of the impact of a disaster on various aspects of an economy can change during a crisis. These changes in expectations are worth documenting because they underline an important point: namely, the considerable uncertainty faced by government and other economic decision-makers in responding to a disaster and trying to plan appropriate, cost-effective responses. Decisions required concern not only the nature of direct assistance but also issues such as the most appropriate form of fiscal and monetary policy. Any such decisions inevitably involve certain trade-offs, the relative benefits and costs of which also have to be calibrated. For example, should a government expand credit availability to support productive recovery or tighten monetary growth to stem food shortage related inflationary pressures? In the abstract, there can be no definitive answers to such questions as these depend on prevailing circumstances, in turn requiring reliable, up-to-date information on many aspects of economic performance as well as on the more direct costs of a disaster.

In the case of Bangladesh, strong growth in the two years preceding the 1998 floods had led to optimism, at least on the part of the GoB, that a high rate of growth would be sustained in 1998/99. In 1996/97, GDP had been boosted by a second year of strong crop performance, in turn encouraged by the reintroduction of subsidies on various agricultural inputs although non-agricultural growth had been weaker. The budget and external current account deficits as a percentage of GDP had been reduced (the latter primarily reflecting relatively strong growth of exports and remittances but also owing to stagnant import demand). A low rate of inflation was also achieved. However, concerns remained about the country's underlying macroeconomic stability and the low level of foreign reserves, amounting to US$1,629m in June 1997. The latter was expected to come under further pressure as non-agricultural sectors and import demand recovered. Credit to the Central Government had also increased, triggering warnings that should this trend continue it could potentially either crowd out future private sector expansion or lead to monetary growth as foreign reserves could not be drawn down any further.

In FY1997/98, inflation had remained modest whilst the current account deficit had fallen slightly again, although there had been a marginal rise in the fiscal deficit. As a result of strong export performance and subdued imports, there had been a slight improvement in the reserve position, standing at US$1,680m on 1 June 1998. There were also some signs of recovery in the industrial sector, led by the garments and knitwear sectors, although other industrial sub-sectors continued to perform less well. In addition, there were certain encouraging indications of an improvement in financial management, with a shift in the composition of domestic financing towards non-inflationary non-bank sources – that is, towards borrowing from the public through the sale of various savings instruments rather than monetary expansion (World Bank/ADB, 1998).

After a year in which agricultural growth was depressed by relatively unfavorable growing conditions for monsoon aus and aman rice crops, growth of around 2.5% was projected in agriculture in 1998/99. Thus, there was a sense of optimism, at least on the part of the GoB, that a high rate of growth would be sustained in 1998/99. The GoB forecast an annual GDP growth rate of 6.3% (GoB, 1999b). Other GoB goals for 1998/99 included containment of the rate of inflation at 5% and the rebuilding of reserves to US$2bn (Table 2).

Table 2: Bangladesh - the 1998 flood and macroeconomic performance in 1998/99

	Unit of measurement	Pre-flood forecast/target	Oct/Nov 1998 estimates	~April 1999 estimates	Actual
GDP growth	%	6.3	3.3	3.8	4.9
Agricultural sector growth	%	N/A	-3.3	0.0	4.8
Manufacturing sector growth	%	N/A	2.7	4.7	3.2
Foodgrain production growth	%	2.4	-10.5	-5.9	5.6
Inflation	%	5.0	8.0	N/A	8.9
Budget deficit	Taka bn	(Budget) 93.4	101.8	N/A	105.6
Budget deficit as % GDP	%	(Budget) 4.3	4.7	N/A	4.8
Current account deficit (excl. official transfers)	US$m	694	1,305	505	656
Current account deficit as % GDP (excl. official transfers)	%		2.9		1.4
Export growth (expressed in nominal US$)	%	8.8	4.8	12.4	2.9
Import growth (expressed in nominal US$)	%	7.0	13.0	9.1	6.6
Workers' remittances	US$m	1,525	1,575	N/A	1,706
Foreign exchange reserves (year end)	US$m	2,000	1,730	1,850	1,525
Source of data		GoB (1999b) IMF (1998) WFP	World Bank (1998a) World Bank (1998b) IMF (1998) WFP	GoB (1999b) WFP	GoB (2000a) World Bank (2000) WFP

Instead, the 1998 floods had a devastating impact.[19] The GoB (1999b) estimated the total loss at US$2bn in lost output and damaged infrastructure, equivalent to 6% of FY1997/98 GDP. Rehabilitation costs were estimated at US$1.5bn (UNDP/GoB, 1998) (See Table 5.3).[20] The early monsoon aus rice crop (harvested in June-July) and broadcast aman were damaged and transplanting of aman (harvested in November-December) prevented in large parts of the country. The manufacturing sector fell into recession, although in part due to longer-term structural deficiencies as well as the shorter-term impacts of the flood (World Bank, 2000b). Installations were damaged and a large number of industrial units rendered inoperative while many workers were temporarily unable to get to work. During the peak of the floods, road and rail communications were disrupted, half of the road network submerged and the major port, Chittagong, cut off from the rest of the country, affecting movement of goods and people.

In the immediate aftermath of the floods, in October/November 1998, the World Bank (1998a) and IMF produced revised forecasts of economic performance. In the absence of any special measures to address the macroeconomic impact of the floods, the current account deficit was projected to rise from 1.5% of GDP in 1997/98 to 3.2% of GDP in 1998/99. Lower export growth (in part due to disruptions to transportation) and additional rehabilitation-related imports were forecast to increase the external financing gap to US$803m (after accounting for an increase in remittances from compassionate Bangladeshis), putting considerable pressure on the country's foreign exchange position. A flood-related increase in expenditure and decline in revenues was also projected to lead to a rise in the overall budget deficit, from 4.2% of GDP in 1997/98 to 5.9% in 1998/99, with domestic financing rising substantially. However, by this date certain measures intended to address the macroeconomic implications of the flood had already been announced, including inflows of balance of payments and other external assistance as well as steps by government to raise revenue and reduce expenditure. Economic forecasts taking these measures into account were more optimistic. They included a current account deficit for 1998/99 of 2.9% of GDP, a budget deficit of 4.7% of GDP (with domestic financing of the budget deficit expected to remain at 1.6% of GDP, as in 1997/98) and a real annual GDP growth rate of 3.3% (Table 2).

Further forecasts for 1998/99 were released in April 1999, this time produced by the GoB (1999b). These suggested better GDP and visible trade performance than had been previously forecast, implying higher foreign exchange reserves by the end of the year (Table 2)[21]. Forecasts for agricultural GDP were also noticeably improved, reflecting in part the expected impact of the government's concerted efforts to ensure a rapid agricultural recovery.

In the event, actual economic performance was even better than expected - a growth rate of 4.9%. This outcome was primarily due to a record post-flood, dry season, irrigated Boro rice crop and also a bumper wheat crop. Agricultural output expanded 4.8% in real terms, reflecting producer response to aman crop losses. Production was boosted by good weather conditions and supported by a comprehensive program of

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[19] The extent of damage caused by floods depends on timing and duration as well as the nature and size of the area affected.

[20] This figure includes not only costs relating to the repair and reconstruction or replacement of infrastructure and equipment but also other forms of support. It should be noted that losses and rehabilitation costs are not the same. It is not clear how the two figures were estimated in the case of the 1998 Bangladesh flood. However, if calculated correctly, estimates of losses and rehabilitation costs should be based on different types of price. Rehabilitation costs should reflect replacement costs; estimates of losses should be based on remaining economic value of affected infrastructure and assets.

[21] The GoB forecast that the floods would result in a US$40m widening of the trade gap to US$2.932m by end of FY1998/99, with exports increasing 12.4% and imports 9.1% year-on-year (in US$ terms). The current account deficit was expected to decline by US$71m to US$182m, in part because of an increase in remittances, whilst the overall balance of payments was expected to rise by US$40m to US$122m, in part owing to higher disbursement of external assistance as well as the decline in the current account deficit. At the end of FY1998/99, the foreign exchange reserve was forecast to stand at US$1,850m, compared to US$1,739m at the end of FY1997/98.

agricultural rehabilitation, including the timely provision of credit and agricultural inputs. In volume terms, food grain production was 5.6% higher year-on-year (GoB, 2000a). This compares also with a pre-flood projection of only 2.4% growth and initial post-flood assessments of a 10-11% decline in output (Table 2). The large producer response was possible because of an enormous expansion in lift irrigation capacity since 1988 through private investment. Those actually assessing losses and recovery potential seem to have underestimated this greatly enhanced response to short-term potential to respond (Shahabuddin, 2000). This capacity was little affected by the floods.

Construction activity also remained strong, boosted by the rehabilitation process, with an annual growth rate of 8.9%. However, recovery was less rapid in certain other sectors, particularly non-agricultural processing sub-sectors of manufacturing industry.

Actual export growth was much lower than had been predicted through the year, falling to 2.9% (in US$ terms) compared to a trend growth of 12% for the rest of the 1990s. This decline in growth largely reflected dislocation and damage resulting as a consequence of the 1998 floods as well as a decline in the international price of primary goods (Rahman, 2000). Both production and shipment of exportable goods were hampered, as already noted, although the GoB did take various steps to ease difficulties relating to the latter, including the introduction of alternative ferry services and special arrangements for air-lifting cargo (GoB, 1999b). Steps were also taken to keep the port of Chittagong operational whilst the Bangladesh Bank pursued a flexible exchange rate policy with a view to maintaining export competitiveness and consolidating the value of the Taka. The Taka was devalued twice between June and October 1998 to reduce pressure on the balance of payments.[22]

More positively, import growth was also lower than had been expected in the aftermath of the flood, rising by 6.6% (in US$ terms) rather than 13% as had been forecasted in October 1998. The cost of food grains alone increased from US$369m in FY 1997-98 to US$997m in 1998/99 (GoB, 2000a). Remittances also increased more than anticipated, rising by 11.9% (in US$ terms) in 1998/99 to US$1,706m. However, they were insufficient to prevent a widening gap in the current account balance from US$470m in 1997/98 to US$656m excluding official grants, and from US$253m to US$394m including them. Foreign exchange reserves fell from US$1,706m at the end of FY1998 to US$1,525m in FY1999, equivalent to only 2.3 months of imports (Rahman, 2000). Three months of imports is generally accepted to be the safe margin of reserves.

Fiscal management was deemed ‘generally sound’ during and immediately after the floods (World Bank, 2000b: 4). The overall fiscal deficit was contained at 4.8% of GDP in FY1998/99, compared to 4.1% the previous year. However, net domestic financing totaled 2.4% of GDP, compared to an original budget estimate of 1.9%, rising again in FY1999/2000 to 3.3%, contributing to a further increase in the share of interest payments on domestic debt in the recurrent budget. Monetary policy was relaxed to accommodate the increased fiscal deficit as well as limited expansion of credit to the private sector to reactivate the economy (GoB, 1999b). However, despite upward pressure on food prices in the first two quarters of year, the annual rate of inflation was only slightly higher than in the previous year. Annual inflation stood at 8.9%, compared to 7.0% in 1997/98.

Overall economic performance in the following year was also good, at least as expressed in terms of GDP aggregates. At the end of 1998/99, the GoB (1999b) had forecast an annual GDP growth of 6.4% for 1999/2000, reflecting its relative optimism about the forthcoming year. It considered that ‘the economy ha (d) largely reverted to the normal and (was) expected to regain the necessary momentum’ (GoB, 1999b:

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[22] Bangladesh pursues a flexible exchange rate policy and in recent years there have been frequent devaluations. By mid-2000, the prevailing government had devalued the Taka 18 times, with the overall objectives of encouraging exports by maintaining international competitiveness, encouraging remittances and minimizing adverse developments in the balance of payments position. Thus two devaluations in such a short space of time was not particularly unusual.

11). In the event, the economy performed slightly less well than had been expected but nevertheless satisfactorily, with an estimated actual growth rate of 6.0% (at factor cost). The manufacturing sector made a good recovery, increasing 4.8% in real terms year-on-year. The agricultural sector also performed well, achieving a 7.4% growth rate. However, the overall budget deficit expanded to an estimated 6.2% of GDP. Net domestic financing also rose to 3.7% of GDP (see below). The GoB continued to pursue a moderately expansionary monetary policy, with a view to counteracting the flood-related downturn. This policy included a significant increase in domestic credit although the annual rate of inflation was relatively low.

Chapter 4.

Public Finance: Budgetary Process and Performance

This chapter examines the evidence on short-run impacts of major disasters on central government finances, beginning with a review of overall trends in fiscal performance. After describing the budgetary process, development expenditure under the ADP and then recurrent expenditure under the Revenue budget are considered. Next, government revenue is looked at before ending with an examination of how the public deficit has been financed.

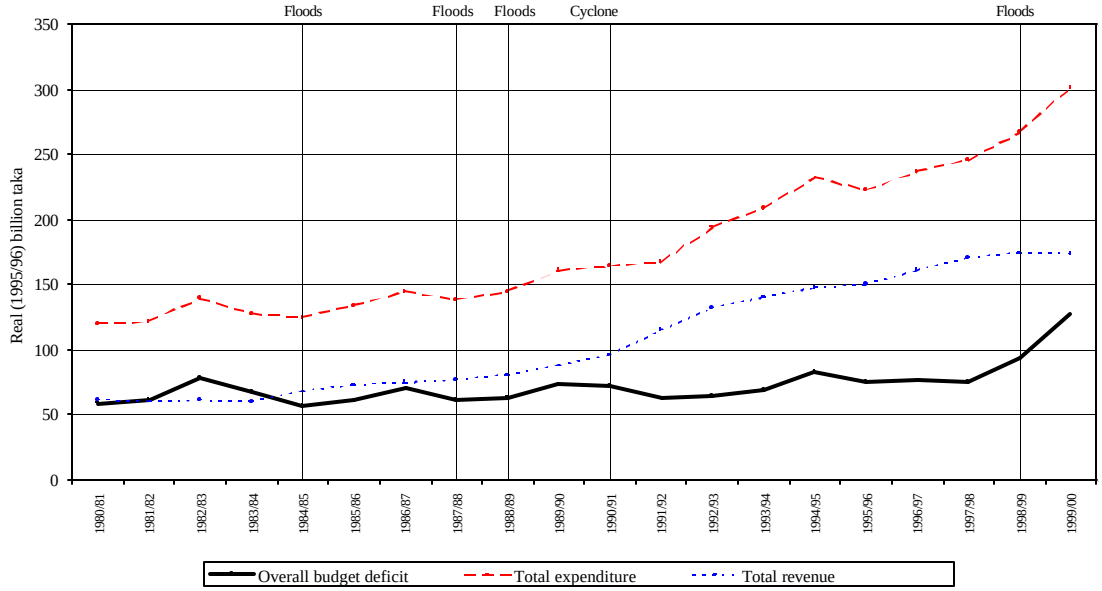
4.1 Overall trends in fiscal performance

Public finances are highly centralized in Bangladesh, with central government accounting for some 97% of total revenues and 93% of public spending in the mid-1990s (World Bank, 1996). The following analysis is, therefore, restricted to central government operations. It also focuses in particular on the period since 1980/81 because of distortions in data for the 1970s, reflecting the economic turmoil caused by the war of independence and subsequent reconstruction efforts. The impact of natural disasters on commitments and flows of external assistance is discussed separately (see Chapter 7).

The GoB has consistently run a central budget deficit, ranging between 4.1% and 8.5% of GDP during the 1980s and 1990s (Table 4.1). This deficit has been met primarily through external grant and loan assistance, although there has also been a significant increase in domestic financing in the past few years (Table 4.4). At least prior to the 1998 flood, there appears to have been little correlation between the incidence of natural disasters and the overall budget deficit, with data if anything suggesting a slight decline in the deficit during disaster years (Figure 4.1). However, this observation may reflect non-disaster factors rather than increased fiscal discipline during disaster years. For example, fiscal policy in the early 1980s was dominated by the GoB's handling of the 1979 oil price shock and the collapse of international jute prices in the early 1980s. Between 1982/83 and 1985/86 the GoB achieved some cutback in the budget deficit via restraints on expenditure, including a reduction in the size of the ADP and the introduction of 'core' investment projects to facilitate the flow of funds to priority projects (see below) (World Bank, 1989a). This was reflected in lower fiscal deficits in 1987/88 and 1988/89.

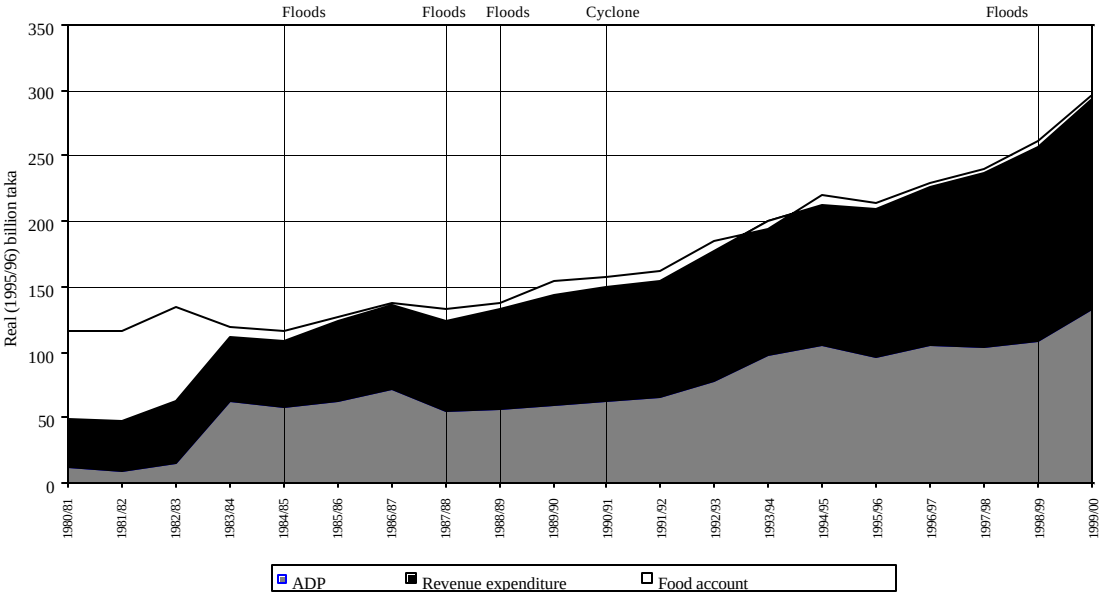
Revenue expenditure (usually known as recurrent expenditure in many countries) has followed a gradual upward trend over time, continuously increasing every year, at least between 1980/81 and 1999/2000 (Figure 4.2). Over the same period, its ratio to GDP has increased from around 4.5% to 7.8%. This growth has reflected rising expenditure on wages and salaries and on debt servicing whilst natural disasters appear to have had little aggregate impact. Annual Development Program (ADP) expenditure has also increased over time, particularly in the 1990s, although falling back temporarily in some years. However, again, there is little discernible consistent relationship between the incidence of natural disasters and the direction or scale of movement in total development expenditure. Rather, the composition and to some extent the short term objectives of the ADP change as a significant part of expenditure is devoted to rehabilitation, whilst involving the replacement of assets is not strictly development investment.

Figure 4.1: Bangladesh - central government revenue, expenditure and the deficit, 1980/81-1999/00 (real 1995/96 prices)



Source: World Bank, various.

Figure 4.2: Bangladesh - composition of central government expenditure, 1980/81-1999/2000 (real 1995/96 prices)



Source: World Bank. various.

Meanwhile, the food account – the fourth basic component of the GoB budget - was a potential source of considerable fiscal instability in the past, even in non-disaster years. During the 1970s and the early 1980s, expenditure on this account was very high, with reported activities accounting for over half the total central

government expenditure in some years.[23] Then it dropped back dramatically, partly, it appears, because a substantial part of expenditure was attributed to the development budget. Since then there has been a sizeable reduction in the food account deficit from about Tk 11m in 1989/90 to about half that level in the late 1990s (Table 4.1). The food account is presented in such a way that it may not always reveal the full extent of activity in this area nor the continuing degree of inter-annual fluctuations. For these reasons and because of the special importance of food operations in disasters, the food account is considered separately in Chapter 6.

Turning to central government revenue, this too has followed a gradual upward path in real terms, with little suggestion of any disaster-related downturn in revenues (Figure 4.1).

In sum, an inspection of broad budgetary aggregates suggests that disasters have had little apparent impact on central government finances, even in the case of the most severe disasters. However, a more detailed analysis of expenditure and sources of finance, as outlined below in this and subsequent chapters, gives a rather different picture.

4.2 The budgetary process

To examine the budgetary impact of natural disasters in more detail, it is necessary to be familiar with certain basic budgetary procedures and practices in Bangladesh. In terms of institutional responsibilities, finance and planning are the responsibility of a complex and changing ministry with several divisions each headed by an official of full secretary rank. There are also 'line ministries' each also headed by equivalent level officials[24]. The Ministry of Finance is responsible for raising taxes. Revenue expenditure is determined by the Finance Division and the Planning Commission is responsible for preparing the ADP. The Economics Relations Division, formerly the External Resources Division (ERD), is responsible for donor co-ordination and external financing. The food account is a Finance Division responsibility in conjunction with the Ministry of Food. The Implementation, Monitoring and Evaluation Division (IMED) is responsible for monitoring on-going projects. Individual line ministries are also involved in the determination of annual budget resources and actual spending.

Government revenues are first estimated, based on forecast economic performance and the revenue implications of any tax changes.[25] The revenue surplus is then calculated by subtracting planned revenue expenditure from current revenue estimates. This surplus is transferred onto the ADP where it is used in combination with (substantial) external project assistance. The degree of flexibility in the subsequent reallocation of resources within individual ministries varies between ministries. Some still require the permission of the Planning Commission before they can move resources between projects, but others do not.

In reality, however, the division between Revenue (recurrent) and ADP as capital expenditure is somewhat artificial. Both the GoB and donors have included a substantial share of operating expenditures in the ADP, a practice adopted in the past to compensate for chronic under-funding of the revenue budget. Sobhan

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[23] Following two successive years of drought in 1978/79 and 1979/80, substantial expenditure was required to build up food grain stocks in 1980/81, by the end of the year bringing public grain stocks up to adequate levels of around 1.2 million tonnes in rice equivalent (World Bank, 1981).

[24] During the period under review responsibilities have changed, partly as the result of the progressive decline in importance of the Planning Commission from its powerful post-Independence role.

[25] According to Rahman and others (2000), in reality revenue and expenditure estimates are typically based on trends in actual expenditure and receipts over the past six to eight months, rather than expected macroeconomic performance.

(1998) estimates that over a third of the ADP is padded with items of recurrent expenditure, including project staff. The government also acknowledges that there is no qualitative difference between allocations for social sectors in the revenue and development budgets (GoB, 2000b).

In examining the impact of natural disasters on planned expenditure it is also important to bear in mind that revenue projections and thus expenditure pledges are typically over-optimistic (Rahman and others, 2000). Thus, deficits may be greater than envisaged in both disaster and non-disaster years. This practice potentially results in short-term borrowing and squeezing resources available on the ADP. In most years there has also been under-estimation of recurrent expenditure (see below). At the same time, as discussed below, there has likely been some under spending even of the resources that were available on the ADP (Chowdhury, 2001).

The government's way of reporting budgetary information, which is unusual in several respects, also makes it less likely that the public accounts would reveal the full extent of the impact of disasters on public finance. In particular, the quasi-fiscal deficit of the central bank is not yet recognized as part of public deficit. This is despite the fact that the Bangladesh Bank supports effective losses on subsidized credit programs that the financial sector is obliged to offer on the directive of the GoB and counter-guarantees foreign loans taken by the government. Moreover, the accounting treatment of bonds for investment, recapitalization and replacement of non-performing loans is ambiguous. Meanwhile, foreign aid is shown as a receipt for financing the development program but the loan component in aid is not included in public debt (World Bank, 1996). Until very recently, the GoB also failed to specify the amount of debt to be raised and the types of instrument to be used in presenting the annual budget.[26] A further issue concerns the practice of cash accounting, with any internal transactions going unreported. This issue is particularly relevant in analyzing performance of the food account, as already noted, as budgetary reporting does not cover stock changes (see Chapter 6).

Finally, in view of the importance of timely and accurate information being available to facilitate post-disaster budgetary decisions, monitoring practices are also relevant. Monitoring of government revenue and expenditure has been poor historically. An initial estimate is made ahead of the relevant financial year and presented before Parliament. A mid-year revision of the original budget estimate is undertaken and revised estimates produced, with expenditure figures based in part on revised forecasts of revenue. At this stage, some reallocation of funds between projects may be required. However, information on actual revenue and expenditure has become available only after considerable delay. Instead, at least in the past, expenditure control has been achieved through a rigid system of authorizations (World Bank, 1989a). Indeed, according to Rahman and others (2000: 64):

> 'The current procedures for expenditure monitoring are inadequate for tracking and controlling public expenditure totaling in the order of US $3 bn annually. In the course of the budget year, the Ministry of Finance monitors its financial position by looking at its cash balance held with the Bangladesh Bank. More detailed information on expenditures at ministerial or departmental level is available only after lengthy delays and at too aggregate a level to permit the data to be used to monitor the detailed outcome of the expenditure programmed. In order to prevent over-spending, the Ministry of Finance relies on a detailed system of line-item expenditure controls backed up by strict authorization procedures, rather than monitoring expenditures on a broader basis. This system hinders the delegation of responsibility and accountability to the respective ministries and agencies.'

[26] The GoB began explicitly showing in its budget documents the amount of bank borrowing planned for the next fiscal year in the FY2000/2001 Budget Speech (World Bank, 2000c).

However, efforts are under way to improve budgetary monitoring, in part as a consequence of work undertaken under the UK-funded RIBEC project.[27] This work has included the creation of Management Accounting Units within ministries responsible for health, education, agriculture and social welfare to provide up-to-date information on expenditure. This initiative should facilitate rapid, cost-effective reallocation of resources post-disaster in the future by making it easier to identify any under spending, particularly if used in conjunction with a clear system of ranking projects according to their priority (see below).

4.3 Development expenditure

The Annual Development Program (ADP)

The ADP is the basic instrument for the implementation of plans and programs of national development - that is, for public investment. It details allocations for expenditure against individual projects, based on estimates and proposals put forward by implementing ministries and agencies. The ADP also includes capital investment projects of public enterprises financed through government contributions, foreign aid and their own resources.

ADP expenditure has increased over time, as already noted, particularly in the 1990s, although it has fallen back temporarily in some years (Figure 4.2). A significant, although declining, share of the ADP has also been funded by external assistance. External assistance accounted for 45% of actual expenditure on the ADP between 1980/81 and 1998/99. However, there is little discernible consistent pattern between the incidence of natural disasters and the direction or scale of movement in either total development expenditure or externally funded development expenditure (see Chapter 7).

Actual expenditure on the ADP has typically been lower than planned (Figure 4.3). Over the period 1980/81 to 1998/99, actual expenditure has averaged 89% of the budgeted amount, according to Planning Commission/IMED data. Actual expenditure on the ADP funded through external aid alone has averaged 83% of budgeted levels. Although actual expenditure has exceeded the budgeted level in three of these years, none were disaster years. Indeed, at least according to the data, there is little apparent relationship between the incidence of a disaster and the ratio of actual to budgeted expenditure on the ADP.

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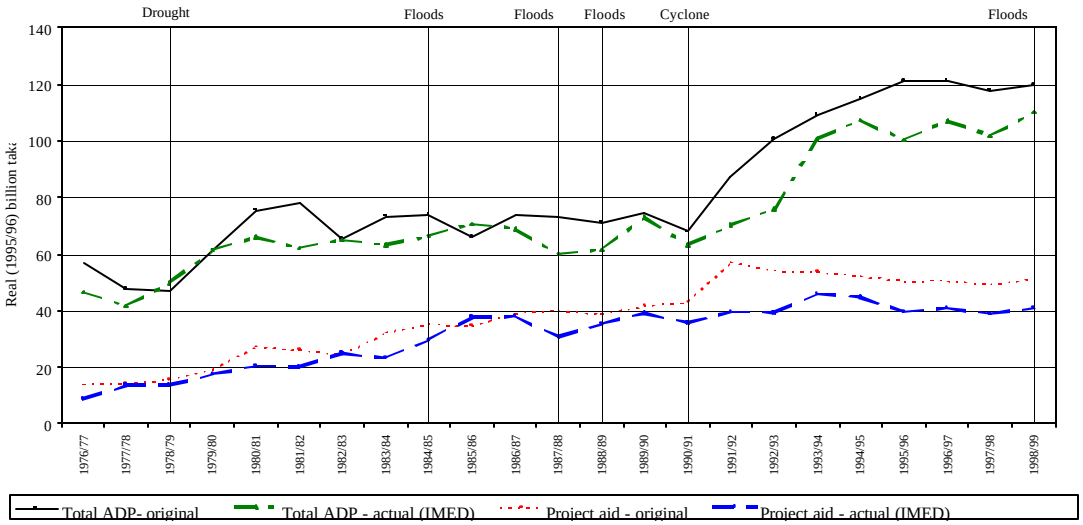
[27] The Reforms in Budgeting and Expenditure Control (RIBEC) project was begun in 1995 to address lack of adequate timely information on public expenditure, a repetitive and overlapping budgetary system, antiquated classification system, very complex processes, poorly trained staff and various other problems. Under the project, a computerized budgeting and accounting system has now been put in place, supporting a new government wide classification capable of supporting economic analysis and budget forecasting.

Figure 4.3: Bangladesh - ADP actual and original budgeted expenditure, 1976/77-1998/99 (real 1995/96 billion



Source: GoB Planning Commission and IMED

A number of factors have thwarted the implementation of the ADP at various times, including local counterpart fund constraints, staff shortages, complexity of bureaucratic and procurement procedures, delays in land acquisition and not entirely effective project monitoring practices (World Bank, 1989a). These procedures are also made more complex because of donor cross conditionalities. Implementation delays, in turn, have ultimately increased the cost of projects[28] and have increased their level of exposure to natural hazards to the extent that unfinished structures are more vulnerable. Writing more recently, Rahman and others (2000: 83) cite lack of institutional base to implement the ADP properly together with other structural bottlenecks including 'bureaucratic sloth, inefficient management, corruption and a host of administrative complexities that tend to slow down the rate of utilization of the provisions of the development budget' as factors underlying the under spend. The discretionary nature of expenditure on the ADP also renders it more vulnerable to potential cutbacks than the revenue budget.

Over time there has been a change in the composition of the ADP, with social sector and infrastructure investments on roads and water and sanitation assuming increasing importance. In terms of the impact of disasters on the relative sectoral pattern of expenditure, it is also important to explore whether some sectors are more vulnerable to cutbacks than others. Writing in the 1970s, Islam (1977) indicated that agriculture, rural development, water resources and physical infrastructure were spared as much as possible in any cutbacks either because of their importance in the economy or, in the case of infrastructure, because of the relatively high proportion of ongoing projects, many with foreign aid committed to them, awaiting disbursement. Social sectors and the industrial sector received the largest cutbacks. Available data on budgeted, revised and actual allocations for the year of the 1998 floods suggest a less clear-cut picture. Revised allocations suggested increased emphasis on rural development and institutions, water resources and transport both in terms of GoB and, in the case of the first two of the sectors, external resources (Table 4.2). However, data on actual expenditure show a marginal decline in expenditure on water resources,

[28] For instance, the World Bank (1989a) public expenditure review (PER) cites a study that estimated that implementation delays increase the cost of projects by 35-40% on average and extend the implementation period by 60% as compared to the time expected at project approval. For example, Shahabuddin (1998) cites an examination of 18 BWBD projects that found that all except two had cost overruns, ranging from 1.42% to 8993% of the original estimates.

relative to the original budgeted amount. Actual expenditure was lower than budgeted for all sectors except rural development and institutions and transport, although the largest cutback in absolute terms was felt by health, population and family welfare.

The fact that disasters have not forced a significant increase in spending on the ADP, even in the case of extreme events, suggests that disasters must have resulted, instead, in the deliberate reallocation of resources; and/or that disasters have severely hampered the progress of ongoing projects, effectively releasing domestic resources, at least, for alternative uses. Indeed, even in normal years, shortfalls in resources have been compensated for by increasing the number of years over which projects are implemented, a practice followed since the 1970s (Islam, 1977) and which ultimately increases the cost of projects.

The fact that reallocations occur raises another question: are reallocations done on such a basis as to minimize their long-term developmental impact? For this to be the case, four key conditions must be satisfied:

- A clearly defined and applied policy framework must exist;
- Linked to this, a system of prioritization of projects must be in place;
- There must be up-to-date and reliable information on the current availability of resources as well as the timely production of comprehensive and accurate damage assessments;
- Proper evaluation of post-disaster rehabilitation and reconstruction projects should be undertaken.

These conditions are explored in further detail below.

An examination of the impact of disasters on on-going projects in any depth was beyond the scope of this study. However, it is entirely plausible that disasters have delayed the implementation of ongoing projects, both by causing disruption and direct damage to them and also by placing additional pressures on the government's administrative sections. Disasters have also played a role in delaying the implementation of projects due to local counterpart fund availability constraints, as discussed below in the context of the 1987 and 1988 floods.

Development policy framework

As well as potentially causing heavy losses, disasters offer an opportunity to upgrade capital and implement some physical restructuring of an economy. This point is illustrated by the Chinese word for risk, 'wei-ji', which combines the characters meaning 'opportunity/chance' and 'danger' (Smith, 1996). However, in order to make appropriate decisions in the aftermath of a disaster, it is necessary to have a clear understanding of the implications of particular decisions for the achievement of longer-term goals and objectives. This, in turn, requires well-functioning planning and control instruments, linked to carefully defined, achievable objectives and outcomes, as well as more specifically a system of prioritization of individual projects.

In Bangladesh the basic medium term planning exercise is the Five Year Plan (FYP), and successions of these have been undertaken since Independence. A Three Year Rolling Plan was also introduced in FY1991, with the terminal year of each plan coinciding with the first year of the next. The two types of plan are used as the basis for drawing up the ADP. Projects on the ADP are examined in terms of their compatibility with these Plans, as well as their cost, technical quality, and economic viability.

The Five Year Plans are themselves an aggregation of numerous projects, some of which are carried over from the previous Plan. Moreover, these Plans are not the only factors determining the composition of the ADP. Political pressures and the availability of external assistance for particular activities also play a role. The sometimes strong political influences are suggested by the fact that the World Bank (1996: 70) public expenditure review (PER) recommended that the choice of so-called 'politically mandated projects' or 'national important projects' should be subjected to the same appraisal discipline as all other projects. Donor priorities are also a potentially significant influence given the importance of external assistance on the ADP.

Every donor has its own priority or strategy, which may not be fully consistent with the FYP and which are also changing. As Akash (1998: 102) comments, 'the GoB thus depends on the coincidence between the long term vision of the GoB's FYPs and the short term ad-hoc goals of the various aided projects of the ADP, to give substance to its vision'. Indeed, Akash goes on to argue that 'heavy aid dependence has logically led the GoB to not only lose control over its policy agendas but also over its functionaries where project fetishism has contributed to a loss of domestic ownership over the GoB's development vision' (his emphasis) (op cit.: 102). Individual ministries also attempt to negotiate as many projects as possible, irrespective of their conformity with the government's longer run plans.

Thus, development priorities may already be compromised even prior to the occurrence of a disaster. The problems are effectively further exacerbated by the slow process of formalizing budgetary allocations and reallocations, with expenditure sometimes undertaken before it has been formally approved. Efforts to undertake effective and rapid post-disaster budgetary reallocations may also be hindered by the GoB's limited achievement to date with the devolution of responsibilities to line ministries. Thus, it is not clear that it is even possible to make rational, objective decisions about rehabilitation priorities, rather than falling into the trap of simply replacing like with like.

Prioritization of projects and post-disaster reallocations

Ideally, any reallocations should be undertaken in the context of a careful strategic review, entailing the reallocation of resources away from lower priority projects. In order for such a process to be implemented rapidly and effectively, projects already need to be ranked according to some level of priority. In reality, however, questions have been periodically raised, continuing up to the current day, about the quality and rationale of certain projects within the ADP. Low growth in ADP expenditure has even been interpreted positively by certain commentators during periods when the GoB has not had a substantial number of high impact projects under implementation at the planning stage.

At least in theory, certain projects, known as 'core' projects are, indeed, prioritized under the ADP, a practice that informally stretches back at least to the mid-1970s. During this earlier period, priority was accorded to quick yielding projects and those in advanced stages of completion. Sectorally, agriculture and natural resource exploration were accorded particular priority. Within the agricultural sector itself, slow yielding large-scale water control projects with long gestation periods were postponed and greater emphasis placed on labor intensive, small-scale drainage schemes. Drainage and dredging of small rivers and canals also took priority over the control of major rivers while new emphasis was placed on coastal embankments. Similarly, lower cost small-scale irrigation projects, involving low-lift pumps and shallow tube wells, were preferred over large-scale ones. However, the World Bank (1989a) PER stated that before the early 1980s, in reality the Planning Commission generally imposed across-the-board cuts as a way of restraining expenditure under the ADP, rather than focusing expenditure cuts on lower priority projects. A further constraint even in a crisis situation is the donor response. Some donors may resist cutting back on their projects regardless of GoB priorities in the short term. This is partly because such cuts affect their disbursement plans.

The formal establishment of a 'core' investment program is of more recent date. It was first proposed to donors in FY1981 and introduced in 1983. The GoB identified two major benefits of the program: priority treatment in the allocation of funds, and protection from budget cutbacks during the budget revision process. No specific guidelines were provided on the prioritization of projects but in practice, at least during the 1980s, criteria for selection included proximity to completion, the production and employment potential of a project, the level of donor support, length of gestation and beneficial linkages with other projects (World Bank, 1989a). By the late 1980s, the World Bank (1989a) PER concluded that, despite the relatively weak nature of the core program, there was evidence that a sense of priorities had, indeed, been introduced into the investment program. However, it had not been effective in ensuring that priority projects had preferential access to local funds required for their implementation and following the 1987 and 1988 floods, available funds were basically spread more thinly across existing projects rather than allocations altered depending on level of priority. 'Ongoing projects cannot be easily abandoned or frozen, bearing in mind that all projects

have official and most have donor support. This World Bank (1989a) PER emphasized the need to strengthen the core program concept, which it considered had been made more necessary as a result of the 1987 and 1988 floods, because rehabilitation expenditure would mean that some other major investments might need to be postponed, both because of limited local financing resources and other implementation constraints.

A further effort to promote the core project concept was begun in 1990 with the introduction of the Three Year Rolling Plan.[29] Since then, the annual ADP has been set in the context of the Three Year Rolling Plan that designates core projects to receive priority access to funds and establishes a ranking for other projects.

Despite this, a subsequent World Bank (1996) PER concluded that, despite some progress, the system of evaluating expenditure remained weak, without the consistent use of objective criteria based on economic rationale for determining the prioritization of expenditure allocations between and within sectors and among projects. It noted that there was little capacity to evaluate projects on the basis of their policy objectives or outcomes. The World Bank's analysis suggested that there was a need for a reassessment of the intersectoral and intrasectoral composition of spending, with greater focus on areas with higher public goods content and a positive effect on growth and income.

Sobhan (1998: 51) in an overview of wider governance issues concludes that

> 'the large ADP projects themselves often tend to be misconceived, or over-designed, uncoordinated with collateral projects, poorly implemented, and after completion, inefficiently managed. Thus, ADP projects represent both an inefficient use of public funds as well as a failure to derive the expected returns from such investments… Public development expenditures… tend to be wastefully spent and inefficiently managed'.

The donors also have a responsibility in bringing about this situation, because they have a large part in the design of projects.

A World Bank/ADB (1998) economic review again stated just prior to the 1998 floods that the project portfolio of the ADP needed a careful re-examination in terms of its merit, rationale and priority to help contain the fiscal deficit. Following the floods funding allocations to particular projects were adjusted on the basis of their priority (see Chapter 5). However, the level of priority was determined according to the stage of implementation of projects (that is, whether they had yet been approved) and whether or not they were aided projects, rather than on a more long-term strategic basis. Thus, the system of prioritization of projects remains an area of public and financial planning that requires strengthening. There are issues too of the appropriateness and quality of both rehabilitation and reconstruction under the ADP, which are discussed briefly in Chapter 9.

4.4 Revenue budget

The revenue budget includes most recurrent expenditure (see above), including pay of officers and establishment and debt servicing as well as operations and maintenance.[30] Real revenue expenditure has followed a gradual upward trend over time, increasing yearly through the 1980s and 1990s. Revenue

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[29] In undertaking this study, no information was found to suggest that the 1987 and 1988 floods played a specific role in precipitating the introduction of the Three Year Rolling Plans but they may have had some indirect part.

[30] The GoB introduced a new budget classification in FY 1998/89. This creates certain problems in comparing various categories of both revenue expenditure and government revenue before and since that date.

expenditure's share of GDP has also increased, rising from around 4.5% to 7.8% between 1980/81 and 1990/2000. Since 1987/88 it has typically accounted for over half of total central government expenditure.

The gradual increase in the revenue budget has reflected rising non-discretionary expenditure on wages and salaries and debt servicing, which have accounted for an increasingly high percentage of total recurrent expenditure. Pay and allowances alone accounted for 29.6% of budgeted gross current expenditure in 2000/01; domestic interest payments for a further 14.9%; and foreign interest payments for 4.2% - together almost half of total revenue expenditure. But, despite the growth in revenue expenditure, certain other areas covered by the revenue budget have consistently remained under funded. In particular, it has been frequently stated that expenditure on operations and maintenance (O&M) is too low. Moreover, non-discretionary expenditure, by definition, is more vulnerable to any cutbacks, for example arising as a consequence of natural disasters.

Annual growth in the revenue budget has not been substantially higher in disaster years than in the immediate preceding years. For example, in 1987/88 current expenditure increased 7.7% and by a further 9.2% in 1988/89, compared to annual growth of 7.1% in 1986/87. In 1998/99 it rose 11.6%, compared to annual growth for the previous year of 10.1%.

Instead, it seems that disaster-related expenditure has been met by drawing on existing unallocated resources under the revenue budget and by diverting resources away from other uses. The annual revenue budget includes some Block Allocations, which are allocated over the course of the fiscal year as needs require, rather than at the outset. These funds, which are a comparatively recent phenomenon, are substantial and increasing. For example, total Block Allocations under the 1998/99 Budget totaled Tk 11.2bn or 7% of the total gross revenue budget, of which Tk 5.3bn were allocated for unexpected expenditures.

Expenditures incurred in the aftermath of a disaster on the recurrent budget fall into one of two categories: additional discrete items of expenditure (e.g., agricultural subsidies) and an effective change in use of (or reallocation) of available resources. One of the most obvious reallocations involves the redeployment of government staff. For instance, according to GoB (1999c: 5) 'with the outbreak of the (1998) flood, the entire civil administration was deployed in relief operations'. However, it is extremely difficult to cost the diversion of human resources as well as machinery and equipment. Imposition of austerity measures, as noted below in the context of the 1987 and 1998 floods, also involved effective reallocation of resources.

As the GoB seems to respond to recurrent expenditure demands arising in the aftermath of natural disasters within the existing budget envelope, it is extremely difficult to discern any impact of disasters on the revenue budget from an examination of aggregate data. However, that is not to say that disasters do not have significant implications for the recurrent budget. But an intimate knowledge of decisions taken within particular ministries and line agencies at the time of a disaster is required both in relation to financial and in-kind resources to understand how this has happened and what are the consequences.

4.5 Government revenue

The revenue structure in Bangladesh has been very weak. Total revenue averaged only 6.9% of GDP during the 1980s and 9.3% in the 1990s. Official external grants and loans have played a significant role in supplementing government revenue, on average almost doubling the level of resources available to central government during the 1980s and increasing them by over 40% during the 1990s (see Chapter 7).

Tax revenue has accounted for the largest part of total government revenue while non-tax revenue, despite including profits and dividends from SOEs, has been much lower. Within tax revenue, there has been an overwhelming dependence on indirect taxes (Figure 4.4). Import-based taxes (customs duty, VAT on

imports and supplementary duty on imports) alone accounted for 57% of total tax revenue between 1992/83 and 1997/98.[31] Income tax accounted for a mere 15% of total tax revenue over the same period.[32]

The impact of disasters on government revenue is in part determined by the structure of direct and indirect taxation relative to the compositional impact of disasters. In the case of Bangladesh, the heavy reliance on import duties is particularly significant. Disasters can potentially reduce the import of more heavily taxed, non-essential goods, both by depressing general demand in the economy and also by creating foreign exchange constraints (see Chapter 3). Public food grain imports, which can rise significantly in the event of a disaster, have been tax-exempt. Duties on private imports have also been reduced or waived in post-disaster situations, as in 1998. There is virtually no direct taxation on the agricultural sector, one of the most directly hazard vulnerable sectors of the economy, to some extent reflecting lack of records and the difficulty of tracing ownership of income (World Bank, 1989d).[33] However, as Rahman and others (2000) note, the agricultural sector is a heavy contributor of indirect taxes, implying that the potentially negative impact of disasters on the agricultural sector may also still be felt indirectly.

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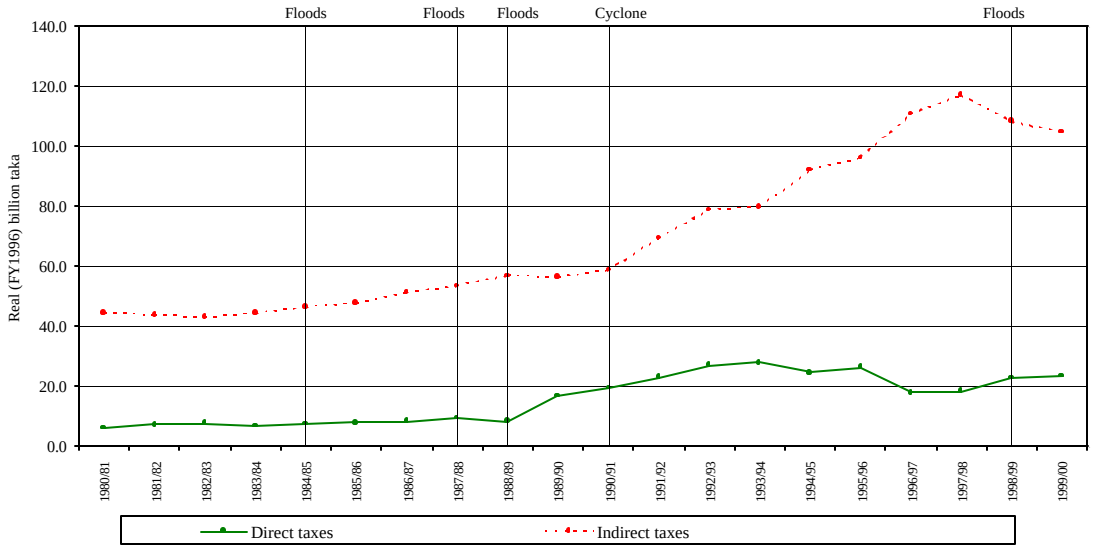
[31] For the purposes of this report, it was not possible to access data on tax revenue by category for the period prior to 1992/93. The data were not reported in any of the economic reports consulted.

[32] As of 1989 tax concessions of various kinds implied that under 0.5% of the population was liable for personal income tax (World Bank, 1989d).

[33] Historically, under British rule, agricultural land taxation had been very important (World Bank, 1989a). Natural disasters apparently played a role in the virtual elimination of this form of tax (Islam, 1977).There are two principal forms of direct agriculture taxation: the Land Development Tax (based on land area, rather than productivity) and a land registration tax payable upon the transfer of property. Land development tax also includes revenue from the commercial and residential sectors and gradual growth in revenue from this source over time most likely reflects the shift in land from agricultural to urban use, thus incurring higher urban rates.

Figure 4.4: Bangladesh - composition of NBR tax revenues, 1980/81-1999/00 (real FY1996 million taka)



Source: World Bank, various.

It was beyond the scope of this study to explore the impact on overall levels of demand within the economy and thus the likely impact on various earlier forms of sales tax and, in the 1990s, VAT, the main source of indirect tax. Moreover, it would be reasonable to assume that following a disaster there are increased inflows of remittances. Support to the agricultural sector would also have played some role in offsetting the adverse impact of disasters on demand in the economy.

Despite its potential hazard sensitivity, at least with regard to import duties, the available evidence suggests that natural disasters have had little impact on aggregate tax performance. Between the mid-1980s and 1998/99, real direct tax revenue increased every year (Figure 4.4). Non-tax revenue fluctuated more, but without a clear relationship between movements in specific revenue components and the impact of natural disasters.[34] Moreover, focusing on specific disaster years, the level of actual revenue in both 1988/89 and 1998/99 appears to have been relatively close to original budget projections. Although at the margin, perhaps the outcomes also reflect the inflationary impact of disasters, as higher inflation gradually increased the nominal value of tax inflows received through the year. In 1988/89 tax revenue was 4.5% higher than originally projected (Table 5.2) and in 1998/99 it was 3.8% lower (Table 3).

[34] More disaggregated information on actual revenue inflows is only available for the 1990s (Table 4.3).

Table 3: Bangladesh - the 1998 flood and public finance performance in 1998/99

	Unit of measurement	Pre-flood budget forecast [a]	Oct 1998 estimates [b]	~Jan 1999 estimates [c]	Actual [d]
Budget deficit	Taka bn	93.2	101.8	113.8	105.6
Budget deficit as % GDP	%	5.3	4.7	N/A	4.8
Total expenditure	Taka bn	305.8	307.8	304.9	303.6
Current expenditure	Taka bn	159.4	162.2	162.5	167.3
of which domestic interest payments		118.4	N/A	N/A	N/A
foreign interest payments		7.3			
ADP	Taka bn	136	129.0	124.0	123.2
Food account	Taka bn	2.4	8.7	6.7	5.9
Other capital	Taka bn	8.0	8.0	8.0	7.2
Revenue (excl foreign financing)	Taka bn	207.8	206.0	191.1	198.1
Tax revenue	Taka bn	166.2	164.0	149.6	158.4

Sources of data: [a] GoB (1999b)
[b] IMF (1998)
[c] Chowdhury et al (1999)
[d] World Bank (2000c and 2001)

Again, this finding of no apparent disaster impact requires more detailed investigation. In addressing the economic consequences of natural disasters a government may choose to increase taxation to meet additional disaster-related expenditure or to offer certain tax reductions as an incentive to economic recovery. Governments may choose only one of these possible courses of action, but pursuing both does not imply an inherent contradiction. Indeed, the GoB has done exactly the latter, as outlined below in the context of both the 1987 and 1998 floods. But it was again beyond the scope of this study to explore the exact fiscal implications of these actions, as they have involved the adjustment of specific detailed lines of taxation, the implications of which are not necessarily apparent in commonly reported aggregated categories. Nevertheless, the overall emphasis appears to have been on increasing tax revenues, counteracting the impact of disasters.

Another issue requiring further examination is the shorter-term impact of disasters on the timing of payment of taxes. If payment is delayed, this can result in increased short-term domestic borrowing. In Bangladesh, there is a long underlying history of substantial tax arrears and evasions (World Bank, 1989b; World Bank/ADB, 1998; Rahman and others, 2000). There is also anecdotal evidence that disasters have disrupted payment of taxes. However, available data on monthly tax receipts for the latter part of the 1990s suggest that specifically disaster-related delays are relatively small, at least in the case of the 1998 floods. Tax receipts in the first three months of 1998/99 were 10% lower than normal, amounting to 20.3% of total receipts for the year compared to figures of over 22% for the corresponding quarter of the preceding and succeeding years (Table 4.3). Comparative figures for the first six months of each year were 54.4% for 1997/98, 51.6% for 1998/99 and 54.5% for 1999/2000, again implying around 9% lower receipts in the flood affected year.

Finally, in undertaking major tax reforms in a hazard-prone country such as Bangladesh, it is important to consider the implications of changes in the composition of taxes for the overall hazard vulnerability of tax revenue. Since the late 1980s various measures have been implemented to help expand the tax base, including the introduction of VAT in July 1991. VAT has been gradually extended to an increasing number of goods, and by 1997/98 accounted for 33.2% of total tax revenue (on domestic - and import-based activities combined).[35] Other measures, introduced in the late 1990s, included the rationalization of tax revenue, whilst providing certain incentives in line with national priorities (for instance, the encouragement of exports). These changes have been intended to widen the tax base, check tax evasion and reduce the complexities of tax laws, which have included a wide range of exemptions and concessions across many of the tax instruments. [36] It is also widely agreed that the GoB still needs to increase its tax revenue further. Ahmad (2000), for example, suggests that the share of taxes needs to increase to around 13-14% of GDP. Assuming no change in the composition of taxes, higher tax revenues and higher reliance on taxes to fund public expenditure implies that the consequence of disasters will be greater tax losses, with implications for both alternative financing requirements and pressures on expenditure. It is important to explore the impact of disasters on different types of tax in more detail in order to understand how the overall sensitivity of the tax structure to disasters and other economic shocks can be reduced.

In addition to the government's revenue and development budgets, there are other areas of public financial involvement that include revenue and expenditure not directly reflected in the budget. These also merit separate and in-depth consideration in a fuller investigation of disasters and the public finances. The food account is considered separately in Chapter 6. There are also local government, state owned enterprises and the financial institutions in which central government has an involvement through public ownership and financial transfers. For example, when banks write off loans there is a loss of

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[35] For example, in FY2000, VAT was extended to over 100 additional retail items as well as to wholesale trading of all imported and locally manufactured goods under the definition of 'Trade Service' (GoB, 2000c).

[36] The measures have included simplification and consolidation of import duty rates, including both reductions (in part reflecting the country's commitment as signatory to certain international trade agreements) and increases in duties on certain locally produced goods or their substitutes; progressive elimination of user-specific import duties with numerous exemptions and concessions; and reduction of personal income tax rates to four slabs, with the lowest rate at 10% and the highest at 25% (introduced in FY 1998/99). Measures to improve the rate of collection of VAT were also announced under the 1997/98 budget.

profit and transfers are required. The Bangladesh Bank is acting as both regulator and lender of last resort. These areas that overlap with the central budgetary process are considered briefly in Chapter 8 where issues for further investigation are identified that would complement this study.

4.6 Funding the government deficit

Since Independence Bangladesh has run large annual public expenditure deficits. The annual deficit has gradually declined in proportionate terms, particularly during the 1990s, as a large real increase in revenue has exceeded growth in expenditure (Table 4.1).[37] There is also much inter-year variability. However, as Ahmad (2000) comments, in the long term the fiscal deficit is not sustainable. In the past the country was able to accumulate a rapid rate of external debt and a large fiscal deficit as a consequence of considerable highly concessional foreign assistance. However, external debt financing is increasingly occurring on commercial terms, and stocks of debt and levels of debt servicing are rising, implying that continued fiscal deficits will place ever-increasing strain on the country's external and internal balances. Moreover, overall sources of external debt financing have fallen sharply in recent years, resulting in increasing reliance on higher-cost domestic debt instruments, potentially destabilizing the economy by triggering inflation in the future.

In 1983/84 the public accounts were re-organized, with a substantial part of the food account deficit re-attributed to the ADP as a subsidy under the development expenditure of the concerned line ministries (Figure 4.2). As a result, ADP expenditure in real terms jumped from Tk 15.8bn in 1982/83 to Tk 63.4bn in 1983/84, whilst the food account deficit declined from Tk 71.9bn to Tk 8.0bn in real terms (Table 4.1). These changes suggested that gross aid levels were then approximately equivalent to ADP expenditure. That broadly remained the situation, although with substantial annual fluctuations from the mid 1980s until the early 1990s. Subsequently, with rising ADP expenditure and reduced aid flows in real terms, the share of gross aid flows in funding the deficit has declined to the equivalent of 55% of the ADP and 58% of the overall deficit in 1999/00.[38]

There is also a growing burden of repayment or amortization of mostly official debt, which has risen in real (1995/96) terms from Tk 3.4bn in 1983/84 to Tk 25.1bn in 1999/00. As a result, the contribution of aid is absolutely and relatively less than implied by these gross comparisons (Table 4.4). There was a one-year halt to debt amortization in 1988/89 as a response to the floods so that in that year aid was contributing again to recurrent expenditure, including the food account. This was the first indication that debt repayment was becoming a short term funding issue. The relationship between disasters and aid, and in particular the composition of aid, is considered further in Chapter 7.

Net domestic financing, including borrowing from the Bangladesh Bank, has funded the remainder of the deficit with very large year-to-year fluctuations in this residual source. However, it is difficult to explore these categories of funding in more detail. The categories of domestic financing within public accounts statistics are opaque: only two categories are reported, 'banking system' net financing and 'other domestic' sources of finance. More disaggregated information is required to understand more clearly how these sources contribute to the funding of the overall deficit. In the absence of such information, it is only possible to infer the overall contribution of domestic funding sources to the overall deficit and how such funding might be influenced by disasters or other shocks. The availability of other sources of funding, such as drawings on the IMF, and then decisions by government about whether to draw on these, would also need to be taken into account.

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[37] Taking the most recent three financial year period 1997/98-1999/00 and the comparable period at the end of the 1980s for comparison (1987/88-1989/90), revenue grew by 110% and total expenditure by 83%, so that the ratio of revenue to expenditure rose from 55.2 to 63.5%.

[38] A comparison of three year averages for 1987/88 – 1989/90 and for 1998/98 – 1999/00 shows that the ratio of gross aid to the ADP declined over a ten year period from 119% to 53% and the gross aid to total deficit ratio fell from 103% to 61%.

It might be hypothesized that disasters are a factor affecting the way the overall deficit is funded, and also the contributions of external official and domestic finance. However, an inspection of the time series for sources of funding indicates no simple relationship. First, the overall deficit has been, if anything, lower in most disaster-affected years – 1984/85, 1987/88, 1988/89 and 1991/92 (because the cyclone came near the end of the financial year 1990/91). The exception was 1998/99 when the deficit increased by 24%. This is but one indication that the economic and financial impacts of the 1998 floods and the response of government were somewhat different from previous major disasters, an issue considered further in Chapter 5.

The time series statistics also suggest the contribution by both gross external aid and domestic financing to funding the central government's deficit has tended to be lower in real terms in disaster years, with a substantial upward rebound in the following year, as occurred in 1985/86, 1989/90 and 1992/93. In 1999/00 gross aid flows were little changed, but domestic financing more than doubled to a new record level (Table 4.4). Again, this growth in domestic financing from 1998 to 2000 implies some attempt to move in post-disaster recovery beyond the possible constraints of aid funding on expenditure. These year to year changes suggest that there may be some elements of a lagged response to disasters as public investment recovers from disaster-related disruption and incorporates reconstruction activity, in turn requiring an extended elapse of time to move from identification to implementation. External funding issues are discussed further in Chapter 7.

There are obviously other factors that have considerable short-term influence on both government expenditure and the composition of funding of the overall deficit. There have been other sources of economic shock, such as the Gulf War in 1991, and also a considerable political aspect to government short-term spending and borrowing decisions, linked to political instability and, more recently, the five-year cycle of democratic elections.

Overall, there are no simple, readily discernible relationships between disaster shocks and the pattern of public expenditure and sources of funding. Major disasters are important factors influencing both the composition of public spending and funding. There is some evidence of lags in the way disaster shocks influence the public finances. These relationships may also be changing, particularly since 1998, as domestic expenditure decisions and domestic financial resources play relatively larger roles in public finance.

Chapter 5.

Major Flood Disasters and Public Financial Performance: 1987, 1988 and 1998

This chapter looks in more detail at the financial impacts of the most extreme recent floods, the double shock of 1987-88 and 1998 and how government handled them. The government-UN post-disaster assessments of damage and rehabilitation requirements are compared.

5.1 The 1987 and 1988 floods: local currency constraints and the impact of disasters

Many projects on the ADP involve a combination of external and GoB funding resources. In the period running up the 1987 and 1988 floods, increasing difficulties had been experienced with the availability of local resources, in turn affecting the implementation of donor-funded projects. These difficulties reflected a large increase in donor financing during the 1980s, which had been paralleled by a sharp drop in government net borrowing, effectively externalizing the budget deficit and implying that relatively fewer local resources were placed onto the ADP. The limited availability of local currency resources had also reduced the GoB's capacity to absorb funding shortfalls or meet new demands. Indeed, the World Bank 1989 PER stated that 'one of the most binding constraints on the public expenditure program is the limited availability of local resources' (World Bank, 1989a: 36).

The 1987 and 1988 floods and the enormous scale of related relief and rehabilitation requirements thus created particular difficulties. The GoB, in an assessment with UN assistance, estimated the damage caused by the 1987 floods as US$ 285m (Tk 8.9bn). The damage caused by the more extensive 1988 floods was even greater. The joint task forces of GoB and the UN estimates of total rehabilitation and reconstruction costs following the 1988 floods rose to US$ 1,140m (Tk 33.6bn at the 1998/99 rates of exchange) over the three financial years 1987/88, 1989/90 and 1990/91 (Table 5.1) (World Bank, 1989e). Total reconstruction, rehabilitation and flood protection costs including damage to rural housing and the rapidly but poorly planned and implemented Dhaka city flood protection scheme was estimated at US$ 2.2bn (Tk 70.6bn at 1998/99 rates of exchange), equivalent to over 1.5 times total nominal expenditure on the ADP in 1986/87.

Total revenue was more than budgeted (Table 5.2), but this in part reflected the impact of additional measures to raise revenue introduced after the flood. Although available annual data suggest otherwise, a former official interviewed for the purposes of this study indicated that the GoB did face shortfalls in revenue, in part owing to flood-related disruptions to the road networks, the port at Chittagong and Dhaka airport, in turn hampering the movement of imports and exports. Income tax receipts were also reported to have fallen short. It may have been that in the short term inflows of revenue were adversely affected but that they picked up again towards the end of the two fiscal years. These problems were also noted in the World Bank's (1989e) economic memorandum.

The GoB took certain direct action to increase domestic revenue, as already indicated. For example, a number of measures were introduced in 1987/88 including:

- Imposition of a 6% surcharge on income tax;
- Collection of additional surcharge of 5.1% on excise duties in respect of certain items;
- Deduction of a 4% relief and rehabilitation levy from dividend/interest incomes on balances in savings and fixed deposit accounts, which was applied between September 1987 and June 1988 (World Bank, 1989d); and,

- A levy of 4% on telex and telephone bills (Bangladesh Bank, 1988).

Other measures were also adopted in 1987/88, with varying degrees of success, to alleviate the budgetary impact of the flood, including:

- Austerity measures to reduce current expenditure in certain sectors by 8.5% (a measure described during an interview for the purposes of this study as 'symbolic', rather than a source of significant resources);
- Reduction of revenue expenditure on accounts of subsidies as far as possible;
- Full-cost pricing of public sector products, including gas, electricity and agricultural inputs;
- Target orientated use of the Food-for-Work Program (FFW);
- Rationalization of the different tax structures; and,
- Strengthening of the tax administration.

These measures played some role in alleviating the budgetary impact of the floods. On paper, fiscal performance even appears fairly good, at least relative to budgeted performance. The overall budget was actually lower than had been originally projected for 1988/89.[39] In real terms, the fiscal deficit was also lower in both 1987/88 and 1988/89 than in 1986/87. Total revenue was also higher, both relative to available budgeted figures (for 1988/89) and as compared to actual revenue in all earlier years during the 1980s. Meanwhile, actual expenditure on both the food account and revenue budget was only marginally higher than budgeted for 1988/89 (Table 5.2) despite increased flood-related expenditure. The most serious pressures on the food account expenditure came in the following year, 1989/90 (see Chapter 6).

However, ADP expenditure was lower than budgeted, reflecting both basic budgetary procedures and the practice of effectively relying on the ADP to bear any cutbacks in total expenditure (see Chapter 4). Indeed in 1988/89, the ADP was almost 20% lower despite additional flood-related expenditure. Moreover, in real terms, average actual expenditure on the ADP in 1987/88 and 1988/89 was only 87% of average actual expenditure over the previous four years.

Low expenditure on the ADP primarily reflected local funding constraints, which were exacerbated as a consequence of the floods, relative to requirements to sustain the whole portfolio of projects. The GoB had chosen to maintain a relatively tight monetary policy throughout the period. Thus, it deliberately made only limited use of deficit financing, with the objective of keeping the expansion of domestic credit and broad money within the desired limit. This led the World Bank (1989a: para 2.19) PER to comment that:

> 'while this is a prudent approach, it is not necessarily desirable in all situations, particularly when (as at present) domestic demand is stagnant, the inflation rate is declining, the banking system has adequate liquidity, and there are substantial donor resources available to assist in flood rehabilitation that are likely to be under-utilized because of shortages of local funds. In this situation, increased deficit financing can be helpful to the economy, provided that the Government is prepared to take subsequent measures to increase revenues and restrict expenditures so that the economy does not overheat'.

Thus, despite increased pledges of new external resources (see Chapter 7), the GoB was actually forced to cut total expenditure on the ADP. The introduction of new flood rehabilitation and protection projects also meant that local funds were effectively spread more thinly over existing projects, thereby contributing to a delay in project implementation. Thus, there was little net change in the amount of foreign resources flowing through the budget – that is, being disbursed. Instead, expenditure for flood rehabilitation and immediate protection measures crowded out other public investment.[40]

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[39] Unfortunately, original budget estimates could not be readily accessed in collating data for the purposes of this study.

[40] After the 1988 floods the government hurriedly embarked on a flood protection project around Dhaka. Concerned officials

The GoB faced difficult decisions in choosing which investments to postpone or scale back to release funds in support of the flood rehabilitation program. These difficulties were exacerbated by the fact that the GoB's system of prioritizing projects had not been properly applied. Thus, for instance, the World Bank (1989a) commented that 'the core budgeting concept should be applied more consistently to ensure that funds are directed to the highest priority activities.' Meanwhile, major restructuring of the budget was not practicable because of the length of time required to undertake such an exercise.

The budgetary difficulties resulting as a consequence of the floods also created particular difficulties in preparing the budget for FY1989/90. There were considerable financial pressures from the Revenue Budget and Food Account (World Bank, 1990). Partly in consequence, the estimated level of resources to be made available under the ADP was much reduced, forcing a streamlining of costs. At the same time many demands were being made on the ADP, with numerous orders from various ministries for new projects. At one point during the preparation of the 1998/99 budget, it was even suggested that there would be a deficit on the revenue budget, implying no surplus – or thus resources - for the ADP. In consequence, the ADP had to be re-worked again and again.

The extremity of the flood impacts and pressures on government's own resources had two other important consequences. First, the severe floods of 1987 and 1988 also prompted a comprehensive review of flood policy by government and the international community. This initially centered on UNDP financed studies completed in early 1989 followed by a number of other studies. The government then requested the World Bank to help co-ordinate findings and follow-up actions to address the problems of flood control and mitigation. The outcome in late 1989 was an 'Action Plan for Flood Control' (World Bank, 1989f) that envisaged a set of internationally assisted studies and pilot projects estimated to cost up to US$ 150m over the next three years. This program of activities in response to the events of 1987 and 1988, which became known as the 'Bangladesh Flood Action Plan', was strictly not part of the immediate rehabilitation and reconstruction process (see Chapter 9).

Second, government embarked on important deregulation of private agricultural investment that had direct impact on production and, because of government's active involvement in the food economy, on the public finances in 1989/90 and afterwards. The government lifted restrictions in 1988 on the import and manufacture of agricultural pumping equipment and that encouraged an accelerated expansion in private investment in lift irrigation and an associated rapid growth, especially in boro rice production, from 1988 onwards. Meanwhile, government had organized large-scale commercial imports to assure food supplies and rebuild stocks, partly as a psychological measure to keep markets stable. The combination of government's already scheduled commercial imports, large-scale domestic procurement of rice in 1989/90 and the build-up of stocks resulted in rising expenditure and a growing deficit within the Food Account, putting pressure, especially in 1989/90, on the wider public finances (World Bank, 1990; World Bank, 1991).

5.2 1998 floods: Responding to disasters within the existing budget envelope

An examination of overall expenditure and revenue forecasts and performance suggests that the public financial impacts of even the 1998 flood – 'the worst in 50 years' – were limited (Table 3). The budget deficit for 1998/99 had originally been set at 5.3% of GDP, unchanged from the revised budget for 1997/98. The GoB had proposed a 9.9% increase in the revenue budget, as compared to the revised revenue budget for the previous year, and an 11.5% increase in the ADP, with 54% of the development budget expected to come from external sources.[41] Part of the increase in revenue expenditure reflected

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characterized this as a 'reflex action' to demonstrate that something was being done to protect the capital city. This project did not appear clearly within the portfolio of reconstruction projects. Only later when the ADB formally supported a relatively large and redesigned Dhaka City flood protection project were the full development budgetary implications clearly visible (see Chapter 8).

[41] Some caution is needed in interpreting ADP expenditure for FY1998/99 because the Tk 5.53bn allocation for FFW was

higher public sector wages.[42] Various measures had also been introduced to expand the tax base and simplify the tax payment procedure, with total tax revenue expected to be 10.8% above the revised estimate for 1997/98. Tax changes were expected to result in a net increase of Tk 3.5bn in revenue, with a further Tk 3.9bn increase resulting from intensified monitoring, supervision and procedural improvements, and Tk 8.7bn related to autonomous growth of revenue (GoB, 1998).

Assessing costs

Following the floods, the UN produced a consolidated report on rehabilitation costs (Table 4 and Table 5.3), most of which, where funded, would be expected to appear projectized on the ADP (UNDP/GoB, 1998).[43] This document suggested that the rehabilitation operations would cost a total of US$ 1,527m (Tk 73.0 bn at 1998/9 rates of exchange). This total included recapitalization of microfinance institutions (MFIs), expenditure classified as off-budget, to be spread over a number of years – a figure equivalent to 66% of actual expenditure on the ADP in 1997/98. Meanwhile, Chowdhury and others (1999) reported Planning Commission estimates of emergency/immediate needs alone (i.e., presumably to be met within the current fiscal year) on the ADP budget at Tk 23.5bn. Additional outlays were made from the revenue budget.

In undertaking this current study, no subsequent updated estimates of total damage or of the public sector cost of the floods could be located. Indeed, the lack of a final figure for total GoB flood-related expenditure has apparently not been produced is an issue of itself, particularly in trying to assess the need for possible financial risk transfer mechanisms (see Chapter 9). However, the 1999/2000 Budget does provide at least partial evidence on the final cost of the floods, listing broad areas of expenditures which were undertaken in 1998/99, including:

- A total outlay of over Tk 10 bn under the Vulnerable Group Feeding (VGF) program;
- An allocation of Tk 250 m to the Ministry of Disaster Management and Relief for house building grants to 500,000 affected families (originally budgeted at the start of 1998/99 at Tk 2m);
- Provision of agricultural inputs costing a total of over Tk 300m; and
- Disbursement of Tk 26 bn (up to May 1999) as agricultural credit (compared to a total figure of Tk 14bn in 1997/98).

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included in the initial planned budget, but shown outside the ADP, as is normal GoB practice, in the revised budget.

[42] A three-phase program for new pay scales had been introduced with effect from 1st July 1997, involving additional expenditure of Tk 973.07 crore in the revenue budget and Tk 95.34 crore in the development budget in FY 1997-98; further additional expenditure totaling Tk 495.14 crore in FY 1998/99; and Tk 680 crore, in FY 1999/00 (where 1 crore is equivalent to 10 million).

[43] In undertaking the exercise, the UN clearly requested that the various line ministries include 'costs to rehabilitate major damage caused by 1998 floods *over a one year period only* (November 1998 to October 1999)' (their emphasis). Only donor-assisted projects were supposed to be included.

Table 4: Bangladesh - estimated costs of rehabilitation, 1988 and 1998 (real 1998/99 US$m)

Sector		1988	1998
Agriculture		207	165
Crops		142	82
Livestock	}		10
Fisheries	}	65	67
Forestry	}		6
Flood control/irrigation		156	136
Infrastructure			
Roads and highways		203	186
Railways		100	35
Internal waterways and ports		26	7
Civil aviation		53	?
Posts and telecommunications		125	?
Power		68	45
Urban infrastructure		64	76
Rural water and sanitation		4	18
Other rural infrastructure		?	172
Education	}	118	92
Health	}		13
Food-assisted rehabilitation		?	34
Microcredit		?	300
Shelter		?	249
Industry		273	?
Small & cottage industry		180	?
Medium & large industry		93	?

Source: Tables A5.1 and A5.3

Other expenditure included grants to displaced people and other increased outlays on O&M. For example, an additional allocation of Tk 60m was made to the Ministry of Disaster Management and Relief for cash grant relief (originally budgeted at the start of 1998/99 at Tk 2m). Further effective economic support was provided by pursuing a moderately expansionary monetary policy. Six-month moratoriums were allowed on industrial and export loans and special loans given to affected industries on a priority basis. The Bangladesh Bank also advanced special loans to the tune of almost Tk 9bn to specialized banks and Grameen Bank.

Yet despite the scale of the damage and associated relief and rehabilitation efforts, even in the immediate aftermath of the flood, projections of overall budgetary performance were reasonably positive. This relative optimism could be largely attributed to immediate efforts on the part of the government to meet its disaster-related expenditure within existing budgets and to augment domestic revenue, as well as to the international community's similarly rapid and generous response. An international appeal for assistance was launched on 26 August, with a significant share of resulting commitments received through government channels. The budget deficit increased from an original budgeted figure of Tk 93.2bn to an actual one of Tk 105.6bn - a very slight increase relative to the estimated relief and rehabilitation costs reported above.

Total actual expenditure was 0.7% lower than had been budgeted at the beginning of the year and also lower than estimated in both October 1998 and January 1999 (Table 3), despite increased expenditure on the revenue and food account budgets. Revenue expenditure alone rose 5.0% above the budgeted level, despite the introduction of austerity measures. All ministries had been requested to reduce their miscellaneous expenditures by 10% (implying savings of Tk 2 bn) by stopping the purchase of new cars, reducing procurement of furniture, carpets and miscellaneous furnishings, and cutting down on entertainment costs. However, interest on domestic debt rose as the government was forced into additional domestic borrowing to meet short-term shortfalls in the receipt of taxes and external assistance. In addition, there was unanticipated relief expenditure. Cash expenditure on the food account also rose significantly, resulting in a rise in the deficit on the food account from Tk 3.2 bn in 1997/98 to Tk 5.9 bn in 1998/99. However, as a percentage of total expenditure it remained modest, rising from a budgeted 0.8% of total expenditure to an actual figure of 1.9% (see Chapter 6).

Development expenditure

In contrast, expenditure on the ADP was only 90.6% of the budgeted amount. But it should be borne in mind, as already discussed, that actual ADP expenditure typically falls short of budgeted levels even in normal years, averaging overall an even lower level of 89% over the period 1980/81 to 1998/99 (see Chapter 4). Nevertheless, the shortfall in ADP expenditure was severe in 1998/99, particularly once reallocations of planned expenditure are taken into account.[44] It is also important to note that actual GoB funded expenditure on the ADP was higher than originally budgeted, whereas externally funded assistance was lower, implying increased resort to domestic borrowing.

By November 1998, US$ 695.4m (Tk 33.2bn) had already been committed in the form of (on-budget) external assistance and US$ 129.8m (Tk 6.2bn) from GoB resources to the post-disaster relief and rehabilitation efforts. These commitments were in part made by re-allocating previously committed government and donor funds. The 1998 UN/GoB assessment indicated that at least US$ 106m (Tk 5.1bn) would be reallocated, primarily in the form of externally funded resources (Table 5.4). This was presumably envisaged to be done over several years, and the scale of reallocations under certain sectors was still to be determined at the point of finalization of the UN report.[45] It is also known that the World Bank planned to reallocate a total of some US$ 100m (Tk 4.8bn), of which only US$ 21m (Tk 1.0bn) was indicated in the UN report. Thus, it would be reasonable to assume that total reallocation of resources was well in excess of US$ 200m. Meanwhile, the Planning Commission reviewed the ADP twice to identify resources that could be reallocated from low-priority projects (Khuda and Nizamuddin, 2000). As a consequence, Tk 4.2bn was reallocated under the ADP for high priority rehabilitation

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[44] The reduction in genuine development investment is probably even greater than total figures imply, because the internal composition of many projects may have changed to accommodate relief and rehabilitation measures. To establish this would require a careful examination of individual projects.

[45] In November 1998, the World Bank (1998b) reported that project-related expenditures totaling Tk 6 bn, rather than Tk 5.1bn, had so far been identified for reallocation. Again, these sums were apparently largely those involving external assistance, because this report also stated that the GoB had indicated that it would endeavor to identify low priority projects that could be delayed to save further funding on the ADP.

programs in 1998/99 alone (GoB, 1999b). This funding largely involved non-donor funding and so could be viewed as additional to the Tk 5.1 bn reported above. Thus, probably in excess of Tk 10bn was reallocated, equivalent to over 8% of total actual ADP expenditure for the year.[46]

Not withstanding the pressures placed by the flood on ADP resources the pace of expenditure was slow. By April 1999, expenditure to date totaled only 58% of planned annual spending, although the Planning Commission estimated that this figure could increase to 92% by the end of the year. Inflows of external assistance also appear to have been slow, as was the use of reallocated funds (see Chapter 7), contributing to the need to resort to short-term borrowing.

For the purposes of this study, an attempt was made to examine how the flood-related expenditure translated into individual projects in the ADP in the two financial years following the floods. However, certain problems were encountered in undertaking this exercise, reflecting the fact that some rehabilitation activities are not labeled as such in the ADP. To complete the exercise an intimate knowledge of individual projects under the ADP is required, including of ongoing projects to which rehabilitation components were added. The 1998 UN assessment makes it possible to identify some of the areas where there might have been particular difficulties in attempting to identify rehabilitation activities. For example, the assessment estimated that US$186m was required for the repair of damage to roads and highways. Yet the 1999/2000 ADP contained no projects under this sector which specifically indicated in the project title that part or all of the expenditure commitment was intended to address damage resulting from the 1998 flood. It is also worth noting that the UN assessment was produced relatively rapidly after the floods, finalized in November 1998 before many rehabilitation tasks could be developed into formal projects. Consequently, estimated costs may have changed as detailed project specifications were drawn up. This case in which there is both a quite comprehensive joint assessment and then, within months, a detailed public sector investment program underlines the difficulties in ascertaining the full public cost of disasters.

Despite the reservations about its completeness, this examination of the ADP does provide at least a minimum estimate of the public financial impact of a major disaster in subsequent years. Revised estimates for those flood-related projects that it was possible to identify totaled Tk4.1bn in 1998/99 and Tk 4.9bn in 1999/2000, with a further Tk 2.8bn allocated in the 2000/01 budget (Table 5.5). The full figures would have been even higher, as suggested by the fact that the GoB reported that the revised total outlay for the ADP for 1999/2000 represented an increase of Tk 10bn over the original budgeted allocation 'to complete the rehabilitation of infrastructure damaged by flood' (GoB, 2000b). Actual expenditure in 1999/2000 was 23.1% (Tk 25.1bn) higher than in 1998/99 in real (1995/96) terms.

Changes in the sectoral pattern of expenditure are indicated by a comparison of budgeted and actual expenditure. There was a substantial increase in total expenditure on rural development and institutions and also on transport, whilst the most significant reductions occurred to health, population and family welfare (Table 5.6). This pattern of changes from budgeted to actual expenditure is consistent with efforts to repair and rehabilitate damaged infrastructure. It also reflects a common tendency in the aftermath of disasters to reduce spending on the social sectors. In some other sectors – notably agriculture – there was both a decline in total spending and, in addition, evidence of considerable reallocation of GoB resources (Table 5.7).

Government revenue

In response to the 1998 floods, the GoB also undertook certain measures to augment domestic revenue. It introduced a number of fiscal measures under the Post-Flood Rehabilitation Internal Resource Mobilization Ordinance 1998, announced on October 20 1998. These measures were expected to raise an additional Tk 2-3 bn (Choudhury and others, 1999), although they were also designed to avoid imposing financial burdens on the most vulnerable segments of the population. The measures included:

- 5% surcharge on telex, fax, telephone and e-mail bills;

[46] The World Bank (1999a) reported a lower figure of Tk 6.0bn in total reallocations.

- 2% surcharge on interest accruing from savings certificates;
- 2% surcharge on interest earned from fixed deposits with banks and other financial institutions;
- A lump sum surcharge of Tk 100 on the registration of all documents, irrespective of valuation or fees;
- 4% surcharge on supplementary duties on imports already under the purview of supplementary tax with the exception of a few items; and,
- 15% surcharge on fees for insurance and renewal of passports.

Simultaneously, however, various fiscal measures were also announced to help facilitate the recovery process, as also noted in the context of the 1987 and 1988 floods. Exemption of duty on power tillers was approved in September 1998 to encourage agricultural activity, leading to an increase in imports from 6,299 units between mid-September 1998 and March 1999 to 17,5000 units over the corresponding period in 1997-98 (GoB, 1999c). Exemption of duty on tillers was continued at least into 1999/00 and 2000/01. In February 1999, the GoB also withdrew the infrastructure development surcharge (introduced as a temporary across-the-board measure in 1997/98 and retained in the 1998/99 Budget) from TSP fertilizer and made it completely duty free (GoB, 1999c). Meanwhile, to ease flood-related difficulties faced by the handloom industries, the GoB exempted all excise duty on the industries for the period July-September 1998 and deferred payment by weavers on duty for the period September-December. The GoB also withdrew the 2.5% development surcharge on the import of rice.

Overall tax revenue increased 3.0% in real terms year-on-year. However, tax receipts were 4.7% (Tk 7.8bn) lower than budgeted, despite attempts to augment revenue. This shortfall in part reflected the flood-related slowdown in manufacturing output and imports resulting as a consequence of the flood. The flood also hampered the tax collection process itself.[47] None of the major heads achieved collection targets set for the first quarter of 1998/99 (Chowdhury and others, 1999). Total National Board of Revenue (NBR) tax revenue for the period was 14% lower than budgeted and 2.7% lower that the corresponding period for 1997/98, leading to a Tk 4.1bn increase in bank credit to the GoB in July and August alone. However, the pace of collection was only moderately worse than in other recent years (see Chapter 4).

A comparison of the 1988 and 1998 rehabilitation assessments

Although a comparison of the public financial costs of the 1988 and 1998 floods is difficult, it offers some insights both into the changing impacts of disasters on the Bangladesh economy and the ways these are assessed. The estimates of rehabilitation costs made by the formal Government-UN assessments undertaken immediately after the floods (UNDP/GoB 1988 and UNDP/GoB 1998) are summarized in Table 4 and presented in more detail in Tables 5.1 and 5.3. These estimates are not strictly comparable for a number of reasons. First, there had already been damage in 1987 (UN, 1997) and so the 1988 assessment probably included some of the rehabilitation costs of the event a year earlier. Second, the coverage of the assessment is somewhat different, so that total costs in particular are not comparable. Third, the 1998 assessment appears to have been done in a more systematic and transparent way, with a larger role for external assessors in the process. Fourth, there has been considerable inflation in taka costs, which is difficult to adjust for using the available broad deflators. So a comparison of costs in US dollar values made at the time is more meaningful because inflation has been relatively modest, probably of the order of 30% over 10 years. But despite these qualifications, a simple comparison of overall estimates of costs alone is quite informative (Table 4).

The 1988 and 1998 assessments were both completed quickly, by the beginning of November within two months of the floods ending, because of the urgency of making funding commitments. But in neither case was there a following re-assessment. In view of the considerable over-estimation of direct impact on economic activity in 1998/99, that is unfortunate, because there is no way of knowing whether these early estimates involved substantial elements of over-

[47] As of June 1999, the World Bank (1999a) had reported a preliminary estimate of a Tk 10.76bn shortfall in revenue receipts, of which approximately half could be attributed to the floods. Revenues from other sources were also less than budgeted.

estimation or even under-estimation by omission in some areas. Concerned officials stress the large element of guesswork and inclusion of some 'wish list' elements in estimates Looking at rehabilitation costs by sector shows substantial differences between the estimated public financial implications of these two major disasters.

Crop sector rehabilitation costs were US$ 116m in 1988 but only $52m in 1998, perhaps reflecting a declining role for the state in agriculture. Meanwhile other agricultural or renewable natural resource sector costs, including livestock, forestry and fisheries rose from $52m to $83m. This increase seems largely because of greater awareness in 1998 of the fisheries sector and so there were fuller estimates of damage. The longer duration flood in 1998 also caused greater tree loss, e.g. of mulberries for silk production. The water resources (formerly flood control and irrigation) sector costs were fairly similar, $127m and $136m, suggesting perhaps slightly less damage or tighter assessment. The nominal costs for roads and highways rose from $165m to $186m, again suggesting little real increase despite an expanded network. In contrast, rehabilitation costs for several other areas of key or lifeline infrastructure for the economy were much reduced. Railways costs declined from $81m to $35m, inland water transport from $21m to $7m and civil aviation from $43m to negligible, unreported levels. The power sector, including rural electrification costs, were almost identical, $55m and $54m respectively, implying less impact on a considerably expanded network. Health and education infrastructure costs rose from $74m to $105m and urban infrastructure from $52m to $76m. Overall these comparisons suggest that mitigation in some key areas of infrastructure in the intervening period had been relatively successful. Some other differences also indicate that the composition of public sector involvement and costs were changing substantially.

The 1998 assessment includes $172m of rural infrastructure, 11% of the total estimated costs, not included in 1988. In addition, the 1998 assessment included $300m for MFIs (20%) and housing (16%), neither considered in 1988. The 1998 public sector assessment did not include industry, where it is known that there were considerable rehabilitation costs (Choudhury and others, 1998**)** and the public sector would be involved in financial assistance. These apparently somewhat arbitrary inclusions and exclusions suggest the need for agreed standard guidelines to establish the remit for such post-disaster assessments. The fresh inclusions in the 1998 assessment also indicate changes in the economy – the growing importance of MFI and the greater awareness of social dimensions – housing.

If there are reservations about the 1998 rehabilitation assessment, the above examination of the financial aspects of these two major flood crises has already shown that much more detailed information was available in 1998 to assist planning. The greater coverage and detail of information for external assessment also make this management of the crisis a more transparent process. Overall, the consequences of the 1998 floods were much more closely examined within Bangladesh than the floods a decade earlier, so that a greater understanding of the effects of this natural disaster offers an opportunity to mitigate and more effectively manage the future effects of natural hazards. This experience also highlights the benefits of fuller assessment and the critical need for standardized guidelines for disaster damage reporting.

Chapter 6.

The Food Account and Food Operations

This chapter first traces the history of food operations and the government's food account separate from the main budget. It looks at the large role played by food operations in disaster management, focusing on changes in food policy with important financial implications. Finally, the figures for 1989/90 and 1999/00 are compared to illustrate the opaque and unconventional features of the food account.

6.1 Issues for investigation

A distinctive feature of Bangladesh's public finances is the maintenance of a separate set of food accounts for the public sector operations. This separate food account is only integrated with the rest of the budget through the balancing surplus or deficit on operations, which are accounted on a cash basis (Table 4.1).

The practice of maintaining a separate food account has its origins in public food operations involving the domestic procurement, import, storage, physical distribution and sale of basic foodstuffs through the ration system established in World War Two (Nuruddin Ahmed and others, 2000). A second reason is the historical reliance of Bangladesh on food as commodity aid and the donor requirement, particularly by the US, that the counterpart funds generated from commodity sales should be separately accounted. Large-scale US food aid for sale began in the late 1950s under PL480 Title 1 local currency loans.[48]

There is a further rationale for maintaining separate food accounts, as if these were for the operations of a parastatal agency. There is considerable volatility in these operations from a financial perspective. First, disaster related food crises result in considerable, unplanned short-term changes in the operations. Second, a large share of operations are 'non-monetized' in two senses – a supply and distribution side.

Donors are providing commodity aid at nominal accounting prices that may reflect either their internal or international food prices. That problem may be overcome by accounting food at import parity prices. But there is considerable short-term variability in the spot international prices for the main commodities, wheat, rice, edible vegetable oil and, for extended periods, dairy products. These variable export prices for early delivery can be misleading for valuing commodities where the alternatives to aid are highly concessional commodity credits or commercial imports from lower cost sources such as India or Vietnam. Consequently, the valuations of commodity aid as 'expenditure' could introduce substantial variability into the food account.[49]

Non-monetized direct distribution of food is an increasing share of food operations. The 'revenue' generated by attributing a sale value to these operations is also arbitrary within a wide band.

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[48] In the pre-Independence era the proceeds from these loans denominated in local currencies were used with US agreement to fund the controversial Basic Democracies Rural Development Programmes (Sobhan, 1968).

[49] The valuation problems are reflected in the Bangladesh import parity prices for rice and wheat, estimated by WFP since the early 1990s, which show that there has been considerable short term volatility in international export prices.

Another important consideration in keeping separate accounts was that food operations were very large, compared with the overall budget, during the first decade after Independence. During 1973–75 food security was a dominant consideration (Islam, 1977). In 1980/81 the deficit on the food account after allowing for sales revenue was 55% of total central government expenditure (Table 4.1) and even in 1989/90 it represented about US$300m and 17% of total government expenditure (Ahmed and Haggblade, 2000).

There is also a real financial aspect to these operations that impinges on the budget. On the negative side, there are the foreign exchange costs of government imports and any related external credits, internal procurement costs, the non-commodity costs, including management, internal transport, handling and storage of food. Sales or monetized operations were an important source of revenue, especially in the post-Independence decade, when the government found it especially difficult to make taxation an adequate source of finance even for recurrent expenditure. [50] Bangladesh was frequently cited as exemplifying the problem of financial or budgetary dependence on food aid (Clay, 1981), contributing to distortions in agricultural policy (Stepanek, 1979). There is now widespread recognition that food policy in Bangladesh has undergone a considerable transformation since that period (Ahmed and others, 2000).

As part of this investigation, it seemed worthwhile to look at the food account precisely because it is potentially extremely sensitive to large short-run disaster related changes in the level of operations. This variability in turn has possible implications for the overall public finances. However, the subject is large, complex and a detailed investigation would be a study in itself. Hence, this analysis is limited to a preliminary exploration of some more important issues:

- To what extent are food operations actually related to the management of natural disasters?
- To what extent is this disaster related role a source of unplanned volatility in the food account?
- To what extent is a separate food account a useful practice for insulating the public accounts, especially the development program component, from damaging unplanned and 'apparent' volatility, or alternatively a source of unsatisfactory financial management?
- What are the issues for further investigation of natural disasters, especially those that might assist attempts to improve financial management?

6. 2 Food operations and disasters

After Independence food security was a dominant feature in public policy. Agriculture was overwhelmingly important within the economy representing around 60% of GDP and 70% of employment and, within agriculture, rice production alone was around four fifths of output. Food also accounted for 60% of average private consumption and was proportionately higher within rural areas and amongst the poor (Islam, 1977). Not surprisingly, therefore, food operations loomed large in government's efforts to organize post-war rehabilitation and then cope with disaster related famine and threat of famine. These operations also accounted for a large share of public expenditure and revenue (Figure 6.1). There has been a considerable secular decline in the relative importance of food within the economy, and, especially during the 1990s, in public sector activity, but food operations are still a substantial proportion of public expenditure, with the deficit representing about 7% in the late 1990s (Figure 6.2). An inspection of the time series shows no apparent link between short term movements in the food account deficit which is a residual item, as reported in the budget and major disasters (Figure 6.1-6.2 and Table 4.1). But there are in fact close and complex relationships between public expenditure and revenue under the food account and disasters, which only emerge from a more detailed analysis of its components.

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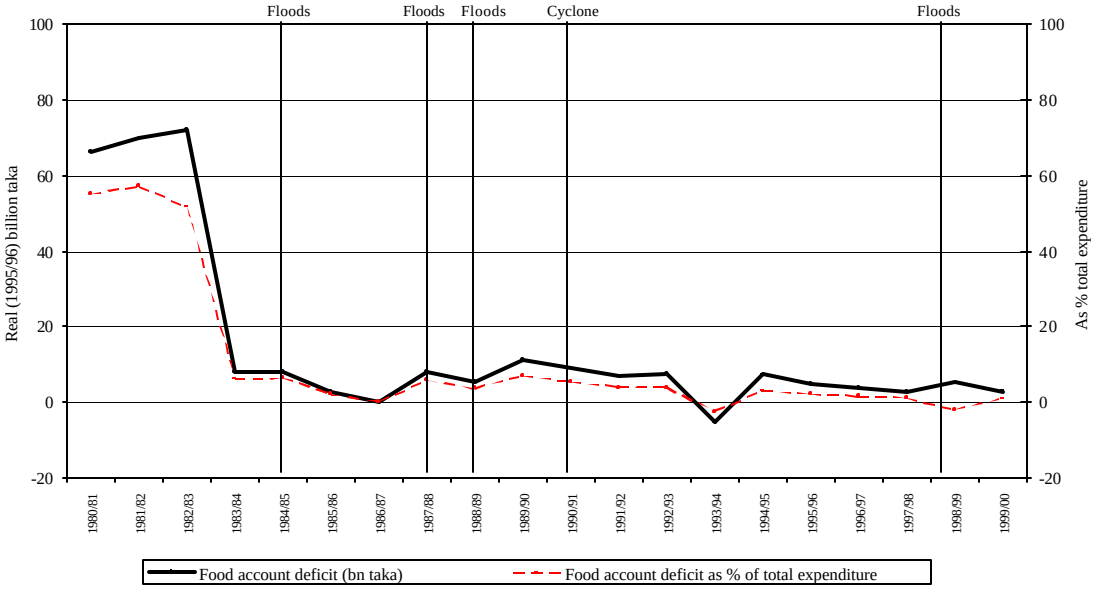
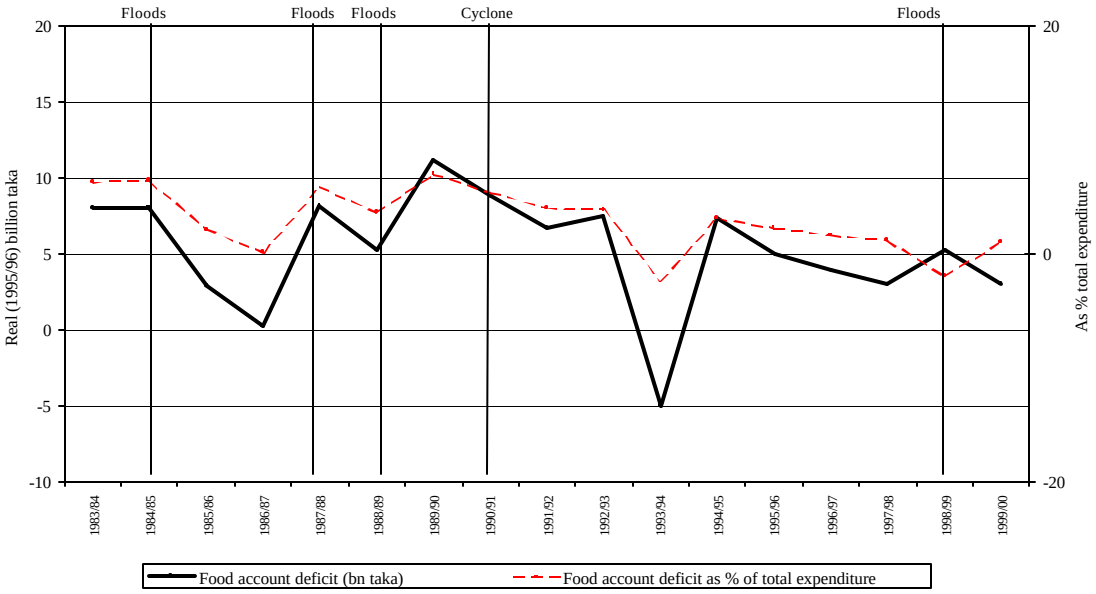
[50] '…food aid provided counterpart domestic funds for financing development expenditures. It was a way of mobilizing resources from the private sector for financing expenditure in the public sector. This was also true of that portion of commodity aid which was sold to the private sector. This food and commodity aid served as a mechanism for augmenting the resources of the public sector.' (Islam, 1977, p.142).

Figure 6.1: Bangladesh - central government food account deficit, 1980/81-1999/00 (real 1995/96 billion taka and %)



Source: World Bank, various.

Figure 6.2: Bangladesh - central government food account deficit, 1983/84-1999/00 (real 1995/96 billion taka and %)



Source: World Bank, various.

The focus here is on public food operations from a financial perspective. Nevertheless, to make sense of public action, the main features of the operations that underlie the food account need to be considered. Public sector food expenditure, largely the responsibility of the Directorate of Food within the Ministry of Food, includes the acquisition of food grains, almost entirely rice and wheat, through donor funded food aid and government commercial imports, as well as domestic procurement. There have been at various times operations in vegetable oils, sugar, salt and, when food aid was available from the EU (up to the mid 1980s), dairy products. There are associated operating costs, which are conventionally accounted in budgetary statements as around 15% of total expenditure on acquisition and freight (Table 5). However, the actual internal costs of storing, moving and distributing, for example, imported commodities, is probably around 40% of CIF landed costs according to World Bank and IFPRI reviews of food policy (World Bank, 1991; Ahmed and Haggblade, 2000). These contrasting figures indicate much opaque detail in the food account.

A further complicating feature of food management is that rice and wheat operations are separate and parallel. However, there are elements of substitution in acquisition and distribution between rice and wheat, the more expensive, superior good largely acquired by cash purchase and inferior good, disproportionately obtained as tied grant commodity aid. Therefore, from both a food and nutritional policy as well as a financial perspective, it is somewhat misleading to consider 'food grains' only in aggregate. The public food distribution system (PFDS) has two broad, but distinct categories of operations – sales or monetized channels and direct distribution of food or non-monetized channels.

Monetized channels

Prior to the 1990s reforms, monetized channels encompassed urban and rural rations that were supposed to assure those eligible both availability and protection from price spikes. Many studies confirm that urban rationing, intended to protect the poorer consumer, was unsatisfactorily targeted, more on public sector employees than the urban poor. Rural rationing was subject to extreme political manipulation and leakage. There was also a range of 'priority groups' that had been incorporated into the system. There were sales of wheat to flour mills, because only the public sector was allowed to import. Finally there were Open Market Operations as a mechanism for short-term market management. The ineffective and wasteful functioning of this system has been the subject of extensive critical review (Nuruddin Ahmed and others, 2000). The considerable and structural subsidy to some categories of beneficiaries as well as to large-scale commercial millers should be noted. Operations have been sensitive too, as shown below, to the impacts of disaster shocks on food production and markets.

The sale of food has been a significant source of revenue to government. This is so even when in accounting terms there was a considerable amount of subsidy. This is because a substantial part of expenditure represented acquisitions of grant food aid with proceeds of sales paid into a single general food account (No 3) with the Ministry of Finance. Some donors, notably the US, sought to associate these counterpart funds with specific and 'additional' development actions under the ADP. But as a sequence of evaluations openly or implicitly acknowledged, there has been a large, but difficult to quantify, element of fungibility in these on-budget activities[51]. The Ministry of Finance maintained a strongly positive attitude to maximizing the flow of program food aid for sale prior to the food system reforms of the early 1990s.[52] This suggests that such aid was viewed as an additional source of revenue belying the apparent losses on subsidized sales (Table 5). So long as such program food aid was available, Bangladesh continued to be, after Egypt, the second largest recipient of food aid from the mid-1970s until the early 1990s.

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[51] For example, EU, Canadian and Australian evaluations of food aid recognized the largely formal or presentational aspect of the attribution of revenues to activities agreed between the donor and government . US reviews have consistently laid great emphasis on the successful policy reform aspect of agreements (Clay and others, 1998).

[52] For example, in public discussions on food strategy d in the late 1980s the former Finance Minister and senior officials envisaged cereals food aid levels of 4m tonnes or more in the 1990s (Planning Commission, 1989).

Figure 6.3: Bangladesh food account - monetized offtake from PFDS stocks since 1982/83 ('000 tonnes)

Source: Based on WFP data

Non-monetized channels

The second broad category of non-monetized channels involves direct food distribution in three broadly complementary ways. First, there is large-scale relief distribution after a disaster, and periodically for refugees from Myanmar. Second, social safety net income transfers in kind, usually wheat, under the Vulnerable Group Feeding (VGF) and Vulnerable Group Development Program (VGD) for female-headed households began in response to the 1974 famine. Since the early 1990s there has also been a growing program of 'food for education', again monthly income transfer in kind to families, to encourage higher primary enrolments (Chowdhury, 2001). Genuine nutritional supplementation is quantitatively insignificant. Third, there are a variety of food-for-work (FFW), wage-in-kind programs, also introduced initially as famine relief. These programs have been largely supplied through the Ministry of Disaster Management and Relief (formerly Ministry of Relief and Rehabilitation) and were until 1983 almost entirely outside the ADP.

The non-monetized category has become increasingly complex as some elements of FFW have been included in the ADP and more departments have been directly involved in organizing development, rehabilitation and O&M with food. A further complication is the practice of monetizing some grant food aid and linking sales revenue to financing non-commodity costs of some direct distribution projects, including VGD and FFW. There were also WFP wheat for rice swaps agreed in the early 1990s by which locally procured rice stocks were directly distributed financed by sales of wheat and grant aid committed to support these same projects. CARE, historically the US government's channel for providing Title II commodity assistance to government's non-monetized program (other donors mostly channel such commodity aid through WFP), began in the 1990s to monetize and use the sales proceeds for social welfare and development involving cash payments to beneficiaries.[53]

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[53] As a consequence of this growing project complexity, there are now multiple accounts with the Bangladesh Bank for depositing sales proceeds of donors' food depending on the type of donation and donor requirements. For example, proceeds earmarked to WFP-assisted programs are hypothecated for goods and development services that are a part of targeted food distribution

Non-monetized operations provide income transfer mechanisms to directly assist chronically poor rural groups and those vulnerable to seasonality in employment and food prices. Operations are also expanded to assist those affected by disaster shocks (Figure 6.4). The resourcing of programs almost entirely with grant food aid overcame foreign exchange constraints in the 1970s and 1980s, but there are considerable local costs of operations, reflected in the subsidies to the Ministry of Food's food account from other departments. These disaster-related expenditure pressures outside the food account are discussed in Chapter 4. The monetized channels were also used to buffer eligible consumers against price shocks with controlled price supply of food grains and some other basics. These food security or social protection functions of food operations are clearly reflected in the pattern of acquisition and distribution of food grains.

The large scale of public food operations, including import, local procurement and distribution, also provided a means of managing food markets through partial intervention – acting as a buffer against the potentially severe short term immediate disruptive effects of disaster shocks on production and markets and the producer response that amplify seasonal fluctuations in prices. That role has been reduced in importance by longer-term structural changes in food markets and liberalization of imports in the 1990s[54]. The food security and social protection functions of food operations are apparent in the pattern of distribution and acquisition of commodities in physical and financial terms. However, the budgetary implications are far less clear.

Figure 6.3 shows monetized food grain off-take in physical terms.[55] There has been a clear association between major natural disasters and off-take. The link is clearest after the 1984, 1987 and 1988 floods and directly following the 1991 cyclone. [56] Rice sales have also possibly been sensitive to the political situation, in election periods in 1990/1 and 1995. However, since the early 1990s off-take has declined rapidly in aggregate terms and there is also increasingly complex substitution in the smaller volumes of rice and wheat. Monetized channels continue to supply highly subsidized rice and wheat mainly to essential priority groups, effectively defense forces and the police, whilst having only a modest role in wider food security. A substantial part of monetized wheat represents sales to generate local currency for direct food assistance (EU, WFP) and CARE cash based social protection and development. The supply of wheat to the milling sector is being increasingly taken on by private sector imports from India. There has also been a progressive shift in relative share of operations from imported wheat to rice from a combination of government commercial imports and domestic procurement. Monetized operations, as discussed in more detail below, played no significant role in the government's response to the 1998 floods, with the combination of large-scale private imports and public non-monetized distribution preventing domestic prices moving for long above import parity prices (Del Ninno and others, 2001).

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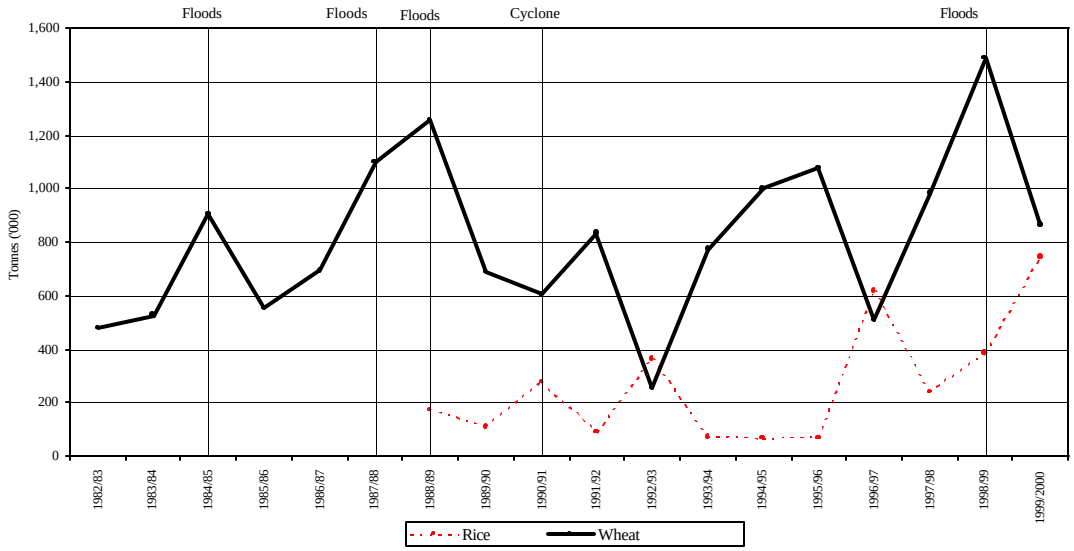
projects.

[54] In the mid 1970s public foodgrain operations in the range of 1.5 –2.5m tonnes were relatively massive when compared with estimates that only around 30% of production of around 11-12m tonnes was marketed. By the early 1990s public operations in the range of 1.0 – 1.5m tonnes should be compared with estimates that 70% of 18-20m tonnes of foodgrains were being marketed. Public operations had declined from being equivalent to around half to only 7-8% of marketed foodgrains (Dorosh, 2000).

[55] There are difficulties in providing a constant price series for foodgrains because of considerable short term variability in international as well as domestic prices. There is sometimes massive subsidization compared to domestic wholesale and retail prices and import parity price (IPP). What is attempted here is to provide a broad measure of value in real terms based on IPP.

[56] An inspection of off-take on a monthly basis confirms the broad links shown in the annual series.

Figure 6.4: Bangladesh food account -non-monetized offtake from PFDS stocks since 1982/83 ('000 tonnes)



Source: Based on WFP data

The direct distribution of food became progressively the key instrument in the government's disaster response, providing relief and continued assistance to affected groups. Figure 6.4 shows the close association between major disasters and non-monetized off-take of food grains. There were new peaks in direct distribution in 1984/5, exceeded in 1987/8 and then again in 1988/9. There was a further peak in 1991/2, following the 1991 cyclone, occurring in May, towards the end of the financial year. Again there was a large increase in operations to another new peak of around 1.5m tonnes following the 1998 floods.

Prior to 1988/9 non-monetized operations were restricted to imported, largely grant aid funded wheat. The picture has become more complex as domestic procurement of rice, especially lower grade HYV boro, became part of operations. There are also the considerable financial costs associated with internal distribution reflected in the subsidies shown in the food account. In addition, in emergency situations such as that after the May 1991 cyclone, NGOs have become involved with distribution, so that part of distribution is organized and funded outside the public sector. The growing role of domestic procured rice implies a growing share of domestic financing.

A disaster related cycle of cereal production and prices changes and reactive intervention was established after the 1974 floods (Ahmed, 1979), and this has been broadly repeated in the late 1980s and again in 1998/9. The floods largely affected the main monsoon aman rice crop causing temporary market disruption and upward pressure on prices. These effects were dampened with increasing effectiveness by public sector imports, increased sales and relief distribution, and in 1988/9 by private imports on an unprecedented scale. The negative shock has also typically been followed by a strong producer response in the following seasons, and government in turn reacted to the related downward pressure on prices and profitability by increased procurement. That raises food account expenditure, whilst weaker prices reduce sales, affect revenue and increase stock costs.

Following the 1987 and 1988 floods, food account expenditure on commodities was over US$700m for three successive years (Figure 6.5). The combination of initially large commitments to food aid, but delays in arrival, then followed by

commercial imports and then pressures to procure and potentially rising stocks became a source of serious financial policy concern in 1989/90 (World Bank, 1991). Again in 1999/2000 a similar disaster related sequence has been a contributory factor to growing worries about the budgetary situation and foreign exchange pressures. Because of major policy reforms and structural changes in the food economy, the budgetary implications of a major disaster on both the revenue and expenditure sides of the budget are becoming even less straightforward, but relatively less important overall (Table 5 and Figure 6.5).

Major food account developments

To summarize, from a financial perspective there have been four important developments in the food account since the early 1980s. First, there has been the reassignment of food account expenditure to the development budget (Figure 6.1). That is partly a bookkeeping transfer. But there have also been possible implications for line ministries that have not been explored further. For example, the Ministry of Water Resources used FFW for repair of coastal embankments following the 1991 cyclone, and FFW now appears separately in its budget.

Second, the cost of public food operations has declined by around half in real terms. As Figure 6.5 shows, expenditure on commodity acquisition is extremely volatile.[57] But focusing on disaster affected years when expenditure is highest, acquisition costs declined from over US$800m in 1984/85 and 1987/88 to just over US$500m in 1998/99.

[57] Comparative analysis of total expenditure is difficult for the 1980s and 1990s because of problems of non-comparability and finding an appropriate deflator. So the analysis is undertaken only for acquisition – food aid, government commercial imports and domestic procurement at import parity prices and procured prices adjusted with a US$ deflator.

Table 5: Bangladesh Food Account in 1989/90 and 1999/2000 on a modified basis

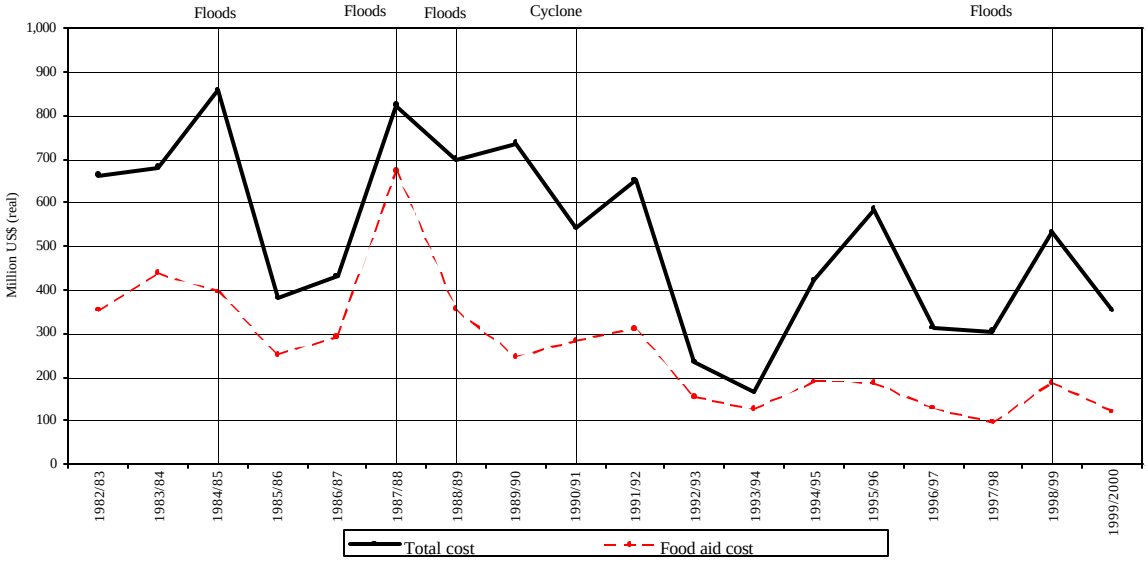
		1989/90 actual		1999/2000 revised budget	
		Tk mn	% total expenditure	Tk mn	% total expenditure
A	**Revenue**	**9,521**	**40**	**6,630**	**24**
	Monetized	9,521	40	6,630 [a]	24
	Non-monetized	-	-	-	-
B	**Expenditure**	**24,068**	**100**	**27,480**	**100**
	Food aid	5,504	23	8,780	32
	GoB commercial imports	4,728	20	-	-
	Domestic procurements	10,102	42	9,080	33
	Deferred payments	-663	-3	5,990	22
	Freight	550	2	250	1
	Operating costs	3,847	16	3,380	12
C	**Operating balance (B-A)** (commitment basis)	**-14,547**	-60	**-20,850**	**-76**
D	**Change in arrears**	**1,513**	6	**-650**	-2
E	**Operating balance (C-D)**	**13,034**	54	**-21,500**	**-78**
F	**Finance**	**5,504**	23	**8,780**	31
	Value of food aid				
G	**Food account balance (E-F)** (cash basis)	**-7,530**	-31	**-12,720**	**-46**
H	**Net cash disbursement [b]**	**3,749**	**16**	**-4,320**	**-16**
I	**Change in stocks [c]**				
	Preceding year	-730	-3	4,900	**18**
	Current year	1,885	8	-2,385	**-9**

Source: GoB, 2000; World Bank, 1991.

Notes
[a] Includes cash sales, monetization for ADP/non-ADP FFW.
[b] According to GoB Food Account on conventional basis.
[c] Based on end of FY IPP prices for cereals. No information available on stocks of other commodities, especially vegetable oil.

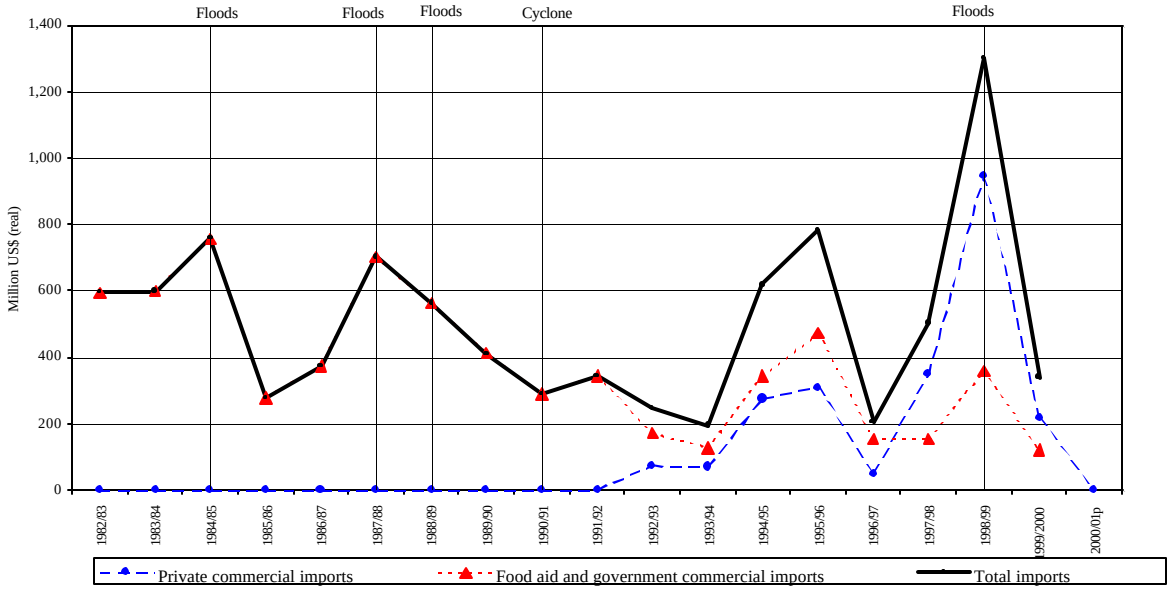
Third, this decline in expenditure is explained by the government's reduced role in supplying the market through its monetized operations, using program food aid and own commercial imports. Instead, the government relied heavily on the private sector to meet the temporary gap in supplies through imports and the local market. Although there were record levels of imports in 1998/99, government's imports were only half the level of 1987/88 (Figure 6.6).

Figure 6.5: Bangladesh - total cost of PFDS imports and domestic procurement of rice and wheat and food aid,1982/93 - 2000/01 (real 1999/2000 million US$)



Source: Based on WFP data

Figure 6.6: Bangladesh - rice and wheat imports by category, 1982/83 - 2000/01 (real 1999/2000 million US$)



Source: Based on WFP data

Fourth, the greater part of the reduction in government operations is accounted for by monetized channels, but the full public financial implications are more complicated. The sales were, and are, heavily subsidized in comparison with import parity or procurement prices plus internal distribution costs. That implies considerable losses in virtually every year, as reflected in Figure 6.1. However, and perhaps this was an important factor in bringing about policy change, a large part of the food sold was program food aid. From 1988/89 onwards donors reduced program food aid levels, largely because of supply constraints and other increasing commitments. If, as argued above, this aid was regarded as effectively additional and fungible as on-budget revenue, then government had a net surplus on that part of its operations. Therefore, from 1988/89 onwards government had to bear an increasing share of the 'real' financial costs of food operations. This is reflected in Figure 6.5, which shows the total annual cost of public sector imports and domestic procurement and the share of total cost accounted for by food aid. It should be borne in mind that substantial levels of aid for non-monetized channels continued to be available in normal years, and on an enhanced level in crisis years.

As Section 6.3 shows, the food account is an opaque and still substantial part of public finance, operating on an unconventional accounting basis. For those who prefer to skip this detailed discussion, the argument is that this important, even essential, part of disaster management and the poverty alleviation social net ought to be brought into the budget on a proper basis, following more conventional accounting practices.

6. 3 Comparison of food accounts in 1989/90 and 1999/2000

It is difficult to present a clear picture of the food accounts from the information in the public accounts. At certain moments there is more detail available, for example when the World Bank undertakes a food sector review, most recently in 1991 (World Bank, 1991a). A general difficulty is that estimates are typically on a Budget or Revised Budget and not actual basis. In addition, the food account is not set out according to normal accounting procedures. To overcome this difficulty, the accounts for 1989/90 and 1990/2000 are presented in terms of revenue and expenditure on a cash basis (Table 5). This tabulation provides a useful snapshot showing the large structural changes in the food account and also its changing importance in relation to overall public finances.

Revenue is shown only for cash sales and other magnetization of food aid. Expenditure is organized according to food aid, government commercial imports, procurement, freight, operating costs and payments deferred from the previous year. The operating balance is expenditure net of cash sales revenue. The financing of operations by food aid in kind is accounted by government at CIF import parity prices on both an in and out basis. Operations are also reported on a cash basis, ignoring stock changes. This provides an approximate measure of the net cash disbursement or size of food account operations in relation to public expenditure overall. Conventionally, only the balance of the account after including subsidy for non-ADP FFW is integrated with the rest of public expenditure, as shown in Figure 6.1 and Table 4.1 (GoB, 2000b).

The food accounts of 1989/90 and 1999/2000 are on a broadly similar basis, because these were years immediately following major floods and associated crisis operations, including large-scale relief. Actual expenditure in 1989/90 was Tk 24.7 bn, excluding negative 'deferred' payments held over from the preceding year, an unusual device in creative accounting discussed below. This total was equivalent to 20% of total public expenditure, including both the revenue budget and ADP. The net cash balance after allowing for revenue from cash sales was Tk 13.7 bn and food aid financed Tk 8.2 bn, equivalent to 6% of total public expenditure. Cash from sales, Tk 9.5 bn, continued to be an important source of revenue, but the scale of procurement combined with government commercial imports, over Tk 14 bn, posed budgetary pressures that were a source of concern (World Bank, 1991a).

In 1999/2000 revised total expenditure was Tk 27.5 bn, equivalent to 7.6% of public expenditure, indicating the considerable decline in importance of food operations during the 1990s. There has been growth in overall public expenditure, and stagnation in the food account in current prices. This is largely explained by a substantial decline in government commercial

imports and monetized food distribution. Revenue from monetization, including sales proceeds that are linked to project costs of directly distributed food operations, had declined from 38% to 24% of expenditure. This had the effect of increasing the deficit on overall operations (operating balance on a cash basis). However, the share of food aid, mostly for direct distribution, within food expenditure had increased too. But because of the relative decline in food account operations compared to total public expenditure, the food subsidy burden had been much reduced.

In Table 5 the 'net cash disbursement' figure that features in the national accounts is shown for purposes of comparison. This indicates that the actual level of expenditure attributable to the revenue budget – the food account balance - is in fact substantially higher than the balancing item of the food account that is transferred to the general public accounts.

Another unconventional feature of the food account is the inclusion of deferred payments or expenditure. On closer inspection this practice may be partially related to the changes in value of food grain stocks. The value of stocks and changes in value of stocks are not reported in the food accounts. So in preparing this report these the end of year changes in value of stocks, for example what stocks were worth in June 1990 compared with June 1989, were separately estimated from import parity prices. When compared, it was found that amounts of deferred payments from the previous year included as expenditure in each of the two years were in the same direct and of relatively similar size to the changes in value of public food grain stocks carried over from the preceding year. It was also found that the changes in arrears carried forward to the next year appear to be similar to end of year changes in stock values. These examples suggest an attempt to incorporate some element of resource based accounting into cash based accounts prepared on an unconventional basis.[58]

The food account can be reorganized to provide a picture of the financial scale and wider budgetary implications of food operations as shown in Table 5. However, the accounts as usually presented are too complicated and unconventional to be of help to financial management or monitoring. For financial planning and budgetary control purposes, it would be more appropriate if resource based accounting were formally adopted for the food account. Such accounts would make explicit the financial implications of the food stock position. Food operations also now represent a more modest share of public expenditure and revenue. It would seem to be time, therefore, to properly incorporate the food account into the budget as revenue, recurrent (revenue) and development expenditure.

[58] In 1989/90 there was a 'negative' deferred payment of Tk 663m and the reduction in stock levels of Tk 730m at the end of 1988/89 were both equivalent to 3% of total expenditure. In contrast, the increase in arrears in 1989/90 and end of year increase in value of stocks were equivalent to 6% and 8% of total expenditure. The increase in value of stocks in 1998/99 and projected deferred payments were equivalent to 18% and 21% of revised total expenditure in the year. The reduction in arrears as envisaged in mid 1999 and projected decrease in stocks were equivalent to 2% and 9% of revised total expenditure.

Chapter 7.

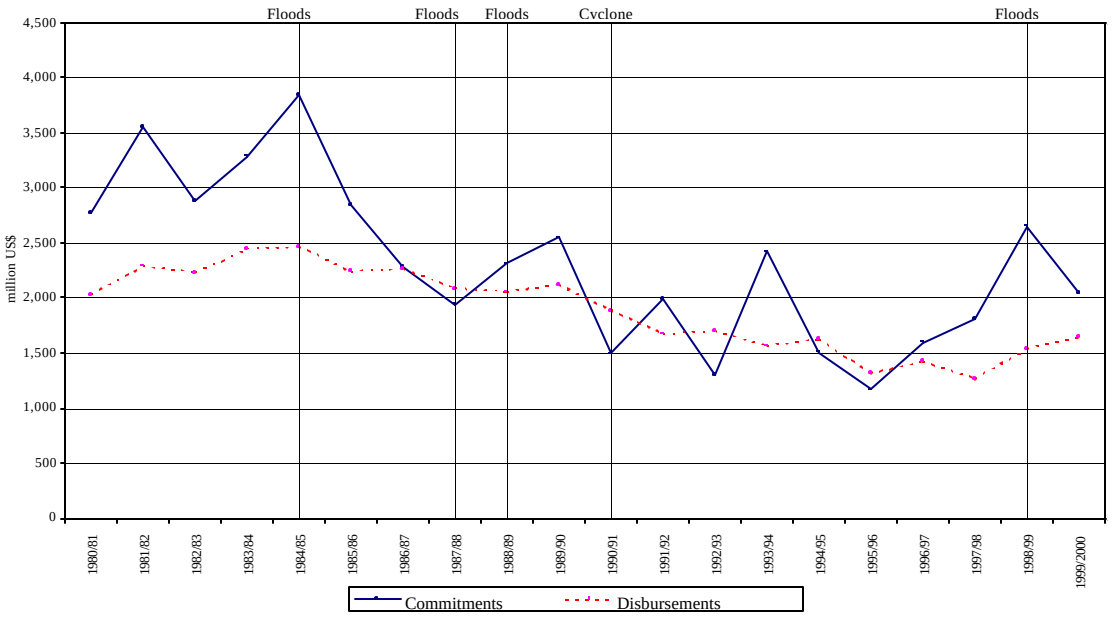
External Aid

This chapter looks at the relationships between disasters and the changing levels of external assistance since 1980/81, considering total aid and its composition as project, commodity and food aid. The response to the 1998 floods is examined in more detail, including the role of NGOs as a channel for aid. The statistical evidence on whether donor responses to disasters brought additional resources or involved reallocations of funds between categories or channels of assistance is considered.

7.1 External aid flows

Official development assistance (ODA) or external aid has been a major source of public finance in Bangladesh, totaling US$38bn between 1980/81 and 1999/2000 (in real 1999/2000 prices) (Table 6). Aid flows peaked in the flood crisis year of 1984/85. Then, with considerable inter-year variability, aid gradually declined until the mid 1990s – the lowest commitments were in 1995/96 and lowest disbursements in 1997/98 (Figure 7.1).

Figure 7.1: Bangladesh - commitments and disbursements of total external aid, 1980/81-1999/2000 (in real (1999/2000) million dollars)



Source: Table 7.1

External resources are channeled directly to government and publicly owned bodies, as well as through international and locally registered NGOs. However, the flow of aid through these different channels is not clearly or fully documented in official statistics, and that is a serious limitation on an analysis of donor responses to disasters. It is generally thought that many bilateral donors regard NGOs as more effective than public agencies in quickly and efficiently targeting those most

affected and the poorest amongst those impacted by a disaster, and so prefer to channel relief and rehabilitation through them. Furthermore, NGOs respond to major disasters with a high level of international funds contributed by aid agencies. The limited data available, considered more fully below in Section 7.3, suggest that at least a quarter of all aid is channeled through NGOs in the period immediately following a major disaster such as the 1991 cyclone and the 1998 floods.

There are also apparent differences between estimates of official aid flows in balance of payments, foreign exchange equivalent and as the external contribution to financing the central government's deficit originally reported in Taka when converted to real US$ equivalent (Table 6). The inter-year changes in amounts of aid in US dollars in Table 7.1 and in Taka in Table 4.4 are not quite consistent. Thus, a comparison of the two series suggests that the widely used estimates of aid as external funding of the government's deficit (Table 4.4) systematically underestimated total aid flows until the early 1990s (Table 6). These apparent discrepancies partly reflect differences in coverage of these series. The financing of the central government deficit in Taka, discussed in Chapter 4, is shown in Table 4.4. Official funding in balance of payments, foreign exchange terms in Table 7.1 includes external funding of statutory bodies such as Bangladesh Telephone and Telecommunications Corporation and is more comprehensive. Another reason for the discrepancies is the use of different deflators in deriving constant or real price series. These considerable ambiguities inherent in the data were the reason for restricting this preliminary examination to a qualitative analysis of the external financial response to natural disasters.

Additionality or reallocations?

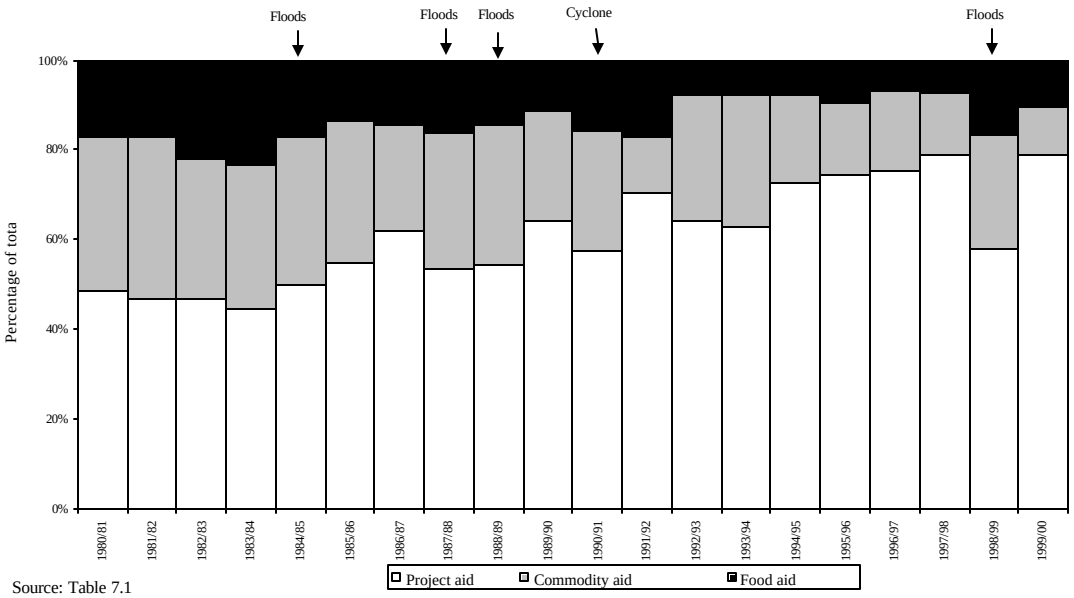
The GoB categorizes foreign loans and grants as project aid, food aid or commodity assistance. Project aid is financial assistance, which largely appears as approved development activities under the ADP. Food aid is received in the form of commodities for either relief or development. Commodity aid is a residual category, covering a wide range of assistance ranging from direct contributions of specific goods to balance of payments support (World Bank, 1989a). During the 1970s, food aid and commodity aid were the largest categories of external assistance, but in the 1980s project aid emerged as the primary form of aid (Figure 7.2). Both food aid and commodity aid have declined in real terms during the 1980s and 1990s. In 1999/2000 project aid alone accounted for 89% of total commitments and 81% of total disbursements in US$ terms (Table 7.1).

A notable feature of external aid to Bangladesh has been the substantial gap between projected and actual expenditure. During the 1980s (1980/81-1989/90), disbursements averaged 79% of commitments, rising to 87% during the 1990s. The problems of disbursement have reflected a number of factors variously affecting both government and members of the donor community, including:

- Limited administrative and implementation capacity;
- Cumbersome procedures;
- Frequent changes in project staff;
- Delays in procurement;
- Limited availability of local CPFs, especially during the 1980s (see above);
- The imposition of stricter project-level aid conditionality in more recent years in the face of lack of improvement in project implementation, coupled with using project aid conditionality as a tool for policy change.

As already noted, disasters have created significant financing gaps and donors collectively have usually sought to be generous and flexible in meeting them.

Figure 7.2: Bangladesh - external assistance by category, 1980/81 - 1999/2000 (as % total)



Source: Table 7.1

A component of the disaster-related assistance has involved the reallocation of existing aid resources, in part intended as a way of speeding up the disbursement. For instance, at a donor meeting in December 1988, US$514m assistance was pledged by donors in response to the 1988 floods, of which US$114m was expected to be covered from the surplus and unallocated amounts under ongoing credits (World Bank, 1989e).

As well as some level of reallocation, it might be expected that total flows of assistance to the country would also increase following a major disaster, given the importance of external aid in post-disaster relief and rehabilitation efforts. In practice, however, there appears to have been little correlation between the incidence of natural disasters and total aid flows. Total commitments have typically increased in the year of, or immediately following, a major disaster – in 1984/85, 1988/89, 1989/90, 1991/92 and 1998/99 – only to fall sharply in the following year (Figure 7.1). Other factors have short term influence on commitments – upwards such as the large Jamuna Bridge project of over US900m, especially in 1993/94, and downwards, political uncertainty in an election year, 1990/91 and 1995/96. There are donor constraints too, such as supply-side influences on food aid discussed below.

Disbursements have been less clearly influenced than commitments by disasters. Total aid seems to have followed a broadly downward trend from around 1985 until the mid 1990s. Since then there is some evidence of a reversal of this trend or stabilization in levels. Disasters have the apparent effect of a short-term movement forward in commitments and to a lesser extent in disbursements around these trends. World Bank country economic memorandums suggest that donors saw this pattern as an adjustment to the build-up in the aid pipeline following large post-disaster commitments and associated disbursement problems.

The sensitivity of external aid to disasters and other short run influences is perhaps more apparent in the three broad components of aid (Figure 7.2). The clear downward trend in both food aid and commodity aid is punctuated with large temporary increases in commitments and to a lesser extent increased disbursements linked to disaster events. As might be expected, food aid commitments temporarily peaked in 1984/85, 1987/88, 1991/92 and 1998/99 (Table 7.1). However, the short term influences on food system management are exceedingly complex, including the stock situation, government's

own commercial imports, domestic procurements and more recently private import trade (see Chapter 6). Also, as Bangladesh has been a non-marginal recipient of food aid - second only to Egypt from the late 1970s to early 1994, accounting in some years for 20% or more of total global food aid - there are short term supply influences on availability.[59] Similarly, commodity aid commitments and disbursements seem to have been to some extent sensitive to disasters, but again as only one factor.

The reported reallocations in external assistance also suggest that project aid in particular has most likely been affected by disasters, with a shift to more quickly disbursing assistance (Figure 7.2). The different aggregate data series when adjusted to a constant real price series give a broadly, but not wholly consistent, picture of the negative relationship between major disasters and project aid disbursement. This statistical evidence also confirms the reported disruption to development project implementation caused by short term funding problems, noted in Chapter 4.[60]

7.2 Aid and the 1998 floods

The external response to the 1998 floods is well documented and, combined with the accounts provided by some of those directly involved, provides a contemporary case study of the actions of international aid communities. There was a large increase of 46% in total aid commitments and a much smaller increase in total disbursements (22%) in 1998/99. However, this total included two quick-disbursing loans of US$138m (25% of quota) from the IMF, in the form of an Emergency Financing Facility, and of US$200m from IDA for emergency imports, both intended to ease the pressure on the reserve situation following the 1998 flood. By simply subtracting the value of these two loans, the residual amount immediately indicates a decline in the disbursements of other assistance, despite including other forms of external relief and rehabilitation assistance (see Chapter 5). Thus, it would seem reasonable to conclude that total external assistance provided in response to this disaster was ultimately not additional but, instead, displaced flows of non-disaster assistance. This finding is confirmed by examining planned, revised and actual aid flows in 1998/99. Food aid was higher and commodity aid disbursements reflect the IDA, IMF and other import assistance. However, actual flows of aid and project aid in particular were much lower than budgeted despite the floods (Table 6). Of course, actions of individual donors may be inconsistent with this overall finding, but this study has only looked at total flows.

The evidence of reallocations and depressive effects of disasters on project aid disbursements raises another immediate question - whether or not disaster relief is intentionally diversionary in nature. To some extent, disasters themselves have exacerbated implementation difficulties as reported above, implying that a significant increase in total aid flows after a disaster may not be feasible. For example, the ADB reported that disbursements from its portfolio totaled US$231m in 1998, marking the second consecutive year of lower than expected disbursements. This decline was in part attributed to the floods, 'which not only hampered project implementation, but also squeezed counterpart funds' (ADB, 1999: 7). Disasters can also damage on-going projects and delay implementation of others. As already noted, donors have also reallocated some aid post-disaster, in part with the intention of speeding up disbursement. However, even the disbursement of reallocated assistance has sometimes been slow, as, for instance, was the experience of the World Bank following the 1998

[59] This is most obvious in the case of US food aid. There were supply as well as notoriously political constraints in the famine year of 1974. But more recently commitments and disbursements fell sharply because of supply constraints in the mid-1990s.

[60] Table 4.4 on source of finance for government's deficit shows above trend declines in project aid disbursements of 2.5% in 1984/85, 21-27% in 1987/88, a recovery of only 1.1% in 1988/89, a further fall of 7% in 1990/91 and a recovery of only 0.4% in 1991/92. The next large fall was 14.3% in the much disrupted election year, 1995/96, followed by 29.4% in flood affected 1998/99. The World Bank's US$ series for disbursement of project aid is less clear cut, but again there is a sharp fall in disbursement in 1987/88, little recovery in 1988/89, falls in 1990/91 and 1991/92 and in 1998/99 (Table 7.1).

floods. Reallocated World Bank funds were still being disbursed two years after the floods, primarily reflecting procurement problems. [61]

There are also various ways in which donors can seek to overcome delays, at least to some extent, thus potentially reducing need for domestic borrowing and the use of high cost commercial supplier's credit, as various authors have acknowledged (e.g., Islam, 1977). For instance, food and commodity assistance can be more quickly committed and disbursed than project aid. The food and commodity aid typically entail less administrative work, especially when drawing on more flexible relief or emergency budget lines. Food and commodity aid can also be used to generate counterpart funds and so facilitate a faster pace of project implementation.

Disbursement of food aid and commodity aid has generally been more sensitive to the timing of disasters. This is again confirmed by contrasting performance in 1998/99 of food, commodity and project aid. Commodities and in effect import support had the highest ratio of actual disbursement to commitments, 89% compared to 66% for food aid and only 51% for project aid (Table 6).

Donors have also invested considerable resources in disaster mitigation and preparedness, particularly in flood protection, as indicated in Chapter 9.

7.3 Non-Governmental Organizations

The government's NGO Bureau began in 1990/91 to compile more comprehensive information on aid channeled to officially registered NGOs. These data are probably still incomplete, and so they should be compared with other statistical series for aid with caution.[62] Nevertheless, they provide evidence on both the major role played by NGOs as a channel for aid and of the impacts of disasters on aid funding (Table 7). The data confirm that a substantial, but also highly variable amount of aid is channeled through NGOs. The real level and share of NGOs in external assistance appears to have peaked between 1993/94 and 1995/96. As this was when total aid flows were declining, the NGO share also rose to around a quarter of total aid disbursements. Subsequently there is an apparent downward trend in aid channeled to NGOs. There were also, as widely believed, a substantial increases in the value and share of aid channeled through NGOs in response to crisis – the 1991 cyclone and again following the 1998 floods. The NGOs share of aid apparently doubled in real terms and increased to a new peak of 27% of total external assistance in 1998/9. The level of aid channeled through NGOs then declined by 28% in 1999/2000 and the NGO share fell to 16% of total aid. These large swings in levels of aid channeled through NGOs suggest considerable short-term management pressures on NGOs and possible problems in implementing their wider portfolio of development and social welfare activities. These issues are voiced in the extensive literature of activities organized to evaluate and learn from the response to the 19998 floods (Annex C).

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[61] The Ministry of Agriculture provided an example of such difficulties and how they might delay disbursement of committed emergency funding. It had been envisaged that World Bank recovery lending would fund imports of wheat seed required for distribution in late 1998. However, the Ministry had to proceed with government purchases from Pakistan and Indian state agencies, the only sources of suitable seed immediately available on a large scale. These international purchases on a non-competitive basis were apparently not considered eligible for World Bank funding and the Ministry of Finance sanctioned use of government's own foreign exchange resources.

[62] The provisional data on aid channeled through NGOs assembled by the NGO Bureau may be incomplete for several reasons. Donors fund NGOs by contributing for their services as well as by making grants. Some external aid to Bangladesh from international NGOs is from their own resources, especially disaster related appeals, or is aid channeled by bilateral donors via the headquarters and these disbursements are not necessarily reflected in officially reported aid. There may also be some discrepancies in the year in which commitments or disbursements are reported.

NGOs and the 1998 floods

Because of the lack of overall information on funding and the diversity within the NGO sector, it was decided to undertake a brief and partial examination of the financial aspect of NGO involvement in the 1998 floods as a way of illustrating issues that might merit further consideration. These include:

- What information is readily available on the financial aspect of NGO involvement in the response to a major natural disaster? The 1998 floods make a good case study, especially as in the time that has elapsed since the event NGOs would be expected to have prepared financial statements and annual reports for that period;
- What was the effect of the disaster response on overall expenditure?
- Was the response broadly additional, or was there some displacement of other 'normal' development and social welfare activity – in financial terms, did disaster-related spending crowd out other expenditure?
- What were the sources of funding?
- What was the proportion of expenditure channeled on to other organizations?

The NGO sector also has a complex structure with some playing multiple roles as both funding and operational organizations. There are also widely accepted distinctions between international, national and local or regional entities. This situation is also becoming less simple as more bodies constituted outside Bangladesh have established local affiliates with varying degrees of autonomy in practice, including accepting funding from other sources.[63]

This exploratory investigation was restricted to a small purposive survey of NGOs chosen to represent the different broad categories of developmental NGOs.

- International NGOs and national affiliates – SCF (UK), CARITAS (Bangladesh), CONCERN (Bangladesh).
- National NGOs– BRAC, Gono Shastha Kendro (GSK), Nijera Kori (NK) and Proshika;
- Regional/Local NGOs – Prodipan and Samata.
- Two NGOs primarily engaged in information dissemination and networking in Bangladesh, the Association of Development Agencies in Bangladesh (ADAB) and PRIP Trust, were also consulted.

Some international NGOs are registered in only one developed country (e.g. SCF [UK]) and operate directly in Bangladesh. Others represent families of organizations that are registered for fund-raising in many countries, but organize their activities through a local affiliate, such as CARITAS (Bangladesh) and CONCERN (Bangladesh). National NGOs such as BRAC and Proshika are locally registered as charitable organizations drawing upon funding directly from donor agencies, government and, in some instances, have substantial own sources of funding from microfinance, or, less commonly, as in the case of BRAC, from commercial activities and as non-profit making companies. In terms of numbers, most organizations are domestically registered, but are largely regional or only local in coverage, such as Prodipan in the Khulna region and Samata in the Pabna region. This complex structure makes for statistical accounting difficulties, with potential for double counting and the task of supervision for the government's NGO Bureau is formidable.

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63 These are not in principle new arrangements. The Red Cross has long been a federation of national agencies.

Table 7: Bangladesh - official development assistance, total external aid to cental government and channelled via NGOs, 1980/81 - 1999/2000 (in real (1999/2000) US$ million)

	Total ODA [a]	ODA channelled via central government [b]	ODA channelled via NGOs [c]
1980/81	2,031.6	1,783.0	
1981/82	2,291.8	1,946.6	
1982/83	2,228.2	2,297.1	
1983/84	2,444.6	2,305.9	
1984/85	2,464.7	2,165.3	
1985/86	2,237.6	2,101.7	
1986/87	2,265.9	2,185.8	
1987/88	2,084.6	1,903.0	
1988/89	2,055.6	1,919.0	
1989/90	2,117.6	1,963.4	
1990/91	1,885.0	1,865.1	257.7
1991/92	1,669.9	1,399.8	311.5
1992/93	1,701.2	1,597.5	402.2
1993/94	1,564.5	1,553.2	316.2
1994/95	1,627.8	1,597.3	410.4
1995/96	1,311.9	1,310.7	326.0
1996/97	1,422.5	1,421.5	230.8
1997/98	1,264.2	1,490.9	189.7
1998/99	1,536.0	1,403.8	381.8
1999/2000	1,645.0	1,702.8	276.1

Source: Government of Bangladesh and World Bank

Notes: [a] Total ODA (including aid to central government as well as aid to publicly-owned bodies, such as BTTC, and via NGOs) as reported by the World Bank in US$.

[b] External aid to central government is ODA as reported by the Ministry of Finance/ BBS in Bangladesh Taka.

[c] Aid channelled via NGOs is a study estimate, based on unpublished provisional data provided by the GoB NGO Bureau.

Information and transparency

The completeness of financial information on NGOs that is easily available varies enormously, as is indicated in Table 7.2.[64] Some surveyed NGOs could provide both fully audited financial statements and detailed accounts of disaster-related expenditure on request. The information was available in annual reports (CARITAS, CONCERN) and on the organization's internationally accessed website (BRAC). Others obliged by specifically compiling more specific financial and other related information on disaster response, e.g. Prodipan and Samata. In other cases, because of caution about 'need to know', no quantitative financial information was forthcoming, despite repeated contacts, e.g. NK and GSK, or only partial information, e.g. SCF (UK). Some NGOs are also reluctant to share with outsiders what are seen as internal evaluations. One might see double standards in that civil society institutions lay great stress on transparency and accountability by national and international public bodies. The survey also showed, unsurprisingly, the range of scale of operations and complexities of NGOs channeling funding on to others who were operationally engaged in relief and rehabilitation.

A few approximate measures of NGO involvement in the response to the 1998 floods are presented in Table 7.2. The agencies' own estimates of direct involvement in disaster relief and rehabilitation (R & R) is a minimum estimate of their expenditure on disaster R&R because some other programs such as those for agriculture or livestock development may have been temporarily redirected to provide R&R because of the flood. The overall wide range and also considerable scale of some NGO response is indicated – from Tk 19.1m to Tk 223m (from less than US$0.4m to over US$4m). There are of course a large number of even smaller organizations not represented in the survey.

The share of disaster R&R in total annual expenditure indicates the extent to which funding was focused on flood responses. Differences in activity transcend international and national categories – high for CONCERN (63%) and smaller, regional NGOs (52 – 63%), but apparently very low for national NGOs with multiple activities such as Proshika (6%). However, as some NGOs are also MFIs, their involvement because of refinancing of a large proportion of borrowers would have been much higher.

There were annual increases in overall expenditure in 1998 or 1998/9 that in all cases exceeded the share of disaster R&R in total expenditure. This suggests that very broadly disaster R&R was covered by additional finance, mostly channeled from donor organizations. Where the annual increase in disaster R&R from 1997 or 1997/98 could be estimated, this also suggested that a very high proportion of the spending in the flood year was additional, ranging from 73% for CARITAS, to close to 100% for Proshika, Prodipan and Samata. To summarize, this partial survey confirms that NGOs were heavily involved in disaster R&R, and that most of this represented additional funding on disaster R&R and additional overall expenditure. What such numbers do not show is the extent to which organizational human capacity was redirected from normal development activity to disaster R&R. This is illustrated most clearly in the case of ADAB, where a large part of activity in 1998/9 was focused on the floods, but this is hardly reflected in any increase in overall expenditure. Staff in several of the NGOs surveyed also confirmed that disaster R&R took priority over all other activities in 1998/99.

The survey also illustrated another convoluted aspect of donor assistance. Those agencies providing financial information also indicated their sources of support and the funding that they in turn channeled to other agencies for disaster R&R. For example, SCF (UK), an international NGO with relatively small involvement in flood response, received EU bilateral assistance and indirectly UK funding through the Disasters Emergency Committee of larger UK regional development NGOs that combines funds from public appeals with matching government support. In turn, SCF passed most of its funding on to local NGOs, including by coincidence over half to Prodipan. In contrast, CARITAS drew support from over 20 partners

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[64] A local investigator worked full-time for around three weeks with a prepared questionnaire to collect and collate information, including interviews from 10 organizations. The two primary investigators also visited as many of the NGOs as was possible within a timetable disrupted by hartals. The contacts involved meetings with senior managers and disaster co-ordinators and focused on the response to the 1998 floods and the information that was immediately or readily available, including any post-response assessment or evaluation.

or affiliates worldwide, but did not fund directly any other agencies. CONCERN acted as a channel for UN (UNDP, UNICEF, UNHCR and WFP) support, as well as funding from other international NGOs (Bread for the World, CARE, OXFAM). In turn, CONCERN channeled around 80% of its funding to some 60 mostly smaller, local NGOs. Proshika, a very large national NGO, received support directly from five bilateral donors, and indirectly from a Dutch NGO bureau (which is largely government funded) and contributed by its own estimate 16% of funds from its own resources. In turn, it channeled 7% of its disaster R&R as support to smaller NGOs. Much of this NGO complexity is well understood, but its overall importance within disaster related public expenditure, especially donor assistance, is not clear.

For example, to what extent is this disaster related assistance affecting donor funding of development, not only that channeled through NGOs but also by redirecting funding that has been originally allocated as development project aid to publicly organized programs?

The channeling of aid through NGOs has established in effect a parallel structure for providing international support for disaster R&R in Bangladesh and elsewhere. That structure overlaps with, relates to and in many ways complements the roles of central government and local government. The complexities of finance provide some indications of the considerable problem of co-ordination that this represents for all concerned parties in crisis situations. There are then enormous pressures for decisions and rapid implementation, and the information basis for action is typically exceptionally incomplete and provisional. The lack of public statistical information on NGOs and the small survey highlight an issue of transparency that extends beyond official agencies.

Chapter 8.

Around the Budget: Public Agencies and Financial Institutions

This chapter briefly reviews public agencies and financial institutions apart from central government. Those included are local government, state owned enterprises (SOE) and financial institutions, including those involved in microfinance (MFI). The focus is on issues that justify further exploration.

8.1 Local government

As many reviews of government and public expenditure have noted, there are severe imbalances between the services that local government is expected to provide and the revenue directly available to finance them (World Bank, 1989a, 1998). There has been a progressive erosion of local government capacities and resources, arguably since 1947. Responsibility for education and health were gradually centralized. Aid dependence has probably been a contributory if unintended factor, because its management was centralized. Local government has also been subjected to repeated organizational changes that have exacerbated institutional weaknesses and the democratic deficit.

For example, in the rapidly expanding urban areas the responsibilities of *paurashavas* (local councils) include the provision of local infrastructure such as water supply, sanitation and drainage. However, actual responsibilities are complicated by the Water and Sewage Authorities (WASA). As the National Water Management Plan (2000) points out, the *paurashavas* lack autonomy in decision making regarding planning, implementation, tariff setting, staffing and other aspects of water supply. The whole process of service provision has been prejudiced by lack of recurrent local or central revenue funding for operations and maintenance (O&M).

Local government lacks substantial own sources of revenue and has been a low priority in central recurrent funding. Furthermore, processes of allocation and decisions on specifics, including siting of investments dependent on central funding, which are subject to political interference by the powerful, have led to unequal access to services. From a disaster mitigation perspective, this has enabled the rich and powerful to gain control and disproportionate access to safer locations (as in coastal areas cyclone shelters).

In terms of public finances, as already noted, lack of recurrent funding and issues of control over available resources and capital investment are critical issues. The weaknesses of local government also partially explain the considerable role that NGOs have come to perform by default in relief and rehabilitation (Section 7.3). These issues are widely recognized in discussions of governance (e.g. Sobhan, 1998). The fifth Five Year Plan envisaged considerable decentralization of responsibilities, but movement on the practicalities seems to have been minimal.

Looking to the future and, again focusing just on urban areas, the capital investment costs of flood disaster mitigation will be considerable. The investment costs of flood protection and drainage for just the major cities are estimated at over Tk 40 bn up to 2025 (NWMP, 2000, Table 8.10). This additional infrastructure will also require considerable expansion of O&M and the funding of recurrent expenditure. The issue is illustrated by the transfer of the Dhaka Narayanganj Demra project area from the Bangladesh Water Development Board (BWDB) to the Dhaka WASA, from the central revenue budget of the Ministry of Water Resources to a local agency. A fuller exploration of the implications that disasters have for local government and authority finances would be useful in this context.

8.2 State-owned enterprises

The state owned enterprises (SOE) are another important aspect of the public finances in Bangladesh. There is extensive government ownership of industrial and trading enterprises in Bangladesh. Most SOEs came into existence after Independence (see Chapter 3), in part by design and in part by default, as the GoB took over enterprises abandoned by their Pakistani owners (Islam, 1977).

The profits earned by public enterprises and public utilities could provide a potentially major source of non-tax revenues, as Khan and Hossain (1989) argue. Instead, however, the SOEs have generally performed poorly, with persistent losses. Indeed, losses of SOEs are mounting, increasing overdue loans of banks and, as the GoB (1999: 16) acknowledges, placing 'a continuing drag on public resource management'. At the end of 1997/98, total accumulated losses of all SOEs, excluding the financial sector, stood at Tk 124 bn. (GoB, 1998), whilst in 1998/99 alone, 17 statutory public authorities incurred losses to the tune of Tk 13 bn. The consolidated losses of state-owned manufacturing enterprises alone was reported at Tk 7 bn in 1999 (Ahmad, 2000).

The GoB has long recognized the need to improve the financial performance of SOEs and to reduce subsidies. Reforms to improve the efficiency of public enterprises, improve their profitability and reduce their borrowing requirement have been on going since at least 1982 (World Bank, 1985). The GoB has also sought to implement a program of divestiture for public manufacturing enterprises.

Disasters may have contributed to operating difficulties and ultimately losses in some cases – for example, for some of the agricultural SOEs and those involved in infrastructure related services, such as Bangladesh Railways. For instance, under the 1999/2000 budget the GoB announced a loan of Tk 1 bn to the Bangladesh Jute Mills Corporation, which was facing an acute financial crisis. The 1998 floods may have played some role in contributing to this crisis. Thus, in assessing the full public cost of natural disasters, the impact on SOEs should also be considered, including the knock-on impacts for public financial institutions as well as the central government budget.

8.3 Financial institutions

Bangladesh's financial system is comprised of four basic sub-sectors:

- Nationalized commercial banks (NCB), including a number dedicated to particular sectors of the economy;
- Private commercial banks;
- Non-bank financial institutions (e.g. leasing banks, development finance institutions); and,
- NGOs working in microcredit.

There is a high level of public sector involvement in the financial sector. As with SOEs, this is partly the legacy of post-Independence nationalization of commercial banks. There is now a policy of financial liberalization and the private sector is growing in relative significance. However, divestment has not proceeded very far. Moreover, there has been a long history of subsidized credit programs, loan amnesties and debt restructuring, as part of successive governments' political commitment to the electorate, undercutting financial discipline in the banking sector. The cost of credit indiscipline ultimately falls on the budget, via channels such as reduced transfer of profits from the Bangladesh Bank, reduced dividends and taxes from the NCBs and financial transfers to the NCBs (World Bank, 1989a). There have been periodic budgetary allocations to the state banks to compensate for annual losses, as well as negotiated compensations for debt forgiveness and interest rate rebates, creating substantial fiscal costs. Moreover, the banking sector has been effectively crippled by high levels of classified loans.

As of the late 1990s, an estimated 50% of loans of the public banks and some 30% of the loans of private banks were non-performing (Ahmad, 2000).

It is thus relevant to explore the financial sector implications of natural disasters, as the government ultimately bears a substantial part of any related losses. However, there are certain associated data problems that will be encountered. In particular, it is difficult to ascertain the precise level of public support to the banking system post-disaster, reflecting the nature of the accounting system. This point is illustrated by Bhattacharya's (1998: 139) more general comment that 'if the government deems it fit to continue such practices of loan forgiveness, it should reimburse the equivalent amount to the banks through direct budgetary allocations in a transparent fashion'. Nevertheless, some of the key issues for further investigation can be highlighted. These include:

- The impact of disasters on lending operations (deferment, default, new lending etc);
- The nature of post-disaster public support to financial institutions;
- The extent to which disasters have fuelled an environment of lax credit discipline, also noting a recent change in approach, with the response to the 1998 flood characterized by provision of considerable additional credit and deferment of payment on current loans, but also a declaration that credit would be deferred but not wavered;
- The approximate budgetary cost of disasters;
- The opportunity cost of disasters, to the extent that they divert resources away from new investment and force increases in interest rates; and
- Potential mechanisms for minimizing losses to financial institutions and spreading risk which are discussed further in Section 9.3.

Such issues could in part be answered by undertaking case studies, perhaps focusing on the NCBs specializing in the areas of agriculture and industry.

8.4 Microfinance institutions

Microcredit activities in Bangladesh were originally pioneered by the Grameen Bank, which began operations on a project basis in 1976 and was then formalized in 1983 as a public institution. Since then, there has been rapid growth in the number of microfinance institutions (MFIs), particularly in recent years. There are now over 1,000 NGOs operating microfinance programs, including both dedicated MFIs and NGOs involved in microcredit as one of several activities. A number of government departments, public agencies and NCBs are also involved in the provision of microcredit as part of the government's broader poverty alleviation strategy. The NCBs provide additional microcredit to small farmers and the landless poor, channeling the credit both through their own programs and those of NGOs and other organizations. A number of MFIs also offer some form of savings account.[65]

The Palli Karma Sahayak Foundation (PKSF) was established by government to act as an apex microfinance body, which lends to agencies, and sets norms and standards for microfinance management. It acts in effect as the refinancing vehicle for MFIs except the Grameen Bank. The latter, as a public organization, relies directly on the Bangladesh Bank.

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[65] Currently, there is no information available on the overall scale of microcredit lending and saving operations, in part reflecting the fact that the MFIs are self-regulatory. The Credit Development Forum (CDF) has been collating and publishing some data since 1995, but it is not possible to draw any inference on trends or fluctuations in new lending, repayment and so forth from these statistics because there has also been a steady increase in the number of NGOs reporting data to the CDF.

Credit activities are in part funded via revolving loans but also entail new (but declining, as a percentage of total funds) injections of resources from the government and international communities. Again, it is thus relevant to include an examination of the impact of disasters on microcredit operations in a study of this nature because they entail the use of public resources. The MFIs have a potentially important role in enabling poorer groups who constitute their client base to cope with the effects of disasters. As the events of 1998 highlighted, the exposure of MFIs themselves to a major disaster shock is also an issue.[66]

Available evidence suggests that the 1998 floods had a profound impact on microcredit operations. For example, the Grameen Bank reported that around 1.2 million of its 2.3 million members were affected, of which 0.8 million were seriously affected. This obliged the Grameen Bank to secure a Tk 1 bn loan from Bangladesh Bank. Brown and Nagarajan (2000) report more generally that the 1998 floods created temporary liquidity issues. MFIs scrambled to meet obligations to clients (e.g., allowing the withdrawal of compulsory savings built up precisely for such purposes) at a time when cash flows had declined or stopped entirely. In the longer term, borrowers are generally expected to honor their loans, even when the activity funded through a loan is destroyed as a consequence of a disaster.

The potentially constructive role MFIs can play and their vulnerability in a disaster are important issues worthy of further examination, particularly in view of the rapid growth that has occurred in microcredit. Although no microcredit operation appears to have collapsed as a direct consequence of a disaster, this possibility cannot be ruled out in the future. Some MFIs are beginning to explore options for disaster insurance but, to date, those that have established schemes have basically opted for self insurance, with some funding set aside into a calamity fund. Any further analysis should therefore seek to explore ways of helping to strengthen microcredit operations against future disasters whilst simultaneously both maintaining responsible attitudes to debt repayment and ensuring that those most affected have adequate access to credit post-disaster and are willing and able to utilize such credit.

66 The extensive debate on the role of MFIs in the light of the 1998 floods is summarized in Pantelic and others (2000). See also Del Ninno and others (2001) and below Appendix A, Table 5.3.

Chapter 9.

Disaster Mitigation: Longer Term, Short Term

This chapter examines the longer-term disaster mitigation strategy. It notes how historically that strategy had largely focused on multi-purpose flood control, drainage and surface irrigation projects. It then discusses how a new strategy is evolving, partly because of financial constraints. More short term financial pressures and overlapping mitigation policy issues of post-disaster rehabilitation and reconstruction are considered next. Finally there is a brief exploration of alternative ways of financing the cost of future disasters through insurance and risk spreading arrangements.

9.1 Investing in mitigation and preparedness[67]

The GoB and the international community have invested considerable public resources in disaster mitigation and preparedness, an additional cost relating to the country's high hazard vulnerability. In so far as such a system exists, mitigation projects are supposed to be prioritized, at least according to the government's *Standing Orders on Disaster*. This document states:

> 'The Planning Commission has an important role regarding allocation of funds on priority basis for disaster mitigation and rehabilitation projects. Investment of funds in disaster mitigation and rehabilitation projects is in reality investment to keep development programs active. This should be borne in mind while preparing development programs' (GoB, 1999a: 114)

Disaster preparedness has also been accorded a high priority in policy statements and there is a long history of formal administrative arrangements, including manuals for action in responding to a natural disaster, since the Bengal Famine Code was initially formulated in the late 19th century.

Bangladesh's experience in disaster mitigation has been subjected to fuller and careful re-examination since the 1988 floods, which led to the Bangladesh Flood Action Plan process (World Bank, 1989f). Most recently the National Water Management Plan project has prepared a longer-term development strategy, which provides indicators on the basis of 5 year rolling plans for the next fifty years (NWMP, 2000; NWMP, 2001).[68] Simultaneously, government with UNDP support is reformulating its strategy for disaster preparedness (UNDP/GoB, 2000). These major exercises are rethinking strategies, with their institutional and resource implications. They reflect too the explicit assumption that rapid social and economic transformation combined with an uncertain and also changing physical environment necessitate a re-examination of inherited strategies and arrangements – whatever their past strengths and weaknesses.

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[67] *Disaster mitigation* is understood to encompass measures that prevent or reduce the negative social and economic impacts of future disasters. Mitigation in this sense includes formal public actions and also the ways that people at household and community levels adapt their environment and activities to limit the effects of disasters. *Disaster preparedness* includes measures that facilitate public and private action to minimize adverse effects when a disaster occurs.

[68] That strategy document's technical annexes D 'Legacies and lessons', F 'Social Analysis', H 'Institutions' and J 'Economies' provide a comprehensive review of disaster mitigation experience, an economic and social assessment of past performance and options for the longer term.

Proofing strategies

In Bangladesh there are well established proofing practices that are more easily understood and most are fully documented for annually recurring flood hazard. Micro-scale interventions, commonly described as flood 'proofing' measures, include the construction of elevated sites for homesteads, storage and livestock, and more locally housing on wooden piles. In cyclone-prone areas the protective sites are known as *killa.* On sites exposed to erosion, riverbanks and *chars,* flood proofing has included protective measures. Publicly organized flood proofing has been for railheads, ports and, more recently, towns such as Chandpur and Sirajganj, which are sited on major rivers.

Under the FAP there were assessments of flood proofing, especially in riverine charland areas (ISPAN,1992; ISPAN, 1993). NGOs also launched pilot projects to support flood proofing by vulnerable communities. Until these initiatives direct public sector interest in and financing of flood proofing had been minimal and would be difficult to identify. Some FFW has been directed by local community leaders for flood proofing, but not necessarily for the poor or most vulnerable. Some micro-finance credit may also have been utilized by borrowers for this purpose. The NWMP (2000) suggests, on the basis of assessments of recent experiences, that flood proofing is highly cost-effective and should become part of a future strategy that would be enabling rather than purely interventionist for mitigation in rural areas. Actual costs are low and there is considerable scope for cost contributions by beneficiaries through provision of labor.[69]

The cyclone protection strategy for high-risk coastal areas, based on the combined construction of safe areas and *pukka* community shelters, was a response to the cyclones and storm surges in the 1960s and especially the catastrophic 1970 storm. This represented a formalization of traditional approaches to mitigation centered on elevated *killa* . It also introduced higher cost modern building techniques to provide shelters using reinforced concrete and masonry. Traditionally, *pukka* buildings were rare in cyclone prone coastal areas. People's severely flawed coping strategy was for those who survived to quickly reconstruct at lowest cost, using locally readily available materials. The funding and provision of high cost structures, effectively as a public good, poses problems of financing investment and O&M, unless there are beneficiary contributions. There is also effectively capture of scarce assets by the more powerful. These problems have prevented the extension to and continued assurance of cyclone provision to all vulnerable people. Cyclone protection has become an intermittent official donor and international NGO priority in response to specific extreme events, notably after 1970 – the Bangladesh Red Crescent managed programs for cyclone shelter construction - and again after 1991 with increasing success. Although 140, 000 lost their lives in the May 1991 cyclone, 340,000 people survived by evacuation and sheltering in purpose-built shelters and pukka public buildings. In May 1997 a similar cyclone claimed less than 200 lives, whilst 1 million people were evacuated into shelters. Since 1991 cyclone shelters have been designed for multipurpose use, mainly for schools, with budgetary implications for O&M.[70] Current thinking is to find 'community-based' ways of rehabilitating and extending the network of shelters and safe areas (Pantelic and others, 2000).

Environmental management strategies

The largest part of public action for disaster mitigation has been in the water resources sector, through flood protection, drainage and (often) surface irrigation (FCD & I) projects. Unusually, but not surprisingly, since Bangladesh was almost entirely rural when this strategy was first formulated in the 1950s and adopted on a nation-wide scale in the 1960s, the primary objective was to promote agricultural development, particularly food grain self-sufficiency through rice production. This was to be achieved by controlled water management, providing protection from river flooding and coastal inundation (but not cyclone protection), reducing drainage congestion and associated localized flooding, as well as protection against

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[69] The NWMP evaluated the CARE pilot project in the highly flood prone area of Kurigram estimated per person capital costs as Tk 560–670 (US$10-12), excluding beneficiary labor inputs. Thomson and Tod (1998) also estimated costs at around Tk 500-650.

[70] In 2001 the GoB contributed 56% of the recurrent operational costs of US$ 460,000 of the Cyclone Preparedness Programme managed by the Bangladesh Red Crescent with the International Federation of Red Cross and Red Crescent Societies covering the remainder (IFRC, 2002).

drought. It was, in effect, a multi-purpose approach to mitigating the effects of all the four main disaster types (see Chapter 2). However, little attention was given to estimating benefits from the protection of assets. The primary benefit was in raising productivity by reducing variability in agriculture and from more intensive cultivation. Many projects only provided FCD, but it is difficult to separate out the proportion of such investment that could be attributed to mitigation.

The provision of urban water supply and sanitation includes a substantial element of flood protection and drainage. The increasing problems of drainage congestion in urban areas leading to localized flooding in periods of heavy rainfall and high river flood levels introduce another component of water related disaster mitigation.

The enormous FFW program has since 1974 funded considerable localized environmental interventions such as small embankments and re-excavation of water courses (*khals*). Many of these schemes have probably contributed to flooding and drainage congestion. Some micro interventions were wrongly sited and improperly constructed, e.g. roads without culverts, creating unforeseen problems elsewhere. Some small-scale flood control projects are also undertaken by local government. The Local Government Engineering Department (LGED) provides technical assistance at the district and *thana* levels and is also responsible for implementation of a wide range of rural infrastructure development activities, including the implementation of small-scale water resource projects.[71]

In a normal year, there are further disaster mitigation and prevention expenses on the recurrent budget. For instance, some ministries, including MRDM and the Ministry of Food, apparently have disaster management units. In addition, part of the cost of maintenance of the country's food stocks could be considered expenditure on preparedness, effectively helping to spread the cost of disaster-related food requirements over time. Additional expenditure has also been incurred in efforts to mitigate problems of arsenic contamination.

It is therefore difficult to attribute a share of public investment expenditure to disaster mitigation. What is clear is how large has been the proportion of development expenditure absorbed by the water resources sector since the highly interventionist FCD strategy was launched in the 1960s.

During the periods of 1973-76 and the First FYP agriculture and rural development, which were dominated by water management, accounted for almost 32% of the ADP (Islam 1977), whilst Khan and Hossain (1989) estimate that over 20% of public capital investment was for this sector. Since at least 1970 there were expressions of concern that FCDI as organized by the Bangladesh Water Development Board (BWDB) was absorbing too high a share of public investment, because small-scale lift irrigation offered higher returns from agricultural productivity growth. Nevertheless, the sector's share of public investment continued to be substantial, although declining in relative terms and stagnating if not declining in real terms in the 1990s (Table 4.2). The water resources sector's share of ADP allocations declined from 12.7% of the 3rd FYP to 11% of the 4th FYP and 8.5% of the 5th FYP.

This strategy for agricultural growth and food security is now considered to have been flawed in conception. There were more efficient, decentralized ways to promote agricultural development through a relative shift from highly flood and rainfall sensitive monsoon season rice production to dry season irrigated production, based on diesel and electric pump powered lift irrigation. The implementation of the FCDI strategy was further undermined by weaknesses in design, and, to a considerable extent, by an inability to address adequately the inevitably massive problems of O&M. In contrast to the sector's high share of ADP, its share of revenue expenditure was modest, leaving little scope for O&M. The NWDB estimates that in 1997/98 the O&M requirement for the existing FCDI system was around Tk 5 bn, which compared with the

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[71] Since 1985 the LGED has also been supposed to have assumed responsibility for O&M of small completed flood control and irrigation schemes. However in practice, at least as of 1998, this transfer of responsibility had yet to occur (Shahabuddin, 1998).

BWDB Revenue Budget request of Tk 1.6 bn and receipts of Tk 1 bn. In 1995/96 establishment costs accounted for 36% of the BWDB revenue expenditure and repairs and maintenance for only 27-30%.

The gap between requirements and available central funding has always been unbridgeable. The water sector's poor performance in cost recovery from beneficiaries of prospective works, or for provision of irrigation, reflects both questions about the 'value' to beneficiaries of services provided and wider problems of governance.

The flawed nature of the strategy has been confirmed by the systematic assessment undertaken under the FAP and the NWMP of economic returns to FCDI investments. Many schemes had low or negative rates of return. The best returns have been achieved by smaller schemes with more modest environmental management objectives, such as submersible embankments for *boro* season rice and some coastal schemes (Thomson and Sultana, 2000; Shahabuddin, 1999; NWMP, 2000).

The structure of public finances and the extreme difficulties in achieving cost recovery for publicly organized investment, intended to generate largely private benefits, have undoubtedly contributed to shaping the flawed mitigation strategy that was adopted and which then continued, almost as an unstoppable juggernaut, until the mid 1990s. A central bureaucratic organization, BWDB, was created to implement a multi-decade investment strategy. To sustain its establishment and operational budget, BWDB persisted with that investment strategy, with little regard to changing technical options and needs. [72]

The major floods in 1984, 1987 and especially in 1988, exposed the ineffectiveness of many of the major projects in providing protection to agriculture (the original priority), rural communities and especially the rapidly developing urban centers. It was these events that set in process the re-examination of the overall strategy. First this was through the FAP, a broad and largely donor funded program of 26 component activities which combined preparation and appraisal of regional FCD projects, in depth scientific investigations into the river system applying the latest technical methods and assessments of past interventions.

The outcome, as reflected in the draft NWMP (2000) and the revised version approved by the National Water Council, chaired by the Prime Minister (NWMP, 2001), is the gradual emergence of a fresh strategy. This strategy gives priority to protection of concentrations of people and high value assets in urban and peri-urban areas against extreme flood, cyclones and river erosion. For rural areas the strategy is still being formulated, but coastal zones are a priority. [73] There is also a shift away from new FCDI schemes to a combination of FCD rehabilitation and flood proofing. Instead of a national blueprint, with very large fresh investment costs for government and donors, there would be a more decentralized approach. Rehabilitation solutions would be based on current understanding of the dynamic physical environment and local circumstances. Only the most viable existing FCDI projects would be rehabilitated.[74] The management of many systems

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[72] The expansion in small-scale dry season lift irrigation made the combined provision of FCD with surface irrigation inappropriate and uneconomic in many parts of Bangladesh (NWMP, 2000). In many coastal polders shrimp cultivation displaced rice. However, BWDB persisted with pressing forward with new projects for surface irrigation, most controversially the Teesta Barrage that could find no external support (Ahmed, Salahuddin and others, 1998).

[73] For example, in coastal areas Jaakko Poyry Consultancy Oy and others (2000) ambitiously envisage building up beneficiary organizations to take over polder O&M, transfer of polders to local government institutions, improved BWDB embankment O&M as the revenue budget permits, and closer co-ordination of the main agencies involved. It is not clear that the institutional implications of such changes have been thought through.

[74] The proposal for the Coastal Zone Management Programme suggests that a diagnostic inventory or database is required including each polder and its infrastructure. The database would need to be regularly updated to provide the information on which to base improvements and O&M interventions (Jaakko Poyry and others, 2000).

would also be transferred to beneficiaries. This would depend too on cost contributions by beneficiaries. There would be a parallel new emphasis on enabling disaster-prone communities to better protect themselves through flood proofing. Disaster preparedness would be strengthened too. The strategy that seems to be emerging would be financially more realistic. The central government investment requirements are reduced in circumstances where overall aid flows have been declining, and donors accord high priority funding to 'soft' poverty reduction strategies. Perhaps more important, the massive unbridgeable gap between O&M requirements and Revenue Budget is addressed by proposing to reduce these requirements and introduce beneficiary responsibility and cost contributions. Such radical changes in the organization of O&M are needed, but pose enormous institutional challenges for government and civil society.

9.2 Rehabilitation and reconstruction decisions

There is an inevitable tension between the desire to begin post-disaster rehabilitation and reconstruction efforts as soon as possible and the need to ensure the projects are properly designed and appraised. As part of efforts to fast-track post-disaster assistance, some donors waive cost-benefit analysis on the premise that investments will, by definition, have positive returns simply because they replace lost or damaged infrastructure. By implication the opportunity costs of investments, in terms of other investment foregone, are not considered. However, available evidence suggests that some post-disaster investment decisions may not have been entirely appropriate. For example, ADB extended two rehabilitation loans to Bangladesh, totaling US$40m in 1988 and a further US$80m in 1989, in support of the rehabilitation of the rail and road networks following the 1987 and then 1988 floods. Yet the World Bank (1990b) review of projects on the ADP questioned the rationale for continued investment in Bangladesh Railway at a time when its operating and financial performance had deteriorated drastically.

Natural disasters have played a part in triggering fresh mitigation initiatives at a time of heightened public concerns. Thus the 1987 and 1988 floods rekindled interest in providing additional flood protection, including for Dhaka and other urban areas. The World Bank 1989 PER referred to the largest such scheme, the Dhaka flood embankment started in 1988, as one of a series of ad hoc projects, formulated in the context of a poorly formulated urban investment plan with no clear prioritization of needs. It considered that this and several other longer-term large-scale investment flood-related proposals should be reviewed carefully before they were allowed to displace other activities in the ADP. It stated that 'such projects have the potential for displacing a large number of high priority activities in the public expenditure program that are necessary to support long-term economic growth, and the viability and affordability of such proposals should therefore be very carefully scrutinized' (World Bank, 1989a: 37).

After considerable expenditure of government's own resources, the ADB subsequently approved in November 1991 a US$91.5m loan in support of the redesigned Dhaka integrated flood protection scheme. This was partially effective in limiting flood damage in 1998. A number of other priority projects were also introduced, including to protect several secondary towns, to provide enhanced erosion protection at selected places on the Brahmaputra right bank, and to strengthen the coastal embankments (Bhattacharya, 2000a). Apparently reflecting this surge of interest in flood protection, actual expenditure under the ADP on the water resources sector increased by 31% in 1988/89 in real terms year-on-year and then by 59% in 1989/90, although dropping back down to a level more on a par with the pre-flood period in subsequent years. This post flood priority for the water sector also seems to have crowded out other ADP expenditure during 1988/89 and 1989/90. ADP expenditure in all other sectors except transport declined or stagnated in 1988/89, whilst transport, industry, power and education also declined in 1989/90 (Table 4.2).

The floods also triggered the Flood Action Plan (discussed above), exploring a range of alternatives for dealing with floods, new research and technical investigations, and studies of the socio-economic consequences of extreme flooding, but

costing an estimated total of US$75m between 1990 and 1995 in external assistance.[75] Similarly, Islam (2000b: 117) reports that, in the aftermath of the 1998 floods, 'another round of brainstorming' began and anticipated that 'many mega-projects (were) sure to be proposed'. A more positive view is that the period following a crisis provides an opportunity and unlocks resources that can be exploited to move ahead with changes in mitigation policy and implement measures that had previously struggled to get domestic or international support.

9.3 Financing future disaster costs: insurance and risk spreading

Historically, there has been heavy reliance on donor funding to meet disaster-related costs both in Bangladesh and elsewhere. However, at a time when donor resources are globally now on the decline, some scientists also believe that climate change implies an increase in incidence of natural disasters in the future (see Chapter 2). Questions are therefore beginning to be asked about alternative ways of meeting disaster-related costs. In a developing country context, the World Bank has been at the forefront of such developments, hoping to reduce the financial risks inherent in catastrophic events by promoting increased utilization of risk transfer mechanisms. Over the past few years, particular attention has been paid to financial risk transfer mechanisms. With these issues in mind, it was considered useful to review ideas and options being explored elsewhere and their potential relevance and scope for application to the Bangladesh situation. However, it should also be borne in mind that the issue is not simply one of funding. Ways of reducing vulnerability also need to be carefully examined, as discussed above.

Disaster-related financial risk transfer mechanisms under discussion typically involve the establishment of some form of market-based insurance, entailing a large share of reinsurance and so transferring risks to the international market. Various permutations exist, in some cases involving conventional catastrophe damage insurance and also in using more innovative tools such as weather derivatives and catastrophe bonds[76]. The potential advantages of developing risk transfer in these ways include increased government control over the financing of disasters, possibly including immediate and timely availability of funds (depending on the precise nature of the scheme); increased capacity for the relevant government to set its own priorities in the management of relief and rehabilitation; and increased transparency in the delivery of relief and reconstruction. Increased public insurance, in whatever form, could also stimulate increased private cover.

To help stimulate increased public catastrophe insurance in developing countries, the World Bank has already expressed interest in providing assistance. In particular, in Turkey the World Bank has extended support to a basically traditional property insurance scheme. Following the 1998 Marmara earthquake, a compulsory earthquake scheme was established for all real estate tax paying dwellings. The World Bank supported this scheme by extending both technical assistance and also providing some initial capitalization through a contingent loan facility.

Weather index-based insurance offers another alternative. This is a relatively new mechanism, with insurance payouts automatic and immediate (typically available within 72 hours) upon the occurrence of the predetermined trigger event rather than awaiting the outcome of post-disaster damage assessments. Parametric insurance requires a careful assessment of the nature of the hazard event, including sufficient high quality historical scientific data to enable computation of its probability, and thus the rate of premium charged. To be economically sensible, the trigger event must also be highly correlated with economic losses, in turn requiring some understanding of the relationship between types of risk and socio-economic vulnerability – for example, how a particular hazard would affect crop production. To date, such contracts have been

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[75] The actual costs of the FAP are the subject of some confusion with some commentators quoting donor commitments for 1989-1995 as actual expenditure. World Bank estimates indicate that US$125m was committed to studies and pilot programs under the FAP and the follow-on NWMP, but that actual expenditure had only reached US$75m by the end of FY1995/6.

[76] See, for example, Kreimer and others, 1999, for a fuller discussion of the various mechanisms.

written on indices of earthquake intensities, temperature levels, cumulative precipitation over a specified period and wind speed, in all cases involving developed countries. However, the World Bank has also begun to explore the scope for providing support to particular developing country governments to develop such contracts. It is also exploring the scope for provision of some form of parametric weather insurance to individual farmers and associated traders.

In the case of Bangladesh, it is useful to make a distinction between localized hazards that occur in some part of the country annually (see Chapter 2) and more severe, less frequent disasters. Costs relating to the former are currently met from the revenue budget, largely on an ad hoc basis, although the Ministry of Disaster Management and Relief maintains a small annual budget for relief activities. There is a strong case for more pre-assignment of funds for this purpose, helping to strengthen broader financial planning exercises and fiscal discipline. Indeed, the World Bank (2000b) has suggested that a disaster sinking fund could be established on the revenue budget, financed from regular budgetary appropriations and external financing. Any surplus funds in a particular year could be used to build up reserves. The government's *Standing Orders on Disaster* states that during 'normal' (i.e., non-disaster) times, the Ministry of Finance should 'arrange for the necessary funds as per decision of the National Disaster Management Council' (GoB, 1999a), suggesting that in theory it is already meant to do this. In a similar vein, Bhattacharya (2000a: 27) also recommends that 'in preparing annual revenue budget a contingency provision for meeting probable disasters should be made in the light of the probability of occurrence of flood and cyclones', implying a variable, rather than fixed, yearly allocations.

In contrast, in years of more severe disaster, or when major disasters occur in successive years, as in 1987 and 1988, substantially larger resources are required which are beyond the means of the GoB. For example, in 1998 rehabilitation costs to be borne by the public sector were estimated at over US$1.5bn in the joint UNDP/GoB (1998) post-flood assessment (Table 5.3). Financial risk transfer mechanisms could potentially play a major role in helping to manage the cost of such events and to spread related expenditure over time.

Currently, even the use of conventional catastrophe insurance is very limited, both by the public and private sectors in Bangladesh, suggesting considerable scope for increased coverage. As far as could be ascertained, there is no hazard insurance of public property (a fact common to many countries around the world). Total annual general insurance premiums currently total some Tk 4bn (US$80m), equivalent to Tk 31 (61 US cents) per capita. Of this, fire and allied insurance accounts for some 35% of the total, marine and cargo insurance for a further 30%, motor insurance for 20% and the remainder for other items. State owned enterprises (jute, textiles, steel, etc) account for about 15% (Tk 600m) of total premiums (see Chapter 8). Fire and allied insurance cover is compulsory against loans from the formal banking sector, but many private houses are not insured. Moreover, natural hazard cover is not included in basic fire and allied policies but instead has to be procured separately, with premiums determined by the location of a house as well as its quality. Reflecting this, cyclone and flood insurance is more expensive in the southern parts of the country. The limited scale of coverage of hazard insurance is illustrated by the fact that only 5% of houses in Chittagong damaged by the 1991 cyclone were insured against cyclones. Currently there is also very little, if any, insurance written against seismic risks. Similarly, there is no crop insurance, although there has been some experimentation with a pilot crop and livestock scheme. At a more micro-level, a number of Bangladeshi microfinance institutions are beginning to offer insurance, including against natural disasters. However, to date these have been schemes for self-financed insurance and the amounts involved, by definition, small.

Increased hazard insurance would almost certainly require major de-regulation of the Bangladesh insurance industry. There are 43 insurance companies currently operating in Bangladesh, all of which are domestic, and a number of which are also very small. Also less than half are general insurance companies, the others restricting business to life insurance. Foreign insurance companies are not permitted to operate in the country, whilst all insurance emanating in Bangladesh, including from foreign businesses, must be purchased locally. Furthermore, a full 50% of reinsurance must be placed with the state owned reinsurance company, Sadharan Insurance Company (Sadharan Bima Corporation), although the remaining 50% can be placed overseas. This structure implies that a high level of risk is retained within Bangladesh and that the industry

could not provide substantial hazard cover, because it would simply not be able to meet claims in the aftermath of a severe disaster.

As regards some form of flood or weather index-based derivative for *loss of output or income*, there are possibly insuperable practical difficulties in the definition of the trigger event. Flooding in Bangladesh is hugely complex (see Chapter 2). It cannot be measured simply in terms of rainfall at particular weather stations, river flow or depth. Drought insurance too poses problems of considerable complexity. The rapid expansion of irrigation may invalidate the attempt to infer losses from historical data. On closer inspection, because of the considerable agro-hydrological complexity, even within relatively small spatial areas, there are likely to be both large numbers of losers and gainers from a range of interacting weather and hydrological conditions. Furthermore, there are the enormous problems of landholding title, sharecropping and extreme fragmentation that are obstacles to verification and determining entitlement to compensation.

There may be more scope initially for insuring *assets* in both rural and urban areas. In urban areas there is increasing use of lease financing of equipment and plant, which is more likely to carry insurance, In rural areas there is rapid expansion in the use of agricultural machinery – pump sets, power tillers and processing equipment - as well as commercial buildings, often credit financed. A large part of microfinance involves acquisition of productive assets, such as livestock, boats and fishing equipment. There are therefore institutional credit arrangements with which insurance could be linked. The extension of microfinance to urban areas also extends the possible coverage to the urban poor and very small business operations. Currently there is an extreme problem of moral hazard, because borrowers anticipate that the lender or government will meet catastrophic losses by writing off or refinancing debts. The introduction of insurance, even if subsidized, would provide a way of bringing further beneficiary involvement in disaster mitigation and for them to make cost contributions.

A further issue that should be considered in deciding the relative merits of promoting some form of catastrophe insurance concerns the future *affordability* of such schemes, in the face of uncertainty about increasing incidence and severity of some types of disaster. More research is required too on the precise nature and probability of various forms of risk.

On balance, there is certainly merit in exploring the potential scope for some form of catastrophe cover, particularly given the fact that disaster-related spending effectively displaces development investment. However, there are also a number of practical obstacles that need to be overcome. There is a need to reform the structure of the insurance industry. Although use of weather derivatives would not require reform of the domestic insurance industry, it would not be particularly successful in encouraging increased private catastrophe cover without such changes. Greater use could also be made of the insurance industry in promoting mitigation. Currently, there are no formal premium reduction policies offered against the insurance of properties where efforts have been taken to reduce the impacts of disasters, although premium reductions can be negotiated on a case-by-case basis, dependent on inspection of a property. Bundling of different types of hazard under one contract for assets could offer a financially viable policy by potentially reducing premium rates to the extent that better understood risks (e.g., cyclones) are bundled with less well understood ones (e.g., earthquakes).

More fundamentally, the GoB itself has to be convinced of the merits of some form of cover against public losses in the event of a disaster. At first glance, it might appear that, in the event of a disaster, additional external assistance is forthcoming anyway and so the GoB does not need disaster insurance. However, as this study has shown, ultimately disaster-related external assistance is in fact not additional, but instead displaces funding for development.

Chapter 10.

Disaster reduction: findings, policy options and research implications

This final chapter begins by summarizing preliminary findings from the study. Next information problems that have limited the study and hamper disaster management are reviewed. It then considers ways of prioritizing disaster reduction and some of the options for finding the resources required to achieve this. Lastly it examines implications for further investigation on the economic and financial aspects of natural disasters.

10.1 Some preliminary findings

Short- term economic impacts

Major disasters have significant macro-economic impacts on Bangladesh (Chapter 3). This is because Bangladesh was, at least until the 1980s, a largely rural economy, and its performance was dominated by the agricultural sector. Agricultural production was highly sensitive to disasters, and indirectly that impacted on GDP through employment and income multiplier and sectoral linkages that determined the short run course of the economy. However, the amplitude of disaster shocks has considerably diminished after initial post-conflict reconstruction and reintegration of the economy was completed by the early 1980s. Subsequently, structural transformation of the economy has also reduced vulnerability. Agriculture is more resilient and a relatively larger share of the economy is accounted for by industry and services, which have proved less sensitive to disasters.

The 1998 floods, the most extreme such event at least since 1947, may be an important point of transition. The year 1998/99 was the first in which, despite major floods, annual agricultural sector output growth rose, from 3.2% to 4.8% and food grain production not only increased but growth was more than double pre-disaster forecasts (Table 2). The reverse in industrial output was more severe than in agriculture. This indicates the need in future to be relatively more concerned about protecting the still fledgling export oriented industrial economy, whose international markets are far from assured from disaster related disruption. However, there was still extensive damage to rural and urban assets and crop losses in the extreme flood affected *aman* season, with considerable associated suffering. That raises the issue of the distribution of effects of a disaster geographically and according to income class.

There are the analytic problems of isolating the economic and financial effects of a disaster within national income and public financial aggregates that are usually only available on an annual basis. This is illustrated by the May 1991 cyclone towards the end of FY1990/91, whose impacts were felt to a considerable extent in the following financial year, beginning in July. Then in 1998/89 annual growth of agriculture rose, but only after massive *aman* season crop losses.

Central government expenditure

The government has a potentially important role in countering the immediate negative impacts of a disaster shock on private sector expenditure. The evidence suggests that government has slowly shifted towards compensating increases in public expenditure, because of policy changes and/or more effective overall financial management in a crisis (Chapter 4). In 1984/85 and 1987/88 there were falls in total expenditure, but slight increases in 1988/89 and in both 1990/91 and 1991/92, and then a substantial rise of 9% in 1998/99.

Disaster shocks have a substantial impact on the composition of public expenditure (Chapter 4). Development expenditure under the ADP has typically been adversely affected, with either a decline in growth or actual reductions in disaster years. There is also some indication that, at least prior to 1998, ADP expenditure that was seen as directly related to disaster relief and rehabilitation (R&R), especially in the water sector, may have crowded out spending in other sectors. Further investigation of the composition of expenditure may show that genuine investment in some sectors was squeezed as funds were redirected to more disaster related spending.

The closer examination of 1998/99 expenditure is intriguing (Chapter 5), suggesting that the government's response in a less tight resource situation than in previous crises was to substantially increase recurrent revenue expenditure. However, ADP expenditure, still largely financed by aid, including development investment and much recurrent mostly social welfare expenditure, increased only slightly. The fresh commitments for R&R were in part made up by reallocating previously committed government and donor funds, probably in excess of Tk10bn (US$200m), equivalent to over 8% of total actual ADP expenditure for 1998/99.

There are less discernible overall impacts of disaster shocks on *central government revenue*. Indirect taxes declined sharply only in 1998 and there are reports of disruption to collection in some post-disaster assessments. Whilst the growth in direct taxes decelerated and then declined with the double shocks of 1987 and 1988, revenue growth increased in 1998/99 and then decelerated in 1999/2000. Again, more refined and disaggregated analyses are required to understand if there were problems, and if these could be minimized in the future.

An unusual feature of public finances in Bangladesh is the separate *food account* (Chapter 6). That account is only formally reconciled with the rest of the budget on a cash accounting basis through its residual balancing deficit or surplus. Cash accounting does not take account of changes in the value of stocks. The circumstances of the 1970s provided a pragmatic logic for this practice, but not necessarily now. Following food market and import liberalization, the government was able to leave the greater part of a temporarily large import requirement in 1998 to the private sector to finance and organize. However, operations were still over US$500m in 1998/99. Direct distribution of food is still a large component of the public social safety net, justified in part as an instrument for disaster reduction. The initial response of many donors was again to offer emergency food aid in 1998, perhaps limiting government's options.

External assistance

Aid has had a considerable role – until recently largely funding the development program (Chapter 7). Previously, food aid also had a complicated role, with sales proceeds contributing to government revenue. Again, looking at 1998 there was a rapid and more flexible response, and a willingness to provide broad budgetary and import support for the disaster-affected economy on the part of international financial institutions, the IMF, World Bank and ADB. Nevertheless, the overall donor response to disasters appears to involve a large element of reallocation in assistance, laterally between budget heads and uses, and between years. After a disaster, food aid and other crisis assistance has typically increased, whereas development project expenditure has stagnated or even declined. Allowing for a lag in project preparation, there is then a short-lived spurt in commitments, in turn followed by lower commitments. There is little evidence of longer-term additionality, except that disasters, as well as poverty and low-income status, have perhaps continued to give Bangladesh priority as an aid recipient.[77] Such intermittent sensitivity in aid to disasters is not necessarily constructive – the issue merits further exploration.

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[77] The exception on additionality may be some part of food aid, especially for direct distribution. Some donors may not be willing to provide alternative financial assistance. However, the retention of very large food based safety nets may be increasingly inappropriate where the problem is not of that food shortage but purchasing power to sustain entitlements. Food aid has high transaction costs and possible distorting effects on the food economy (Dorosh and others, 1998).

10.2 Budgetary information: transparency and disaster management

A major reason for emphasizing the preliminary nature of this study's findings is the variable quality and insufficient detail in the information that is available on public finance. The data reviewed in this study are broadly what would be accessible to economists in the major independent research centers in Bangladesh. There is perhaps a tiny group in government and the international financial institutions, responsible for managing and monitoring public finance and external assistance, who are better informed on the immediate or short term situation. The lack of transparency and weaknesses in the data are therefore an obstacle to the informed discussion of current economic and financial issues and to achieving democratic accountability. These data limitations are also a constraint on the better formulation of longer-term development strategy that takes into account the implications of natural disasters.

The government's way of reporting budgetary information, which is unusual in several respects, also makes it less likely that the public accounts would reveal the full extent of the impact of disasters on public finance. In particular, the quasi-fiscal deficit of the central bank is not yet recognized as part of the public deficit (Chapter 4). A further issue concerns the practice of cash accounting rather than resource based, with any internal transactions going unreported, as noted for the food account (see Chapter 6).

Only a relatively superficial analysis was possible of the impacts of disasters on revenue, including taxes and other sources of government income (Chapter 5). That leaves a range of unresolved issues about the sensitivity of the tax system which merit further investigation – such as possible impacts on the timing of payments of different taxes and the effects of fiscal measures that were taken in 1998/99 to assist recovery. It is important to explore the impacts of disasters on different types of tax in more detail in order to understand how the overall sensitivity of the tax structure to disasters and other economic shocks can be reduced.

In addition to the government's revenue and development budgets, there are other areas of public financial involvement that include revenue and expenditure not directly reflected in the budget. These areas outside the budget also merit separate and in-depth consideration in a fuller investigation of disasters and the public finances (Chapter 8).

External assistance flows are not always transparent and there are problems of inconsistency and incompleteness in the data. This weakness is exemplified by the lack of regular and detailed statistics on the channeling of external assistance, and specifically on the way aid was channeled through NGOs in response to the 1998 floods (Chapter 7).

Information availability and disaster management

Rational and cost-effective post-disaster allocations and, inevitably, reallocations require timely and accurate information on the level and pattern to date of current year expenditure, as well as on disaster impacts. As noted above, the generation of budgetary data has been an area of weakness in the past. However, efforts are underway to secure some improvement in budgetary monitoring. This is in part due to the RIBEC project, which includes the creation of management accounting units in some ministries.

The quality of post-disaster damage assessments was poor, but is improving. Assessments are undertaken by individual ministries and this information is forwarded to the Prime Minister's Office, which has responsibility for consolidating the reports into a single document. The latter is then forwarded to the Planning Commission as a basis for determining the allocation of resources to the reconstruction efforts. There was a considerable effort, coordinated by UNDP, to provide a fuller and consistent assessment of damage and losses following the 1998 floods, involving individual ministries with donor technical co-operation (Chapter 5). The resulting damage assessment, combined with other economic and financial assessments, which are drawn upon extensively in this report, provide probably the most comprehensive picture so far of the impacts of a major disaster in Bangladesh.

10.3 Prioritizing disaster reduction

Natural disasters and longer-term government development objectives

An important question is the extent to which successive disasters have thwarted the attainment of government development objectives of poverty reduction and sustained growth. A related issue is whether there are measures that could be taken to cushion the impact of disasters on the achievement of such objectives. Whilst this study has not explored these issues in depth, it provides a useful context for highlighting the policy linkages between development and disaster reduction.

Poverty reduction is widely acknowledged as Bangladesh's central developmental challenge (e.g. World Bank, 1999b). Successive governments have attached high priority and considerable resources to poverty reduction, focusing on economic growth and human development as the main instruments in the fight against poverty. A threefold strategy has been pursued, involving the direct transfer of resources to target groups, increased allocation to sectors contributing to poverty alleviation (such as rural development and health) and the encouragement of microcredit programs to promote self employment for the poor (GoB, 1998). The GoB (1999c), for example, reported that 26.3% of the total allocation of revenue and development budgets in FY 1999/2000 was directed at poverty alleviation, with some additional projects under the ADP also contributing indirectly.

Poverty has declined, although slowly and with some indications of rising inequality, particularly in urban areas. Preliminary evidence for the 2000 Bangladesh Bureau of Statistics Household Expenditure Survey suggests that there was a 1% per annum reduction in poverty levels in the 1990s. There were also indications for 2000/2001 that the historically high economic growth, which accompanied this trend, might continue. But the more diversified and open Bangladesh economy is extremely sensitive to international economic shocks. As the World Bank 1999 poverty assessment noted, rising inequality is not unusual in the short to medium term, but efforts are required to achieve faster poverty reduction. Measures proposed include 'more effective use of concessional aid flows to spur sustainable growth and finance high-priority public programs that reduce poverty directly' (World Bank, 1999b: 21).

Efforts to reduce hazard vulnerability would also help support poverty reduction. At the household level, poverty is the single most important factor determining hazard vulnerability, in part reflecting location of housing, choice of building materials and primary source of income generation. Disasters, in turn, can play a significant role in reinforcing poverty (World Bank, 2000d). Yet, in the past at least, the relationship between hazard vulnerability and poverty appears to have been overlooked. For example, Khan and Hossain (1989) did not mention hazard vulnerability in discussing factors underlying poverty and underdevelopment.. Even the recent World Bank report on poverty (1999b) failed to include any mention of natural hazards in discussing determinants of poverty.

Economic and social analysis of poverty in the 1970s and 1980s was widely undertaken within a structuralist paradigm that focused on the underlying relationships between control over land, and inter-personal inequality, which in turn explained weak development performance in a largely rural economy (e.g. Stepanek, 1979; Boyce, 1987; Khan and Hossain, 1989). There was very limited discussion of the damaging short-term dynamics of disaster shocks and of resultant risks and uncertainty. Disasters were seen as exacerbating structural inequalities because those affected, especially poorer households, lost assets and there was a further concentration of control over land.

More recently, there has been a discernible shift in thinking. More general discussions of the relationships between poverty and natural hazards accept the validity of the structuralist analysis but see it as incomplete (World Bank, 2000d). There is the issue of agency. The social construction of communities, including strong, but problematic, patron client relationships that bind the poor to the powerful, is in part a consequence of natural hazard vulnerability. Both risks and the temporal and spatial dynamics of actual disaster impacts need to be taken into account in formulating development strategies.

The GoB (2000a) acknowledges the linkages, identifying natural hazards as one of a number of factors eroding the income of the poor, via both crisis-related expenditures and reductions in income earning capabilities It recognizes that poverty alleviation cannot be achieved simply by increasing income, but instead requires a range of other measures, including the strengthening of local capacity to protect the poor against shocks. For example the World Bank and DFID have produced reports stressing the mutually reinforcing relationship between poverty and hazard vulnerability (Pantelic and others, 2000; Kelly and Khan Chowdhury, 2002). It is hoped that such thinking will be reflected in practical terms as well.

Natural disasters can also hamper achievement of government objectives by disrupting short and medium term investment plans. Public investment is a critical factor in stimulating economic growth in Bangladesh, particularly given the limited contribution to date of private investment. Although falling, population growth of around 1.5% a year still makes provision of adequate infrastructure and services more challenging. Yet in reality the level of infrastructure investment has been insufficient, as acknowledged by the GoB. For instance, in a memorandum to the Bangladesh Development Forum the GoB (2000a: 17) states that 'inadequate infrastructure has been a constraint on investment in productive activities as well as on utilization of installed capacity', further stating that interruption of electricity, transportation bottlenecks, limitations of port facilities and so forth are well known difficulties. Writing a decade earlier, Khan and Hossain (1989: 144) also concluded that 'inadequate infrastructural facilities constitute a serious obstacle to the economic and social development of Bangladesh' and that 'the physical infrastructure is in urgent need of rehabilitation and expansion' (op cit.: 181). The fact, as demonstrated above, that natural disaster related expenditure has largely displaced planned capital investment and normal recurrent expenditure must be part of the problem.

Natural hazards and economic planning

In exploring the budgetary impacts of disasters, it is relevant to consider the extent to which government and donors seek to minimize an economy's hazard vulnerability, not only through narrowly defined structural measures, such as flood protection, but also more broadly. Currently, this appears a weak aspect of public policy, in part reflecting more generic weaknesses in the planning process. As the recently completed Comprehensive Disaster Management Program (CDMP) states, 'disaster management has not been formally associated with the broader development programs and as such it continues to be regarded as a task that is additional to day-to-day core business activities' (UNDP/GoB, 2000).

The Ministry of Finance and the Planning Commission are represented on the National Disaster Management Council and Inter-Ministerial Disaster Management Coordination Committee. According to the *Standing Orders on Disasters,* responsibilities of the Inter-Ministerial Disaster Management Coordination Committee include making recommendations to the Natural Disaster Management Council 'regarding the prioritization and inclusion of disaster prevention/mitigation projects in the National Development Plan' and 'determin(ing) the method of Disaster Impact Assessment (DIA) of large projects regarding their longevity against increasing disaster or damage during disasters' (GoB, 1999a: 5). But the *Standing Orders* make no mention of the need to integrate hazard risk concerns into development planning more broadly. Meanwhile, recent annual budget statements, even in the aftermath of the 1998 flood, only referred indirectly to the need for hazard risk reduction, in the context of discussions on allocations for flood control.

The CDMP seeks to strengthen the future interface between disaster management and development planning. Its basic objective is:

> 'to establish a functioning integrated institutional mechanism that facilitates the delivery of long-term sustainable risk management practices as an integral component of national development planning and achieves greater effectiveness in emergency response and recovery management at all levels' (UNDP/GoB, 2000).

Guiding principles of the CDMP indicate that the promotion and establishment of disaster management should become an integral element of government activity. This will be achieved through increased awareness and advocacy, promoting issues including the impact of disaster situations on the national economy and the cost benefit of incorporating risk

management measures into all development planning considerations. The need to introduce a disaster management program approach based on formal hazard analysis and risk identification, including impact analysis of the vulnerability of individual projects to natural hazards, is also recognized.[78] Successful completion of the combined component outputs under the CDMP is expected to result in the 'strengthened interface between development planning and disaster management through the establishment of guidelines and project vetting responsibilities of the CDMP Steering Committee' (UNDP/GoB: 2000: xiii).

The World Bank's 2000 Country Assistance Strategy (CAS) also recognizes the critical importance of providing protection against natural disasters in seeking to sustain development outcomes (World Bank, 2000a). The report acknowledges the benefits that have been reaped from improved information and early warning systems. Furthermore, it emphasizes the importance of the operation and maintenance of defensive infrastructure and related GoB efforts to encourage greater participation by affected communities and NGOs in such activities, indicating its willingness to consider the provision of support in these areas, as well as additional assistance for post-disaster recovery. But the commitment in this area may not go far enough. The CAS does not directly advocate the incorporation of hazard risk concerns into the more general development process. More positively, the subsequent World Bank emergency flood recovery project implementation completion report (World Bank, 2000b: 5) drew attention to 'the serious need to recognize Bangladesh's vulnerability to natural hazards and to mainstream emergency responsiveness and mitigation concerns in donor and IDA assistance'.

10.4 Natural disaster reduction: ways and means

In seeking to reduce the impact of future disasters, some broad sense is needed of the scale of the problems and the resources required. Focusing on the main hazards considered in Chapter 2, Bangladesh's disaster vulnerability is considerable but changing. The costs of urban flood protection, including drainage and continuous protection against erosion, are inevitably rising. In contrast, the rethinking of the rural disaster reduction strategy for river flooding, drainage, erosion and drought points to possibly less costly, more localized solutions. These would give greater emphasis to flood proofing rather than attempt total protection by environmental control (Chapter 9). Coastal areas are the important exception and considerable continuing investment will be necessary to address problems of drainage and erosion that take account of changing land and water use, as well as enhanced cyclone protection. Earthquake hazard has been insufficiently considered and that implies higher investment costs. There is uncertainty about the effects of climatic change and how this will interact with the dynamics of land and water use. For example, climatic change could imply increased risks of more variable, especially lower, rainfall patterns, whereas massive private investment in irrigation may have reduced drought risks. This issue illustrates the need for continued, probably enhanced support for scientific investigations into natural hazards, as a public good, which has national, regional and international financial implications.

Overall, the costs of disaster reduction seem likely to increase. Meanwhile, the longer-term trend in external assistance has been downwards, and seems unlikely to rise substantially in the foreseeable future. That prospect and the considerable difficulties experienced in adequately funding disaster mitigation, especially recurrent costs from domestic sources, have led to an increased interest in alternative ways of financing disaster costs.

Alternative ways of financing the cost of disasters

There is considerable merit in exploring the potential scope for some form of catastrophe cover (Chapter 9). However, particularly given the fact that disaster related spending effectively displaces development investment, there are also a number of constraints to be overcome. These include the need to reform the structure of the insurance industry and also to undertake further research on the precise nature and probability of various forms of risk.

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[78] Others, (e.g., Bhattacharya, 2000a) have also called for hazard risk assessments in designing development projects.

Moral hazard is an issue that arises at the micro household and enterprise as well as national levels. There are strong well-established borrowers' expectations, reflected in poor recovery rates that after a disaster formal lending institutions will either cancel debts or refinance them on favorable terms. The massive shock to microcredit clients in the 1998 floods highlighted the risk that a disaster-induced collapse in recovery rates could jeopardize this key sector in the country's poverty reduction strategy. Further analysis should seek to explore ways of helping to strengthen microcredit operations against future disasters through risk spreading. This has to be done, whilst simultaneously both maintaining responsible attitudes to debt repayment and ensuring that those most affected have adequate access to credit post-disaster and are willing and able to utilize such credit. Similar issues need to be addressed for more conventional agricultural and other commercial business lending by state-owned financial institutions.

The GoB itself also has to be convinced of the benefits of some form of catastrophe cover against public losses in the event of a disaster. This study has presented clear evidence that ultimately disaster-related external assistance is in fact *not* additional, but instead largely displaces funding for development, if not immediately then over 1-2 years. There would seem to be a case for the careful consideration of options for spreading some of the public financial costs of disasters and to encourage financial and state owned enterprises to do likewise. The proposal by Bhattacharya (2000a) for an annual Revenue Budget contingency provision for disasters would complement such arrangements and also merits careful consideration.

Disaster mitigation in investment and through O&M

As indicated in Chapter 9, there are other less novel ways of improving the management of hazard risk and disasters, and thus of reducing disaster related costs. An important step would be to undertake hazard risk assessments in designing all investment projects in order to ensure that appropriate mitigation features are incorporated and that future disaster losses are reduced. The processes of urbanization and industrialization as well as the possible effects of climatic change also imply that design standards for protection against hazards may need to be enhanced.

The short-term impacts of disasters on recurrent expenditure are unclear (Chapter 5). Nevertheless, the constraints imposed by lack of finance for recurrent expenditure appear to have contributed considerably to disaster costs. Inadequate O&M has been a major constraint on effective achievement of flood control, drainage and irrigation. The high cost of rehabilitation following the 1987 and 1988 floods also partly reflected longer-term rehabilitation requirements because of inadequate O&M and poor investment planning in the past. For example, lack of proper O&M was the main causal factor behind estimated flood rehabilitation costs of over US$100m to the communication sector alone (World Bank, 1989a). Increased expenditure on O&M in certain areas could also provide a very cost-effective way of reducing the impact of natural disasters. The coastal embankments and shelters that provide protection again cyclones and storm surges are an obvious, high priority area. This will be made more effective by the transfer of more management responsibility to beneficiaries and working with them to address problems of cost recovery.

The latter two options both involve increased expenditure. However, studies elsewhere indicate that the incremental project costs associated with building mitigation features into a project could be relatively minor and in the long term both are likely to be cost-effective. But, as Mahmud (1998) states, macroeconomic management can be influenced by the temptation for government to pursue populist policies, emphasizing short-term gains rather than maximizing longer-term growth. The funding of recurrent costs is similarly less attractive to both government and donors than some new thing. Such policies and preferences may not be conducive to hazard risk management and need to be challenged in constructive ways.

10.5 Further investigations

This study proved no easy task. Natural hazards are extremely complex phenomena and the direct and indirect, short and longer-term effects of disasters are difficult to trace through the economy. Nor is public finance an easy subject for research,

even where there is a well-established tradition of transparency and democratic accountability. Bangladesh's public finances are an opaque and difficult subject for investigation. Since colonial times it has been effectively the preserve of a tiny elite of civil servants and their ministers. Many of the accounting practices are out of date and inappropriate to the enormously enhanced responsibilities of government since Independence, and there are wider problems of governance. Attempts are underway to modernize the public finances, but that is of limited help in undertaking a retrospective study. After a considerable effort, this report is only able to provide what are explicitly called preliminary findings and tentative conclusions. It has also indicated areas that are worthy of further investigation.

Post-disaster assessment

The consequences of the 1998 floods were much more closely examined within Bangladesh than the floods a decade earlier. Such efforts to understand the effects of a specific disaster offer an opportunity to mitigate and more effectively manage these effects. There were, however, many apparently arbitrary inclusions and exclusions in the 1998 post-disaster assessments and also in other mitigation investment related assessments. These practices confirm the need for agreed and generally adopted guidelines to establish the remit for both post-disaster and mitigation assessments. Natural disasters are so frequent and there is so much specificity, that this is a task for Bangladesh itself. The various guidelines for economic, social and institutional appraisal of water resource investments in Bangladesh prepared in the early 1990s provide an example and possible model for what is needed (FPCO,1992; Shahabuddin and Syed, 1998; NWMP, 2000).

Economic research into natural disasters impacts

Economic statistical analysis should usefully focus on changing rates of growth in public expenditure and revenue. The use of regression analysis employed in previous studies to quantify the short term impacts of disaster shocks on national accounting aggregates could be extended to public finances and external assistance. The study has not attempted more formal regression analysis of the relationships between disasters, GDP aggregate and the main components of the public finances as in previous studies (e.g. Benson and Clay, 1998 and 2001). Others, for example Islam (2000a), have investigated the relationships between floods and GDP aggregates, and the quantification of these relationships, especially incorporating data beyond the 1998 floods up to 2000/1, would be worthwhile.

There is scope for quantitative modeling to ascertain the extent to which the economy's longer run development path is adversely affected by cumulative impacts of disaster shocks. There was exploratory modeling by French economists, but only on the costs of flooding under the FAP (Azam, 1991). The recent studies by Freeman and others (2002) using World Bank macro-economic country models, the so-called Revised Minimum Standard or RMSM models, show how the infrastructural costs of disasters might be estimated in ways that would improve post-disaster assessments. An important step forward would be to extend such quantitative economic investigations to consider both the public expenditure and revenue implications of disaster shocks.

Because many of the impacts concern the *composition of public expenditure,* that should be the specific focus of future investigations in Bangladesh and more generally. But to do this in a meaningful way will require a team approach, including economists, accountants and either the participation, or constructive involvement as advisers, of current or retired senior civil servants familiar with the intricacies of public finances. The intention should be to identify key areas of capital and recurrent expenditure that must be protected in a crisis. It should also seek to clarify the areas for additional expenditure to facilitate immediate crisis management, recovery and in the longer term to strengthen disaster mitigation. A disaggregated exploration of the sensitivity to disasters of revenue including both taxation and income from public services could contribute both to better short-term fiscal policy and longer term strengthening of the extremely weak fiscal basis for the public finances.

In exploring the full public cost of natural disasters the impacts not only on central government's budget but also other public enterprises, agencies and public financial operations should also be considered, including the knock-on impacts for the

central budget. In Chapter 8 there is a brief attempt to indicate further areas and issues for investigation that would complement this study.

The role of external aid is also anything but transparent. The categories of aid, conceived in an era of state planning, and much direct tied aid as food, other commodities and projects, should be replaced or complemented by a currently more meaningful classification. The channeling of aid through NGOs and as concessional finance to SOEs and the private sector needs to be regularly reported. A full inventory of aid from all donors and agencies and the ways they support disaster mitigation, emergency responses and post-disaster rehabilitation would be a useful contribution to the integration of disaster reduction into longer-term development strategy.

Monitoring and research on natural hazard risks

Natural hazards are extremely complex and state-of-the-art professional scientific and technical advice is continuously required to make sense of many issues. Hazard risks are changing both because of rapid socio-economic change and the highly uncertain effects of climatic change. A review of the adequacy of support for research on and monitoring of hazard vulnerability would be highly desirable. Recent disasters have again highlighted the growing need for regional co-operation on these matters.

Annex A

Statistical Tables

Table 4.1: Bangladesh - revenue and expenditure of central government, 1980/81 - 1999/2000 (in real 1995/96 billion taka)

	Revenue			**Expenditure**						
	Tax	Non-tax	Total	Current expend-iture	Food account surplus	ADP	Non ADP capital & net lending	Total	Residual[a]	**Overall budget deficit**
1980/81	50.2	11.1	61.3	-36.3	-66.1	-13.0	-4.6	-120.0		-58.7
1981/82	49.3	11.4	60.8	-38.4	-69.6	-8.6	-5.2	-121.8		-61.0
1982/83	50.8	10.4	61.2	-46.3	-71.9	-15.8	-5.4	-139.4		-78.1
1983/84	49.9	10.3	60.2	-48.5	-8.0	-63.4	-7.8	-127.7		-67.5
1984/85	54.7	13.4	68.1	-50.4	-8.1	-57.6	-8.8	-124.9		-56.8
1985/86	56.9	16.0	73.0	-60.3	-2.9	-63.0	-7.5	-133.7		-60.7
1986/87	60.3	14.3	74.6	-64.7	-0.2	-72.0	-7.8	-144.6		-70.0
1987/88	61.6	15.4	77.0	-69.6	-8.1	-54.9	-5.9	-138.5		-61.5
1988/89	65.5	14.9	80.4	-76.0	-5.3	-56.6	-7.0	-144.8	0.9	-63.4
1989/90	73.2	14.8	88.1	-82.7	-11.2	-60.3	-6.6	-160.9	-1.4	-74.3
1990/91	78.2	17.7	95.9	-86.7	-8.9	-62.4	-6.4	-164.3	-3.5	-71.8
1991/92	92.6	22.6	115.2	-88.0	-6.8	-66.4	-6.3	-167.4	-10.0	-62.3
1992/93	105.9	26.0	131.9	-98.2	-7.5	-78.4	-9.9	-194.0	-2.6	-64.6
1993/94	107.8	32.4	140.2	-101.9	5.0	-97.5	-14.0	-208.3	-0.7	-68.8
1994/95	116.6	31.2	147.8	-107.5	-7.3	-105.2	-12.5	-232.4	1.5	-83.1
1995/96	120.0	30.2	150.2	-113.1	-5.0	-96.1	-8.6	-222.8	-2.0	-74.6
1996/97	129.1	31.8	160.9	-119.9	-3.9	-105.2	-7.8	-236.8	0.1	-75.8
1997/98	135.4	35.5	170.9	-131.9	-2.9	-104.1	-6.9	-245.9	0.0	-75.0
1998/99	139.5	35.0	174.4	-147.3	-5.2	-108.5	-6.3	-267.3	-6.5	-93.0
1999/00	138.9	34.7	173.7	-159.9	-3.0	-133.5	-5.0	-301.5	0.0	-127.8

Notes: [a] Represents the difference between the balance of revenue and expenditure from the fiscal accounts and total financing estimates.

Source: World Bank, various

Table 4.2: Bangladesh - ADP: sectoral allocations to selected sectors, 1984/5- 1998/99 (in real 1995/6 million taka and year-on-year percentage change)

	Agriculture			Rural development and institutions			Water resources			Industries			Power		
	Total	GoB	Project aid	Total	GoB	Project aid	Total	GoB	Project aid	Total	GoB	Project aid	Total	GoB	Project aid
IMED estimates expressed in million taka (real 1995/96 prices)															
1984/85	5,445	3,653	1,707	1,735	597	1,138	7,439	3,705	3,734	2,673	2,643	2,077	10,705	4,148	6,556
1985/86	3,528	2,214	1,314	1,715	378	1,337	7,134	3,923	3,211	9,264	3,072	6,192	12,124	3,226	8,898
1986/87	2,967	1,432	1,535	1,684	466	1,296	7,160	3,644	3,515	10,834	3,123	7,711	14,779	3,365	11,413
1987/88	3,787	2,242	1,545	1,315	221	1,094	6,481	3,535	2,946	6,220	2,323	3,897	11,073	3,077	7,995
1988/89	3,754	2,502	1,252	1,339	230	1,109	8,487	4,100	4,427	6,426	1,439	4,987	10,773	2,403	8,371
1989/90	4,164	2,415	1,752	2,273	203	2,070	13,499	7,750	5,749	5,453	1,429	4,024	8,251	2,297	5,954
1990/91	3,684	2,249	1,435	2,666	386	2,280	8,145	3,823	4,322	1,156	783	373	4,379	1,973	2,406
1991/92	4,931	2,173	2,758	3,712	537	3,175	6,239	2,997	3,242	1,388	1,000	389	8,616	3,548	5,067
1992/93	4,321	1,999	2,322	4,246	690	3,556	7,938	3,722	4,217	847	644	202	11,690	6,119	5,571
1993/94	5,830	2,253	3,577	5,373	2,183	3,190	6,330	3,576	2,755	1,753	1,614	139	13,586	6,631	6,954
1994/95	5,640	2,463	3,177	7,134	3,182	3,952	6,797	3,794	3,003	1,380	1,187	193	15,902	8,023	7,879
1995/96	4,550	2,321		6,807	3,735	3,073	5,627	3,409	2,218	1,478	767	701	13,737	7,358	6,379
1996/97	5,406	3,237	1,932	9,040	5,120	3,767	8,816	3,697	4,301	1,534	1,048	65	14,509	9,137	5,005
1997/98	5,528			8,293			9,583			1,106			11,794		
1998/99	5,356	2,469	2,887	11,165	6,409	4,756	7,720	3,754	3,966	866	759	107	13,186	8,511	4,674
Year-on-year percentage change															
1985/86	-35	-39	-23	-1	-37	18	-4	6	-14	247	16	198	13	-22	36
1986/87	-16	-35	17	-2	23	-3	0	-7	9	17	2	25	22	4	28
1987/88	28	57	1	-22	-53	-16	-9	-3	-16	-43	-26	-49	-25	-9	-30
1988/89	-1	12	-19	2	4	1	31	16	50	3	-38	28	-3	-22	5
1989/90	11	-4	40	70	-12	87	59	89	30	-15	-1	-19	-23	-4	-29
1990/91	-12	-7	-18	17	90	10	-40	-51	-25	-79	-45	-91	-47	-14	-60
1991/92	34	-3	92	39	39	39	-23	-22	-25	20	28	4	97	80	111
1992/93	-12	-8	-16	14	29	12	27	24	30	-39	-36	-48	36	72	10
1993/94	35	13	54	27	216	-10	-20	-4	-35	107	150	-31	16	8	25
1994/95	-3	9	-11	33	46	24	7	6	9	-21	-26	39	17	21	13
1995/96	-19	-6		-5	17	-22	-17	-10	-26	7	-35	263	-14	-8	-19
1996/97	19	39		33	37	23	57	8	94	4	37	-91	6	24	-22
1997/98	2			-8			9			-28			-19		
1998/99	-3			35			-19			-22			12		

Table 4.2: Bangladesh - ADP: sectoral allocations to selected sectors, 1984/5- 1998/99 (in real 1995/6 million taka and year-on-year percentage change) (contd.)

	Transport			Physical planning, water supply & housing			Education & religious affairs			Health, population and FW		
	Total	GoB	Project aid	Total	GoB	Project aid	Total	GoB	Project aid	Total	GoB	Project aid
IMED estimates expressed in million taka (real 1995/96 prices)												
1984/85	5,098	3,559	1,539	2,104	1,492	669	2,373	1,593	779	3,692	1,461	2,228
1985/86	4,419	3,582	837	1,967	1,258	709	2,210	928	1,282	2,660	1,428	1,236
1986/87	6,857	2,728	2,574	2,160	1,292	868	3,071	1,248	1,823	2,769	1,539	1,230
1987/88	6,735	2,685	4,050	2,419	1,344	1,074	3,081	1,152	1,930	3,238	1,518	1,720
1988/89	9,172	3,780	5,392	2,165	1,338	827	2,809	1,027	1,782	3,401	1,611	1,790
1989/90	9,704	4,817	4,887	3,662	1,832	1,830	2,883	1,046	1,836	4,062	1,531	2,531
1990/91	7,555	2,692	4,864	2,770	1,274	1,496	2,079	1,075	1,004	5,414	1,771	3,642
1991/92	9,747	3,316	6,431	3,663	1,834	1,829	3,480	1,623	1,857	4,755	2,031	2,724
1992/93	11,244	4,579	6,665	2,752	1,472	1,279	6,135	2,512	3,624	5,674	2,510	3,164
1993/94	17,281	6,346	10,935	3,544	2,039	1,505	10,296	6,424	3,872	7,700	2,878	4,822
1994/95	20,313	10,450	6,479	5,037	3,868	1,170	15,273	10,639	4,634	8,759	3,598	5,160
1995/96	20,101	10,206	9,895	4,583	3,020	1,563	13,049	9,294	3,756	6,378	2,590	4,288
1996/97	23,939	10,757	10,504	5,804	3,613	1,905	14,136	10,020	4,019	8,457	3,450	3,799
1997/98	20,824			5,528			13,729			10,780		
1998/99	19,768	12,225	7,544	5,900	3,887	2,014	14,911	11,086	3,825	8,989	3,152	5,890
Year-on-year percentage change												
1985/86	-13	1	-46	-7	-16	6	-7	-42	65	-28	-2	-45
1986/87	55	-24	208	10	3	22	39	35	42	4	8	0
1987/88	-2	-2	57	12	4	24	0	-8	6	17	-1	40
1988/89	36	41	33	-11	-1	-23	-9	-11	-8	5	6	4
1989/90	6	27	-9	69	37	121	3	2	3	19	-5	41
1990/91	-22	-44	0	-24	-30	-18	-28	3	-45	33	16	44
1991/92	29	23	32	32	44	22	67	51	85	-12	15	-25
1992/93	15	38	4	-25	-20	-30	76	55	95	19	24	16
1993/94	54	39	64	29	38	18	68	156	7	36	15	52
1994/95	18	65	-41	42	90	-22	48	66	20	14	25	7
1995/96	-1	-2	53	-9	-22	34	-15	-13	-19	-27	-28	-17
1996/97	19	5	6	27	20	22	8	8	7	33	33	-11
1997/98	-13			-5			-3			27		
1998/99	-5			7			9			-17		

Source: GoB Planning Commission and IMED.

Table 4.3: Bangladesh - timing of payment of central government taxes, 1994/5 - 1999/00 (percentages)

	Customs	Excise duty	Income tax	Domestic VAT	Import VAT	Total VAT	Supl.tax domestic	Supl.tax import	Others	**Total tax receipits**
Proportion of annual receipts received in first 3 months of the relevant financial year										
1994/5	22.3	17.3	14.2	22.3	22.5	22.5	22.3	19.5	21.3	21.1
1995/6	23.2	20.6	17.1	23.2	23.9	23.7	24.0	19.5	25.3	22.5
1996/7	23.3	16.4	17.7	21.1	23.7	22.8	22.5	18.7	26.1	22.0
1997/8	24.2	16.5	17.2	21.3	24.4	23.3	22.3	21.8	29.3	22.5
1998/9	21.5	15.9	15.9	19.0	21.9	20.8	21.1	21.7	24.8	20.3
1999/00	23.6	17.3	20.2	20.4	23.0	22.0	22.7	22.5	27.0	22.3
Proportion of annual receipts received in last 6 months of the relevant financial year										
1994/5	53.2	64.9	65.6	57.6	54.0	55.2	53.3	58.3	55.1	55.9
1995/6	44.0	52.5	47.8	43.5	43.6	43.6	44.0	47.1	43.9	44.6
1996/7	51.8	65.1	61.4	56.1	51.6	53.2	53.0	59.4	49.4	54.1
1997/8	52.3	66.0	62.0	54.3	52.6	53.2	54.0	55.3	42.7	54.4
1998/9	50.0	69.8	46.6	53.1	52.5	52.7	51.5	66.1	45.4	51.6
1999/00	53.0	65.8	55.5	56.0	54.1	54.8	52.2	60.3	43.8	54.5
Proportion of annual receipts received in last 3 months of the relevant financial year										
1994/5	27.1	22.1	43.2	34.6	27.6	30.0	29.2	26.7	30.4	30.5
1995/6	30.2	28.5	44.6	35.3	30.4	32.0	31.4	35.8	29.2	33.0
1996/7	26.7	21.7	40.4	32.1	26.6	28.5	27.3	32.0	26.7	29.3
1997/8	25.6	26.4	40.0	30.5	26.8	28.1	30.7	28.2	20.3	29.1
1998/9	27.9	30.4	42.7	34.8	28.6	30.9	28.5	25.7	27.0	31.2
1999/00	28.7	25.6	31.7	31.1	29.6	30.2	28.0	37.7	21.5	30.0
Proportion of annual receipts received in last month of the relevant financial year										
1994/5	8.3	7.2	26.3	13.9	8.6	10.5	11.0	7.8	9.8	11.9
1995/6	10.7	8.1	22.9	14.2	10.6	11.8	12.8	12.0	10.6	13.0
1996/7	9.8	6.7	23.8	12.4	10.2	11.0	10.8	11.0	10.8	12.2
1997/8	8.2	7.7	22.9	13.0	8.4	10.1	11.5	8.7	5.0	11.3
1998/9	8.5	7.8	24.4	15.3	8.8	11.2	10.5	6.8	10.1	12.1
1999/00	9.9	9.8	11.5	10.8	10.4	10.5	10.5	10.6	8.8	10.5

Source: Bangladesh Bureau of Statistics, *Monthly Statistical Bulletin of Bangladesh* , various.

Table 4.4: Bangladesh - central government budget deficit financing, 1980/81 - 1999/2000 (in real 1995/96 billion taka)

		Net foreign financing							Net domestic financing		
	Overall budget deficit	Project aid	Comm-odity aid	Food aid	Commercial food borrowing	Others	Debt amort-ization	Total	Banking system	Other domestic	Total
1980/81	-58.7	22.3	15.7	7.8		-3.4		42.5	N/A	N/A	16.5
1981/82	-61.0	25.7	19.7	9.3		-2.3		52.5	N/A	N/A	21.6
1982/83	-78.1	32.4	21.7	15.4		-1.4		68.1	N/A	N/A	10.0
1983/84	-67.5	28.0	20.3	14.7	-0.9	0.0	-3.4	58.7	9.0	0.2	9.2
1984/85	-56.8	27.3	18.2	9.3	4.9	0.0	-5.4	54.3	-3.6	6.1	2.5
1985/86	-60.7	34.8	20.1	8.6	-3.9	0.0	-5.2	54.4	1.6	8.0	9.6
1986/87	-70.0	46.1	17.3	10.8	-4.6	0.0	-6.8	62.7	5.2	2.0	7.3
1987/88	-61.5	36.1	20.3	11.0	0.1	0.0	-7.8	59.8	-1.0	2.7	1.7
1988/89	-63.4	36.5	20.8	9.8	1.7	-6.2	0.0	62.6	-3.4	4.2	0.9
1989/90	-74.3	45.4	17.3	7.9	-1.0	0.0	-7.4	62.1	8.3	2.4	12.1
1990/91	-71.8	42.2	19.5	11.6	-0.6	0.0	-10.6	62.2	2.0	4.2	9.6
1991/92	-62.3	42.4	7.5	10.2	-0.9	0.0	-7.8	51.4	-3.4	10.7	10.8
1992/93	-64.6	46.0	20.0	5.5	-0.8	0.0	-9.1	61.4	-12.0	15.1	3.1
1993/94	-68.8	43.5	20.4	5.4	-0.4	0.0	-12.3	56.4	-6.0	18.4	12.4
1994/95	-83.1	51.8	14.0	5.7	0.0	0.0	-11.5	59.9	5.4	17.7	23.1
1995/96	-74.6	44.0	9.4	5.6	0.0	0.2	-12.9	46.3	15.6	12.5	28.1
1996/97	-75.8	46.3	10.9	4.2	0.0	2.0	-13.6	49.9	16.6	9.4	26.0
1997/98	-75.0	48.6	8.6	4.6	0.0	-2.3	-14.3	45.1	11.6	17.5	29.1
1998/99	-93.0	34.3	15.1	9.8	0.0	2.6	-14.4	47.2	17.4	28.4	45.8
1999/00	-127.8	58.3	8.1	7.6	0.0	2.2	-25.1	51.3	30.4	46.2	76.7

Source: World Bank, various

Table 5.1: Bangladesh - 1988 floods rehabilitation and reconstruction program

	US$m	Tk bn	% of total
Agriculture	168.0	5.31	14.8
Crops	115.6	3.66	10.2
Other	52.4	1.66	4.6
Flood control irrigation	126.6	4.00	11.1
Infrastructure	518.4	16.40	45.6
Roads & highways	164.8	5.21	14.5
Railways	81.2	2.57	7.1
Inland waterways & ports	20.9	0.66	1.8
Civil aviation	43.0	1.36	3.8
Posts & telecommunications	101.4	3.21	8.9
Power	55.2	1.75	4.9
Urban infrastructure	51.9	1.64	4.6
Industry	225.2	7.12	19.8
Small & cottage industry	146.2	4.62	12.9
Medium & large industry	75.5	2.39	6.6
Health & education	95.7	3.02	8.4
Rural water & sanitation	3.2	0.10	0.3
Total	**1,137.1**	**35.94**	100.0

Source: UNDP/GoB, 1988

Note: There are some inconsistencies in the original data such that reported costs of sub-components do not necessarily sum exactly to estimated totals.

Table 5.2: Bangladesh - impact of the 1987 and 1988 floods on central government revenues (in billion taka and percentages)

	1987/88			1988/89		
	Revised Budget [a]	Actual	Actual as % rev. budget	Budget	Actual	Actual as % budget
	Tk m	Tk m	%	Tk m	Tk m	%
Total revenue	53.1	53.3	100.4	57.4	60.0	104.5
Tax	42.5	42.6	100.4	47.6	48.9	102.8
Non-tax	10.6	10.7	100.8	9.8	11.1	113.1
Total expenditure	-99.1	-95.9	96.8	-112.3	-108.0	96.2
Current expenditure	-49.5	-48.2	97.4	-54.2	-56.7	104.6
Food account surplus	-5.8	-5.6	96.6	-3.8	-3.9	104.5
ADP	-40.3	-38.0	94.3	-53.2	-42.2	79.4
Non ADP capital and net lending	-3.5	-4.1	117.5	-1.2	-5.2	437.0
Residual					0.7	
Overall budget deficit	-46.0	-42.6	92.6	-54.9	-47.3	86.2
Net foreign financing	44.2	41.4	93.7	44.0	46.7	106.0
Project aid	26.0	25.0	96.3	28.8	27.2	94.4
Commodity aid	15.1	14.1	93.1	14.2	15.5	108.8
Food aid	7.9	7.6	96.8	6.8	7.3	107.5
Commercial food borrowing		0.1			1.3	
Others	-4.8 [b]			-5.8 [b]	-4.6	
Debt amortization		-5.4				
Net domestic financing	1.8	1.2	66.5	10.9	0.7	6.0
Banking system		-0.7			-2.5	
Other domestic		1.9			3.1	

Notes: [a] Original budget estimates could not be readily accessed in collating data for the purposes of this study.
[b] Equals commercial food borrowing minus debt amortization

Source: World Bank (1989a and 1995)

Table 5.3: Bangladesh - estimated rehabilitation costs of the 1998 flood damage (US$ million)

Sector	Infrastructure and equipment requiring repair/ reconstruction/replacement	Other forms of support required	Estimated costs for re-habilitation	Funding commitment			Financing gap
				GoB	Foreign Assistance	Total	
A. Verified fully or substantially							
Roads & highways	Major roads, pavements, bridging		186.0	14.0	172.0	186.0	-
Railways	Ballast, sleepers, earthworks, lines, bridges, signalling equipment		35.0	2.0	33.0	35.0	-
Inland water transportation	BIWTA civil structures, dredge units, pontoons, machinery etc		7.2	-	7.2	7.2	-
Urban development	Roads, bridges, drainage, sanitation		76.3	3.1	73.2	76.3	-
Rural electrification	Lines, sub-stations		7.4	-	7.4	7.4	-
Water resources	Embankments, sluices, protective worlds, groins, irrigation, canals		135.6	5.6	130.0	135.6	-
Health & family welfare	Health centres, hospitals, clinics, medical colleges, medical & surgical requisites		13.0	-	10.0	10.0	3.0
Rural infrastructure	Feeder roads, bridges, culverts, growth center markets		171.8	11.0	117.6	128.6	43.2
Education: primary	Buildings, furniture, textbooks		43.8	8.3	35.5	43.8	-
Livestock	Livestock, livestock shades, vaccines & drugs*		10.0	0.5	0.5	1.0	9.0
Food assisted rehabilitation (food for work)	Flood control, drainage & irrigation; rural roads; housing; fisheries ponds; tree planting	Expansion of VGD activities	33.9	-	33.9	33.9	-
Sub-total			720.0	44.5	620.2	664.8	55.2
B. Unverified by external consultant							
Energy	Gas pipelines & other infrastructure		37.1	-	-	-	37.1
Forestry	Plantations		6.2	-	-	-	6.2
Rural water supply	Tubewells, latrines, sanitation		18.0	2.0	0.8	2.8	15.2
Education: secondary	Buildings		45.0	14.5	30.5	45.0	-
Non-formal education/GoB	Education centres, materials	Additional staff salaries because of flood-related extension of courses	1.0	1.0	-	1.0	-
Non-formal education/NGO	Infrastructure, furniture, materials	Social support incl to teachers & parents, health services	2.0	-	-	-	2.0
Agriculture	Seeds and other agricultural inputs, extension services, irrigation		82.2	4.8	5.9	10.7	71.6
Sub-total			191.5	22.3	37.2	59.5	132.1
C. Support to the economy							
Micro-credit		Capitalisation of MFIs	300.0	63.0	38.0	101.0	199.0
Fisheries	Fish seed multiplication farms, ponds, hatcheries, nurseries, aquaculture, nets, boats etc		67.0	-	-	-	67.0
Shelter	Houses, incl some relocations		249.0	-	-	-	249.0
Sub-total			616.0	63.0	38.0	101.0	515.0
TOTAL			1,527.5	129.8	695.4	825.2	702.3

Note: Estimate of rehabilitation cost includes US$1.41m pertaining to loss in production of milk, eggs and straw.

Source: UNDP, 1998

Table 5.4: Bangladesh - reallocation of funds under existing projects in response to the 1998 Flood

Sector	US$ million	taka million	Donor/GoB
Roads & highways	2.2	105.2	ADB
	3.6	172.1	??ADB??
	1.5	71.7	??ADB??
	1.458	69.7	Danida
Inland water transportation	2	95.6	IDA
Rural electrification	11.86	566.9	ADB
Water resources	TBD	TBD	Netherlands
	TBD	TBD	Japan
	TBD	TBD	CIDA
	TBD	TBD	WFP
Rural infrastructure	7.19	343.7	GoB
(food assisted)	12.71	607.5	WFP and bilaterals
	15.7	750.5	USAID
	8.53	407.7	DFID
	1.62	77.4	ADB & GoB
Primary education	17	812.6	IDA
	18	860.4	ADB
	TBD	TBD	KfW
	TBD	TBD	IDA
Secondary education	TBD	TBD	ADB
	TBD	TBD	GoB & various donors
Water resources	TBD	TBD	Various donors
Agriculture	2	95.6	IDA
	0.002	0.1	UNDP/FAO
Fisheries	0.65	31.1	IFAD
Total (minimum, excl TBD)	106.02	5067.8	

Note: TBD - to be determined

Source: DMB, 1998

Table 5.5: Bangladesh - incomplete list of 1998 flood-related projects included under the 1998/99, 1999/2000 and 2000/01 ADPs (million taka)

			Total projected cost		1998/99 (b) Revised allocation		1999/00 Budgeted allocation		1999/00 Revised allocation		2000/01 Budgeted allocation	
Sector Project title	Donor	Project duration	Total	Project aid	Total	Project aid	Total	Project aid	Total	Project aid	Total	Project aid
Agriculture												
Increased post flood ag production through demonstration model		Jul-99 to Jun-02	428	0	-	-	5	0	5	0	5	0
TAPP for emergency supply to flood-affected marginal and landless farmers	FAO		95	95	12	12	10	10	-	-	-	-
Rehabilitation of flood-affected areas of livestock development project for small & marginal farmers	IFAD		350	350	35	35	35	35	-	-	-	-
Special multi-purpose dev project for pov alleviation of dis affected areas		Jul-00 to Jun-03	995	0	-	-	-	-	-	-	10	0
Rural dev & institutions												
1998 flood damage rural infrastructure rehab project	ABD	Jul-98 to Jun-01	12,319	9,855	590	480	632	506	782	661	86	72
Construction of steel bailey bridges (flood rehab)	DFID	Jul-98 to Jun-02	7,998	2,970	272	232	70	0	187	66	150	0
Rehab of 1998 flood damage rural infra.in completed RDP-7 areas with KfW assistance	KfW		1,484	1,373	98	90	49	47	-	-	-	-
Water resources												
1998 flood rehab of water resources sector	ADB		6,911	5,352	400	370	366	270	-	-	-	-
1998 flood rehab of water resources sector	IDA/WFP	Jul-98 to Jun-01	16,600	8,292	292	267	718	550	605	460	468	348
Flood rehab project of 1998 for EIP*	Netherlands	Jul-99 to Jun-01	2,617	1,033	-	-	20	0	20	0	153	103
Flood rehab project for completed projects of BWDB damaged in 1998 *		Jul-99 to Jun-02	10,000		-	-	90	0	50	0	80	0
Flood rehab of Narayangonj-Norsingdhi Project		Jul-98 to Jun-01	564		-	-	20	0	20	0	36	0
Project for flood damage & ancillary rehab of Teesta Barage (1st phase)		Jul-99 to Jun-01	5,596	3,296	-	-	-	-	10	10	460	320
Irrigation & mechanized cultivation expansion project under post flood ag rehab program		Jul-99 to Jun-04	10,248	0	35	0	218	208	5	0	85	0
Action research project on multipurpose use of low-cost DTWs for post flood long-term rehab		Jul-99 to Jun-02	496	0	-	-	7	0	7	0	10	0
Industries												
Rehab of industrial estates of BSCIC affected by 1998 flood		Jul-99 to Jun-00	1,533	0	1	-	34	0	53	0	100	0
Rehab of flood affected components of previously completed industries etc			190		5	0	14	0	-	-	-	-
Rehab credit prog of 1998 flood affected small silk fabrics and silk cloth producers		Jul-98 to Jun-01	625	0	23	0	40	0	30	0	18	0
Power												
Rehab of power distribution system of DESA damaged by 1998 flood		Jul-98 to Jun-00	6,000	0	100	0	500	0	320	0	180	0
Transport												
Flood 1998 rehab project (unapproved in 1999/2000 project)	ABD	Jul-99 to Jun-01	26,188	20,170	1,580	1,320	600	500	1,550	1,200	364	304
Rehab of damaged rail line, bridges & other ancillary infra caused by flood 98	ADB	Jul-99 to Jun-01	10,200	5,304	100	50	460	300	420	300	240	180
Rehab of damage caused by flood 98 for BIWTA		Jul-99 to Dec-01	4,499	3,575	-	-	159	100	431	350	30	14
Communication												
Rehab of postal flooding etc damaged by 1998 flood		Jul-99 to Dec-02	434	0	1	0	7	0	6	0	5	0
Post-flood telecommunication rehab project			4,200	0	1	0	1	0	-	-	-	-
Physical planning, water supply & housing												
Procurement of 42 submersible pumps for rehab of flood affected deep tubewells	SIDA	Jul-99 to Jun-00	400	243	-	-	34	24	24	24	40	24
Rehab of affected roads, elec equip & plants due to flood and excessive rainfall		Jul-99 to Jan-01	17,124	0	75	0	20	0	70	0	150	0
Rehab project for flood affected (LGED)	ADB	Jul-99 to Jun-01	5,580	4,493	440	380	279	250	279	223	70	60
Flood rehab program in 5 districts	ADB		365	292	31	29	25	20	-	-	-	-
Flood rehab program in 13 districts	ADB		282	226	24	23	22	18	-	-	-	-
Education & religious affairs												
Construction of 1998 flood affected govt primary school-cum-flood shelters	USAID	Jul-00 to Jun-01	500	2,588	-	-	-	-	-	-	50	0
TOTAL			154,821	69,507	4,113	3,287	4,429	2,837	4,869	3,294	2,784	1,424

a Budgeted allocation for 1998/99 was obviously nil because the budget was prepared prior to the flood.

b Unapproved in 1999/00 budget, subsequently secured donor support.

Source: GoB ADP, various

Table 5.6: Bangladesh - budgeted, revised and actual expenditure under the ADP by sector, 1998/99 (million taka)

	Total					Project aid				
	Budgeted allocation	Revised allocation	Actual (IMED estimate)	Difference (Budgeted less actual)	Difference as % of budgeted	Budgeted allocation	Revised allocation	Actual (IMED estimate)	Difference (Budgeted less actual)	Difference as % of budgeted
Agriculture	7,380	6,649	6,083	-1,297	-17.6	4,290	3,747	3,278	-1,012	-23.6
Rural development & institutions	11,050	14,125	12,680	1,630	14.8	5,700	6,809	5,401	-299	-5.2
Water resources	8,830	11,492	8,767	-63	-0.7	4,530	6,994	4,504	-26	-0.6
Industries	1,397	1,097	984	-413	-29.6	320	153	122	-199	-62.0
Power	14,383	14,234	14,975	591	4.1	4,360	4,682	5,309	949	21.8
Oil, gas & natural resources	6,370	6,097	5,836	-534	-8.4	3,530	2,785	2,684	-846	-24.0
Transport	19,329	23,010	22,451	3,122	16.2	10,309	10,405	8,567	-1,742	-16.9
Bangabandhu Bridge	4,650	3,250	1,800	N/A	N/A	1,750	1,750	N/A	N/A	N/A
Communication	4,260	4,719	3,441	-819	-19.2	2,120	2,019	2,019	-101	-4.8
Physical planning, water supply & housing	7,959	7,829	6,701	-1,258	-15.8	3,600	3,268	2,287	-1,313	-36.5
Education & religious affairs	17,149	17,762	16,935	-214	-1.2	5,438	5,105	4,345	-1,093	-20.1
Sports & culture	613	525	463	-151	-24.5	2	2	1	-1	-50.0
Health, population & family welfare	13,780	12,563	10,209	-3,571	-25.9	9,200	8,086	6,689	-2,511	-27.3
Mass media	818	486	475	-344	-42.0	348	106	109	-239	-68.6
Social welfare, women's affairs & youth development	1,919	1,688	1,658	-261	-13.6	490	261	253	-237	-48.4
Public administration	1,767	1,492	1,251	-516	-29.2	787	567	419	-369	-46.8
Science & technology research	450	227	216	-234	0.0	-	-	-	-	-
Labor & manpower	110	92	86	-24	0.0	-	-	-	-	-
Total sectoral allocation	122,214	127,335				56,774	56,739			0.0
Total bloc allocation	8,376	7,065				1,246	1,001			0.0
Total	130,590	134,400	125,100	-5,490	-4.2	58,020	57,740	46,650	-11,370	-19.6
Food assisted programme	5,410	5,600	5,300	-110		0	0		0	
Grand total [a]	136,000	140,000	130,400	-5,600	-4.1	58,020	57,740	46,650	-11,370	-19.6

Source: GoB, various.

Notes: [a] IMED figures are reported including self-financing.

Table 5.7: Bangladesh - sectoral reallocation of GoB resources on the ADP following the 1998 floods (million taka)

	Budgeted allocation of GoB resources (excl. external aid resources)		Indicated saving (as of Jan 1999) to be reallocated for flood rehab [a]	Amount allocated (as of Jan 1999) for flood rehabilitation [a]	Amount reserved (as of Jan 1999) for flood rehabilitation	Budgeted less savings plus allocation (incl reserved)	Revised ADP allocation of GoB resources (excl. external aid resources)	Actual (IMED estimate) of GoB resources (excl. external aid resources)
Agriculture	3,090		322	280		3,048	2,903	2,804
Rural development & institutions	5,350		159	446	232	5,869	7,316	7,279
Water resources	4,300		214	173		4,259	4,498	4,263
Industries	1,077		353			723	944	862
Power	10,023	}	789			9,234	9,552	9,666
Oil, gas & natural resources	2,840	}				2,840	3,311	3,152
Transport	9,020		164	952	832	10,640	12,605	13,884
Bangabandhu Bridge	2,900					2,900	1,500	N/A
Communication	2,140					2,140	2,700	1,422
Physical planning, water supply & housing	4,359		161			4,198	4,561	4,414
Education & religious affairs	11,711		478	650		11,883	12,657	12,590
Sports & culture	611					611	522	462
Health, population & family welfare	4,580		400		400	4,580	4,477	3,520
Mass media	470					470	380	365
Social welfare, women's affairs & youth development	1,429		183			1,246	1,427	1,406
Public administration	980			38		1,018	925	833
Science & technology research	450		110			340	227	216
Labour & manpower	110					110	92	86
Other			827		47	-780		
Total sectoral allocation	65,440		4,161	2,539	1,512	65,330	70,596	
Total bloc allocation	7,130					7,130	6,064	
Total	72,570		4,161			68,409	76,660	78,450
Food assisted programme	5,410			37		5,447	5,600	5,300
Grand total [b]	77,980		4,161	2,576		76,395	82,260	83,750

Notes: [a] Funding reported as saved and reallocated largely involved the GoB's own resources, rather than external assistance.
[b] IMED figures are reported including self-financing.

Source: World Bank, January 1999

Table 7.1: Bangladesh - official development assistance, 1980/81 - 1999/2000 (in real (1999/2000) US$ million)

	Food aid		*Commodity aid*		*Project aid*		*Total*	
	Commit-ments	Disburse-ments	Commit-ments	Disburse-ments	Commit-ments	Disburse-ments	Commit-ments	Disburse-ments
1980/81	359.5	343.9	628.9	695.5	1,774.7	992.2	2,763.1	2,031.6
1981/82	407.8	426.1	948.4	776.2	2,198.7	1,089.4	3,554.9	2,291.8
1982/83	470.0	483.4	897.8	855.4	1,513.6	889.3	2,881.4	2,228.2
1983/84	549.7	532.7	1,018.0	846.5	1,718.6	1,065.4	3,286.3	2,444.6
1984/85	739.6	475.6	489.8	839.6	2,606.0	1,149.5	3,835.4	2,464.7
1985/86	564.7	347.5	700.6	674.0	1,581.3	1,216.1	2,846.6	2,237.6
1986/87	154.8	320.2	798.5	571.8	1,324.2	1,374.0	2,277.6	2,265.9
1987/88	462.6	381.9	319.2	647.4	1,162.2	1,055.4	1,944.0	2,084.6
1988/89	193.4	279.5	740.8	662.4	1,373.8	1,113.6	2,308.0	2,055.6
1989/90	186.9	219.4	504.0	534.4	1,854.3	1,363.8	2,545.2	2,117.6
1990/91	200.0	292.2	321.9	444.0	968.9	1,148.8	1,490.8	1,885.0
1991/92	234.2	249.9	596.6	400.0	1,154.3	1,020.0	1,985.1	1,669.9
1992/93	180.5	122.9	341.4	377.9	772.6	1,200.4	1,294.4	1,701.2
1993/94	83.7	118.3	366.8	453.0	1,968.7	993.2	2,419.2	1,564.5
1994/95	123.6	128.6	331.6	311.5	1,053.8	1,187.7	1,509.1	1,627.8
1995/96	120.7	125.4	148.2	208.4	893.7	978.1	1,162.6	1,311.9
1996/97	132.4	96.9	163.8	252.7	1,299.3	1,072.9	1,595.5	1,422.5
1997/98	52.4	94.1	221.1	120.8	1,535.5	1,049.4	1,809.1	1,264.2
1998/99	268.8	176.9	362.5	323.9	2,017.2	1,035.2	2,648.5	1,536.0
1999/2000	93.2	130.0	141.0	190.0	1,805.8	1,325.0	2,040.0	1,645.0

Sources 1989/90-present - IMF, 2000
1983/84-1988/89 - World Bank, 1995
19801/81-1982/83 - World Bank, 1989

Table 7.2: Bangladesh - disaster-related expenditure of selected NGOs in 1998 or 1998/99

	Information availability	Net increase in disaster R & R in 1998 or 1998/99	Disaster R & R as % of total expenditure in 1998 or 1998/99	Total expenditure in 1998 or 1998/99 - % increase over 1997 or 1997/98	Net increase in disaster relief as % of total R & R expenditure
		Tk m.	%	%	%
International NGO or affiliate					
Caritas, Bangladesh	Complete AFS	223.1	35	38	73
Concern, Bangladesh	Complete AFS	124.6	63	86	99
SCF, UK	Only disaster relief	35.9	na	na	88
National NGOs					
BRAC	Complete AFS	173.4	12	19	5
GSK	na	na	na	na	na
Nijer Kori	na	na	na	na	na
Proshika	Complete AFS	195.4	6	10	99
ADAB	Complete AFS	0.7	3	5	37
Regional/local NGOs					
Prodipan	Complete AFS	37.6	63	312	100
Samata	Complete AFS	19.1	52	464	100

Source: Study estimates based on NGO annual reports for 1998 or 1998/99 and additional agency information

Note: AFS - annual financial statement
na - no financial information available

Annex B

List of organisations and persons interviewed during visits by Charlotte Benson and Edward Clay to Dhaka, 2-14 February, and 31 August – 6 September, 2001*

Government of Bangladesh

Ministry of Finance: Mr.Siddiqur Rahman Choudhury, Joint Secretary, Development
Planning Commission: Prof. M.A. Sattar Mandal, Member, General Economics
Bangladesh Bank: Dr. Mohammed Farashuddin, Governor; Mr. Habbibullah Bahar, Economic Adviser; Mr. Vindupad Malaka, Director; Mr. Shazzard Hossain, Deputy Director; Ms. Mahbula Khahun, Deputy Director, Agricultural Credit Department
Ministry of Agriculture: Mr. Shakwat Ali, Secretary; Ms Ishrat Jahan, Research Officer
Ministry of Disaster Management and Relief: Mr. Khitish Chandra Kundu, Director General, Disaster Management Bureau
NGO Affairs Bureau: Mr. Ahamad Mahaudur Raza Chowdhury, Director General; Mr. Mostafa Quaium Khan, Coordinator, Government-NGO Consultative Council Cell
Bangladesh Meteorological Department: Mr. Anwarul Kabir, Director

International and bilateral agencies

World Bank: Mr. Imtiazuddin Ahmad, Senior Ops Officer,RD; Ms. Sarwat Chowdhury Ops. Analyst, RD; Dr. Robert Epworth, Senior Agriculturist; Dr. Rashid Faruqee, Lead Economist, RD; Mr. Rezaul Islam, Credit; Dr. Kapil Kapoor, Lead economist; Mr. S.A.M. Rafiquzzaman, Irrigation Engineer
IMF: Mr. Ronald Hicks, Resident Representative
UNDP: Dr. Ali Ashraf, Program Officer, Disaster Management; Ms. Shaila Khan, Project Support Unit
WFP: Mr. Pieter Dijkhuisen, Country Director; Mr. Joan Fleuren, Deputy Country Director
DFID: Alistair Fernie, First Secretary (AID); Ms. Dilruba Haider

Banking, micro-credit and insurance

Grameen Bank: Prof Md. Yunus, Managing Director; Mr. Khalid Shams, Deputy Managing Director
Agrani Bank: Mr. Abdul Hannan, Chairman
Krishi Bank: Mr. Mushid Kuli Khan, Managing Director (by telephone)
Delta Insurance Co: Mr. M R Sadi (tel. conv), Mr. Farid A Choudhuri (by telephone)

NGOs

ADAB: Mr. Syed Mosaddeque Hossain, Disaster Preparedness and Management Program
BRAC: Mr. F.H. Abed, Chairman; Dr. Mustaque Chowdhury, Director of Research; Mr. S.N. Kairy, Chief Accountant
CARE: Mr. Latif Khan, Coordinator, Disaster Management Project (by telephone)
Caritas: Dr. Benedict d'Rozario, Director, Disaster Management
Credit and Development Forum: Mr. Khandker Zakir Hussain, Executive Director
PRIP Trust: Mr. Saidul Huq
In addition, Mr. Clement Peris of Socio Consult also contacted Proshika, Nijera Kori, Gonoshastha Kendro, Prodipan, Concern, and SCF (UK) to obtain financial information about their activities during 1997- 2000.

Research organizations, technical cooperation personnel and other individuals

Bangladesh Institute of Development Studies (BIDS): Mr. Abu Abdullah, Director General; Dr. Omar Haider Chowdhury, Research Director; Dr. Quazi Shahabuddin, Research Director; Dr. Nabiul Islam, Research Fellow
Bangladesh Unnayan Parishad: Dr. Q. K. Ahmad, Chairman; Dr. Ahsan Uddin Ahmed, Head, Environment Division

Centre for Policy Dialogue: Dr. Debapriya Bhattacharya, Executive Director; Prof. Mustifizur Rahman, Research Director; Dr. Shahnaz Karim, Research Fellow
EGIS: Mr. R. Kudstaal, Team Leader and Mr. M. Huq (Environment and GIS Support Project under Ministry of Water Resources)
RIBEC: Ms. Sandra Nicoll, Financial Management Reform Manager; Ms. Sharon Hanson-Cooper, Senior International Manager; Mr. Ian Foster, International Consultant
Mr. Kazi Fazlur Rahman, formerly Secretary, External Resources Division and Secretary of Education etc.
Prof. K. M. Rahman, Economics Department, Jahangirnagar University and formerly Panel of Experts, FPCO
Dr. Chris Finney, Consultant on National Water Management Plan (tel conv)
Mr. Nick Russell , UNDP consultant to DMB on CDMP
Dr. Paul Thomson, ICLARM, formerly with FAP 12 and 13 and Middlesex University Flood Hazard Research Centre
Dr. Paul Dorosh, IFPRI.

Socio Consult: Mr. Alamgir Chowdhury, Mr. John Marandy and Mr. Clement Peris [CP] provided support to the team.

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* A number of other appointments had to be cancelled because of hartal during February 2001 including further meetings with officials of Government of Bangladesh, External Resources Department (Foreign. Aid Budgets and Accounts); Ministry of Water Resources; Krishi Bank; PKSF; UNDP; World Bank; Disasters Forum; and BDPC. In addition, intended meetings could not be arranged with Ministry of Disaster Management and Relief; Surface Water Modeling Centre; Chairperson, Local Consultative Group on Water Resources; EU Food Security Unit; Association of Insurers. This is also inevitably an incomplete list of those met by appointment or participating in discussion meetings during the two visits to Bangladesh.

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