

**APPENDIXES**

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## CURRENT COUNTRY CLASSIFICATION AND ACCESS TO ADF RESOURCES

DMC	Per Capita GNP 1997 \$ <sup>a</sup>	Bank Classification	Least Developed Country (United Nations)	ADF Access
Afghanistan	NA	A	X	X <sup>b</sup>
Myanmar	NA	A	X	X
Nepal	210	A	X	X
Bangladesh	270	A	X	X
Cambodia	300	A	X	X
Viet Nam	320	A		X
Tajikistan	330	A		X
Mongolia	390	A		X
India	390	A		X <sup>c</sup>
Bhutan	400	A	X	X
Lao People's Democratic Republic	400	A	X	X
Kyrgyz Republic	440	A		X
Pakistan	490	A		X <sup>d</sup>
	729	Upper limit of Group A <sup>e</sup>		
Sri Lanka	800	A		X
China, People's Republic of	860	A		X <sup>c</sup>
Solomon Islands	900	A	X	X <sup>si</sup>
	909	Lower limit of Group B <sup>e</sup>		
Kiribati	910	A	X	X <sup>si</sup>
Papua New Guinea	940	B		X <sup>d</sup>
Uzbekistan	1,010	B		X <sup>d</sup>
	1,017	ADF operational cutoff <sup>f</sup>		
Indonesia	1,110	B		X <sup>d</sup>
Maldives	1,150	A	X	X <sup>si</sup>
Samoa	1,150	A	X	X <sup>si</sup>
Philippines	1,220	B		X <sup>d</sup>
Vanuatu	1,310	A	X	X <sup>si</sup>
Kazakhstan	1,340	B		X <sup>d</sup>
Tuvalu	1,430 <sup>g</sup>	A	X	X <sup>si</sup>
	1,697	Upper limit of Group B <sup>e</sup>		
Marshall Islands	1,770	A		X <sup>si</sup>
Tonga	1,830	A		X <sup>si</sup>
Micronesia, Federal States of	1,980	A		X <sup>si</sup>
	2,116	Lower limit of Group C <sup>e</sup>		
Fiji	2,470	C		
Thailand	2,800	B		
Nauru	4,470 <sup>h</sup>	B		X <sup>si</sup>
Cook Islands	4,630 <sup>i</sup>	A		X <sup>si</sup>
Malaysia	4,680	C		
Korea, Rep. Of	10,550	C		
Taipei, China	13,200 <sup>j</sup>	C		
Hong Kong, China	26,360 <sup>j</sup>	C		
Singapore	26,470 <sup>j</sup>	C		

<sup>a</sup> Taken from World Bank Operational Manual unless otherwise indicated.

<sup>b</sup> Inactive borrower, nonaccrual status.

<sup>c</sup> Eligible but no access.

<sup>d</sup> Access to both ADF and OCR.

<sup>e</sup> Bank country classification limits based on R83-92 dated 28 May 1992 are as follows:

	1990 \$	Updated to 1997 \$
Group A	less than \$610	less than \$729
Group B	\$760–\$1,420	\$909–\$1,697
Group C	over \$1,770	over \$2,116

<sup>f</sup> Operational cutoff for ADF eligibility is \$1,017 in 1997 prices.

<sup>g</sup> 1996 per capita GDP computed from national data.

<sup>h</sup> Estimated per capita GDP in FY 1995/1996 from the Bank's Country Assistance Plan.

<sup>i</sup> Per capita GNP computed from national data.

<sup>j</sup> Per capita GNP computed from national data.

x<sup>si</sup> ADF access under small island exception.

NA Not available.

## TECHNICAL SUPPLEMENT ON ASSESSMENT OF DEBT REPAYMENT CAPACITY

1. Weak debt repayment capacity for nonconcessional external borrowing has traditionally been recognized as a determinant of eligibility to the Asian Development Fund (ADF), but there has so far been no Bankwide systematic approach to its assessment. The procedures proposed to systematize assessment of debt repayment capacity use econometric techniques to construct indexes based on quantitative and qualitative variables. The principal objective is to group countries according to three levels of debt repayment capacity: (i) adequate, (ii) limited, and (iii) weak. ADF eligibility matrix (main text, Table 2, para. 61).

### A. Assessment Based on Quantitative Variables

2. The quantitative assessment focuses on the construction of a composite index of debt repayment capacity based on indicators that have a significant bearing on a country's capacity to service nonconcessional loans. The three key steps in this process are: (i) selection of indicators, (ii) methodology for aggregating the selected indicators into a composite index, and (iii) grouping of countries based on the composite index. The procedures used in each of these steps are discussed below.

#### 1. Selection of Quantitative Indicators

3. Criteria for selection of each indicator include:

- (i) the economic logic of the indicator's relationship with the concept of debt repayment capacity, with particular attention paid to avoiding possible ambiguities in interpretation;
- (ii) availability of data on the indicator for most of the developing member countries (DMCs);
- (iii) comparability of data on the indicator across countries (preferably data on a given indicator should be available from a single reliable source);
- (iv) ensuring simplicity of the overall model by restricting the number of indicators to a relatively few variables that measure different dimensions of debt repayment capacity;
- (v) focus on medium-term trends rather than capturing only transitory features; and
- (vi) the overall indices must produce plausible results, i.e., rank countries that obviously lack creditworthiness lower than countries that obviously have creditworthiness.

4. By applying these criteria, a large number of "candidate" indicators were eliminated from the indicator set. After careful consideration, the following four indicators were chosen:

(Reference in text: page 16, para. 53 )

## **COST SHARING IN TECHNICAL ASSISTANCE**

1. Some Board members have expressed concern about the lack of "ownership" and commitment on the part of recipients of Bank technical assistance (TA). This perceived lack of ownership has been attributed to the low levels of financial contribution that recipients are currently required to make. A higher level of financial contribution by recipients, it is argued, would ensure that they undertake a critical assessment that a proposed TA is one of their priorities. It is also argued that a higher level of financial contribution would ensure increased ownership by TA recipients and the eventual implementation of its recommendations. A requirement for TA cost sharing is therefore proposed in the paper on *A Graduation Policy for the Bank's DMCs*. This Appendix identifies the issues involved, the various options available, and their practical implications.

### **A. Rationale and Definition of Cost Sharing**

2. Cost sharing is a standard operational principle of most multilateral and bilateral organizations. It is based on the notion that the donor and the recipient of development assistance are in partnership to achieve development goals. For the partnership to be successful, both parties need to have commitment to and ownership of the development activities to be implemented. Cost sharing is seen as a means of (i) ensuring commitment by the recipient, (ii) enhancing the sustainability of a development undertaking, and (iii) effective management of scarce resources by the donor.

3. While the principle of cost sharing is well recognized, there are differences in its definition/interpretation. One definition of cost sharing turns on the distinction between foreign exchange and local currency costs. According to this definition, the recipient is normally expected to meet the local currency costs of a project or TA, while the donor meets the foreign exchange costs. The World Bank, the Inter-American Development Bank (IaDB), and the Swedish International Development Cooperation Agency (SIDA), and other funding sources, subscribe to this interpretation of cost sharing. The other definition focuses on the share of the recipient in total costs. The United States Agency for International Development (USAID) falls under this category: it requires that the recipient contribute 25 percent of the cost of a project or TA.<sup>1</sup>

4. Bank policy on cost sharing in TAs and projects is closer to the first definition than to the second. For projects, limits have been set on the share of total costs that may be financed by the Bank. However, the entire foreign exchange costs of a project can be met by the Bank even if the cost-sharing limits are exceeded. The ceiling on LCF of TA operations is 25 percent of the total amount of the TA financed by the Bank, excluding the costs of domestic consultants.

5. The basis for defining cost sharing has a significant bearing on how to assess the adequacy of a government's contribution. When cost sharing is understood as the government's responsibility to bear the local costs of a TA (or for that matter a project), then the adequacy of government contribution is to be judged in terms of contribution to *local* costs, not to total costs. In TAs with large foreign exchange components relative to the local cost components, the developing member country (DMC) may bear the entire local currency cost and yet account for only a small proportion of total costs. This would be consistent with cost

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<sup>1</sup> At the operational level, the contribution by the recipient may be considerably less because USAID permits the use of counterpart funds generated by past United States Government aid (such as those from Public Law 480, Titles, etc.) towards recipients' share of costs. USAID also accepts contributions in kind. Data on recipients' share of foreign currency costs, if any, and cash contributions in local currency are not available.

sharing based on the foreign exchange and local currency distinction, but not with the definition based on contribution to total costs. Where local costs are a significant proportion of total costs, there is obviously less room for conflict between the two definitions of cost sharing.

## **B. Trends in Cost Sharing**

6. The foregoing discussion on the principle and definitions of cost sharing provides the context for assessing the adequacy of actual levels of cost sharing in Bank TAs. Data were collected for a four-year period from 1994 to 1997 (see Table 1) with a more detailed, item-wise breakdown for 1997 (see Table 2). Stand-alone Project Preparatory (PP), Project Implementation (PI), and Advisory (AD) TAs<sup>2</sup> were included in the data set. Group A DMCs accounted for 542 of the 734 TAs in 1994-1997; Group B accounted for 172, while Group C accounted for 20. Government contribution averaged 12 percent (11 percent in Group A, 14 percent in Group B, and 22 percent in Group C). The proportion of foreign exchange cost and that of cost of domestic consultants in total costs was 71 percent and 9 percent, respectively. No significant difference was observed between ADTAs and PPTAs in regard to the share of government contribution to total costs. In drawing conclusions about the adequacy of government contributions, several issues need to be flagged.

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<sup>2</sup> The specific TA instruments of the Bank comprise PPTA, PITA, ADTA, and regional TA. PPTA assists feasibility studies and detailed engineering of bankable projects. PITA supplies consulting services for project implementation and initial operation, including training of project personnel. ADTA supports institutional strengthening, sector and policy studies, and nonproject-related human resource development. Regional TA provides assistance to address issues of regional or subregional interest, or to assist a group of individual DMCs on specific issues.

**Table 1: Trends in TA<sup>a</sup> Cost Sharing, 1994-1997**  
(in percent unless otherwise indicated)

Item	Group A	Group B	Group C	Overall
Number of TAs	542	172	20	734
Cost of TAs	71.9	22.4	5.7	100.0
Share of Foreign Currency Costs to Total Costs	73	66.5	70.3	71.2
<b>Government</b>				
Contribution to Total Costs	10.9	13.6	22.4	12.4
Contribution to Local Costs of which	40.1	40.4	76.1	42.6
Domestic Consultants	0.4	0.7	4.6	0.8
Contribution to Foreign Exchange Costs	0.1	0.2	0.0	0.1
<b>Bank</b>				
Contribution to Total Costs	82.9	84.1	77.6	82.6
Contribution to Local Costs of which	52.6	57.3	23.9	51.7
Domestic Consultants	26.2	32.9	11.5	26.7
Contribution to Foreign Exchange Costs	94.2	97.5	100.0	95.1
<b>Other</b>				
Contribution to Total Costs	6.2	2.3	0.0	5.0
Contribution to Local Costs of which	7.3	2.3	0.0	5.7
Domestic Consultants	3.8	1.5	0.0	2.9
Contribution to Foreign Exchange Costs	5.8	2.2	0.0	4.8

<sup>a</sup> Excludes small-scale, supplementary, and other TAs for which cost details are not available.

**Table 2: Composition of Costs, 1997<sup>a</sup>**

Item	Percent of Total
<b>Local Currency Costs</b>	<b>32.5</b>
In-kind (counterpart staff, office space, other local support services)	11.0
Costs of Domestic Consultants	9.9
Equipment	1.7
Training, Workshops, Seminars	2.3
Studies and Surveys	1.7
Other	6.0
<b>Foreign Exchange Costs</b>	<b>67.5</b>
Costs of International Consultants	49.2
Equipment	5.2
Training, Fellowships	2.7
Studies and Surveys	0.2
Contingency and Miscellaneous	10.2

<sup>a</sup> Excludes small-scale, supplementary, and other TAs for which cost details are not available.

7. The first issue for consideration is the significance of the distribution of TAs across country groupings. Group A DMCs accounted for 74 percent of the TAs in 1994-1997. Group A DMCs typically have limited capacity to meet the foreign exchange costs of TAs and projects. In their case, the distinction between the capacity to pay and the willingness to pay assumes added significance. The low levels of government contribution to total costs by Group A DMCs are not necessarily indicative of a lack of ownership but of the limited capacity of these poorer DMCs to contribute to TA costs that have a substantial foreign exchange component.

8. The second issue that needs to be considered is how the costs are to be calculated and how the boundaries are to be drawn around a TA. The costs included in TA financing tables are those attributable to a narrow definition of the TA. Typically, however, the Bank's TA is only a small input into a larger government process of policy evolution, investment outlays, and institution building that could be spread over several years. The associated costs of this process are usually inseparable from the government budget and arguably are not incremental to the TA. In any case, it is impractical to use such a broad-based notion of costs in calculating the financing of TAs. Because it is not easy to draw boundaries around a TA, it is possible to underestimate government contributions to TA costs in the broad sense.

9. The third issue is the form in which government contributions are made. The Bank and other development institutions including the World Bank, laDB, United Nations Development Programme (UNDP), and USAID allow a government to make contributions in kind or in cash. Although the breakup of local cost contribution in kind and in cash is not usually presented in TA reports, government contributions are typically in kind. In this connection, there is the issue of whether cost sharing should include part of the cash component of local expenditures. While there is some merit to adopting such an approach, administrative costs would render it impractical.

10. The fourth issue is the distinction between cost sharing and cost recovery in TAs (see Figure 1). Cost sharing relates to the up-front sharing of local and total costs, while cost recovery (pricing) relates to the terms of the Bank-financed portion of the TA, i.e., grant, grant-cum-loan, or loan. The Bank has so far applied its ceiling on local cost financing (LCF) to stand-alone ADTAs, PPTAs, and PITAs alike. In regard to pricing of TAs funded out of the Technical Assistance Special Fund (TASF), however, a distinction is made between ADTAs and PPTAs. ADTAs are generally grant financed. PPTAs are initially grant financed, but if a loan ensues, the TASF-financed portion of the PPTA above a certain level is recovered through the loan. On this basis, it has been argued that there is a higher level of cost-sharing in PPTAs than in ADTAs. This line of argument is open to question for two reasons. First, as already noted, cost sharing refers to the up-front contribution of DMCs to local costs, whereas cost recovery relates to the mode of funding the Bank-financed portion of TA costs. The principle of cost sharing wherein the recipient is expected to meet the local costs of TAs should apply to PPTAs and ADTAs alike. Second, the fact that the Bank-financed portions of PPTAs are recoverable through the ensuing loan does not mean that they are in fact so recovered. PPTAs financed out of the Japan Special Fund (JSF) are not subject to cost recovery. For these reasons, cost sharing is not necessarily higher in PPTAs than in ADTAs.

11. A related issue is the perception that lack of ownership is much more serious for ADTAs than for PPTAs. That ADTAs have a more mixed record of implementing recommendations than PPTAs should not come as a surprise. ADTAs involve policy reform and organizational change that can be highly sensitive. Whether reforms ensue or not, ADTAs do expose DMCs to new policy approaches that can have a high development impact. PPTAs, on the other hand, typically involve technical questions that DMCs may not find as difficult to implement. PPTAs are also linked to potential projects for Bank financing. From the perspective of Bank staff, PPTAs are critical because they lay the proper foundation for potential projects. Thus, the two types of TA are inherently different and therefore comparisons between ADTAs and PPTAs in regard to ownership may be inappropriate.

12. The fifth issue for consideration is the comparison among multilateral development banks (MDBs) in regard to government contribution to total costs. It has been argued that, although the World Bank and laDB do not require minimum levels of government contribution to total costs, they are able to realize substantially higher levels than the Bank. Available data for laDB indicate that the size of its TA loans is substantially larger than the typical size of the Bank's TAs. Large TAs are more likely to have a significant local cost component than smaller ones. Accordingly, there is more scope for recipient contribution by way of sharing local costs. Differences in the size of typical TAs suggest that caution needs to be exercised in drawing comparisons in regard to the adequacy of government contribution to the TAs of the Bank vis-à-vis those of other MDBs.

### **C. Rationalization of Cost Sharing in TAs**

13. Against the background given above, it needs to be considered whether minimum levels should be prescribed for government contribution to *total* costs. This would mark a significant departure from the existing policy, wherein the composition of TA costs is taken into account in determining the type and extent of government contribution. A shift towards cost sharing based on total costs raises the crucial question of whether, in the pursuit of minimum levels of government contribution, DMCs could be required to contribute to foreign exchange costs. A related issue is the question of financing the local costs of domestic consultants. The average shares of foreign exchange costs to total costs in 1997 were 73 percent in Group A, 67 percent in Group B, and 70 percent in Group C (Table 1). The shares of domestic consultant's costs to total costs were 8 percent, 12 percent, and 7 percent, respectively. These cost figures are useful in assessing alternative cost-sharing options. It is assumed that the pattern of TA operations over the past three years will be continued in the future. As such, the effect of the four options considered below could be assessed by applying them to past data.

## **1. Minimum Level of Government Contribution with No Provisos**

14. If the minimum share of government contribution is fixed at 20 percent, 25 percent, and 30 percent of total costs, respectively, for Groups A, B, and C, and these levels had been applied over 1994-1997, then (i) Group A's share (total 20 percent) would have come 19 percent from local costs other than the costs of domestic consultants, and the remaining 1 percent would have come from either foreign exchange costs or the costs of domestic consultants; (ii) Group B's share (total 25 percent) would have come 22 percent from local costs other than the costs of domestic consultants, and the remaining 3 percent would have come from either foreign exchange costs or the local costs of domestic consultants; and (iii) Group C's share (total 30 percent) would have come 23 percent from local costs other than the costs of domestic consultants, and the remaining 7 percent would have come from either foreign exchange costs or the local costs of domestic consultants. In each of these cases, strict adherence to prescribed levels of government contribution would have meant that the DMCs would end up bearing part of the foreign exchange costs and/or the local costs of domestic consultants.

15. The foreign exchange costs of TAs are largely accounted for by the costs of international consultants. Requiring DMCs to contribute to such costs would not only go against well-established Bank principles, but would make it likely that TA implementation would be rendered more difficult because of bargaining over issues such as the costs of international consultants, etc.

16. In regard to financing the local costs of domestic consultants, the Bank has found it administratively convenient to bear such costs: governments have to go through a time-consuming process of budget approval for hiring consultants. Synchronizing the implementation of the TA with the government budget process is likely to become a bottleneck. Equally important, Bank financing helps develop the domestic consulting industry.

## **2. Minimum Level of Government Contribution with Provisos for Foreign Currency and Domestic Consultants Costs**

17. It is of course possible to specify minimum levels of government contribution to total costs as in para. 14, but to add the proviso that such levels would not preclude full Bank financing of the foreign exchange costs and the local costs of domestic consultants. Then, depending on the cost composition of TAs, the actual levels of government contribution would be different from the prescribed levels. For example, if (i) the minimum shares for Groups A, B, and C were set at 15 percent, 20 percent, and 30 percent, respectively, and (ii) foreign exchange and domestic consultants' costs were excluded from the cost-sharing formula, and the cost-sharing formula were applied to 1994-1997 data, then the "actual" group-wise contributions of governments to total costs would have been 15 percent, 20 percent, and 23 percent for Groups A, B, and C, respectively. Most TAs have foreign exchange and domestic consultant components that together exceed four fifths of the total costs. Moreover, available data show that Group C DMCs are highly selective in their requests for Bank TA: these are typically TAs that have a high percentage of foreign exchange costs that would require exceeding the ceiling for Bank financing of total costs.

## **3. Maintaining the Status Quo**

18. The existing policy on LCF in TAs is also not entirely satisfactory, because the LCF ceiling is set in terms of the amount financed by the Bank and not in terms of the local costs. If the objective is to get a DMC to finance as much of the local costs as possible, then specification of the ceiling in terms of the amount of Bank financing is at best an indirect way of

achieving the objective. Moreover, when the proportion of foreign exchange costs relative to local costs (other than costs of domestic consultants) exceeds a critical level, the Bank could finance the entire local costs and still not violate the 25 percent LCF limit. This is inconsistent with the principle of cost sharing defined earlier.

### **3. Minimum Levels of Government Contribution to Local Costs Other than Domestic Consultants**

19. A ceiling on LCF (other than the local costs of domestic consultants) by the Bank as a proportion of the local cost component of the TA would be more in line with the spirit of the cost-sharing principle. Some DMCs, particularly the less developed DMCs in Group A, could be hard-pressed to mobilize the necessary resources. The minimum level of government contribution to local costs (other than the costs of domestic consultants) could be set at 50 percent, 75 percent, and 100 percent for Groups A, B, and C, respectively. The proposed minimum levels will not apply to regional TAs or small-scale TAs. If this principle were applied to the 1994-1997 data set, then the group-wise contribution of DMCs to total costs would have been 10 percent, 17 percent, and 23 percent, respectively. These shares of government contribution to total costs could be considered inadequate, particularly in relation to the contributions in para. 17.

20. Each one of the options considered above has operational implications that need to be carefully considered. The most viable option appears to be specifying minimum levels of government contribution, but allowing for the possibility that the Bank can finance all of the foreign exchange costs and the local costs of domestic consultants.

21. Situations could arise when cofinancing is made available from other sources. In such cases, the Bank's contribution to TA costs should be adjusted downwards, and it must be ensured that the government contributes at least the minimum levels prescribed.

22. Summing up, it is recommended that government contribution to TAs should be at least 15 percent of the total TA costs for Group A, 20 percent for Group B1 and B2, and 30 percent for Group C. However, such contribution will be subject to the limit of total TA costs *minus* foreign exchange costs and costs of domestic consultants.

- (i) debt sustainability ratio;
- (ii) private capital inflow as a share of total capital inflow;
- (iii) gross domestic saving as a share of gross domestic product; and
- (iv) size of economy measured by GNP.

**a. Debt Sustainability Ratio**

5. Assessment of debt sustainability is based on work done by van Wijnbergen.<sup>1</sup> This approach looks at the time path of the debt output ratio based on its principal determinants, namely, the noninterest current account, the differential between the interest rate and the rate of growth of output, and the outstanding stock of debt. Debt sustainability requires that on average, the sum of the noninterest current account plus the debt outstanding times the difference between the real interest cost on foreign debt and the real output growth rate should be positive. In the present analysis, a modified version of the "van Wijnbergen equation" is used, i.e.,

$$SI = [\text{CAB} + \text{INT} + \text{FDI}] / \text{GDP} + (g - (r - \text{usp})) * \text{LDOD} / \text{GDP}$$

where

**SI** is the debt sustainability index,  
**CAB** is the current account balance,<sup>2</sup>  
**INT** is the interest paid on external foreign debt,  
**FDI** is the net foreign direct investment,  
**GDP** is the gross domestic product,  
**g** is the growth in real output,  
**r** is the average interest rate on foreign debt,  
**usp** is the US price index, and  
**LDOD** is long-term external debt.

The debt sustainability index links the key elements bearing on a country's external debt sustainability: non-interest current account balance, the inflow of FDI, the stock of external debt, and the differential between the growth rate and the real interest rate.

6. For DMCs where the share of concessional debt is large in relation to total debt, the average interest rate on foreign debt is well below market/Ordinary Capital Resources (OCR) rates. For determining debt repayment capacity for OCR loans, actual interest rates may thus provide only a partial answer. "What if" analyses are required to obtain a clearer picture of debt repayment capacity for OCR loans. For example, what if a DMC had to service all its debt on nonconcessional OCR terms? This question is addressed by setting  $r$  at the OCR rate for each DMC and examining the effect on the debt sustainability index. For DMCs that are already servicing loans on conventional terms, this substitution should not have much impact on the debt sustainability ratio. For countries where most of the outstanding debt is on concessional terms, the impact on the debt sustainability ratio could turn out to be quite significant. Debt sustainability would hinge on whether or not the growth of output  $g$  is large enough to offset the effect of the higher (OCR) interest rate. If SI is sufficiently large, then this could be one

<sup>1</sup> van Wijnbergen, Sweder. 1990. *External Debt, Inflation, and the Public Sector: Towards Fiscal Policy For Sustainable Growth*. World Bank Economic Review. Vol. 3 No. 3.

<sup>2</sup> For CAB, the line item taken from balance-of-payments accounts is balance after income but before transfers.

indication (to be corroborated by other indicators) that the country has the capacity to service debt on conventional terms, including OCR terms.

7. The debt data used in the debt sustainability index are based on the figures in the *Global Development Finance 1998* published by the World Bank, which is considered to be the best source of reliable debt data for cross-country comparisons. The balance-of-payments data are taken from International Monetary Fund (IMF) sources. The time series covered is 1989–1996. To address the problem of unusually large ratios for one or two years skewing the results, three-year moving averages are used.

#### **b. Gross Domestic Saving Rate**

8. The gross domestic saving rate is an important indicator of debt repayment capacity because it determines the investment rate and therefore future growth of an economy. The sources for the data include *Key Indicators 1998*, Country Economic Reviews, and Country Assistance Plans (CAPs). The times series covered is 1990-1997. A growing saving rate is a necessary but not sufficient condition for enhanced debt repayment capacity because growth is predicated on the channeling of saving into productive investment.

#### **c. Private Capital Inflow**

9. The ratio of private capital inflows to total capital inflows is a measure of a country's debt repayment capacity in three ways: (i) as a form of external saving, private capital flows augment domestic saving, enable higher investment, and thereby spur growth; (ii) private capital inflows reflect a country's commercial creditworthiness in terms of the capacity to attract private capital; and (iii) the share of private capital inflows is an indicator of the degree of dependence of a DMC on official sources of external financing. The key issues in using private capital inflows as an indicator of debt repayment capacity are sustainability, reversibility, and volatility of the elements that make up these flows. FDI is not readily reversible or volatile. Moreover, there are no contractual repayments associated with such flows. However, sharp drops in new flows of FDI cannot be ruled out. Foreign portfolio investment can, depending on the instrument and how it is used, be more volatile than FDI. The net impact depends on whether the seller uses the proceeds to undertake new investment. With these qualifications, it is proposed to include the share of private capital inflows in total capital inflows as an indicator of debt repayment capacity. Included in the measure are (i) non-debt flows, i.e., FDI and portfolio equity; and (ii) long-term debt flows, i.e., borrowing from private creditors including publicly guaranteed private debt and non-guaranteed private debt. The main source of the data is the *Global Development Finance 1998*. The time series covered is 1990–1996.

#### **d. Size of Economy**

10. Country size is an important determinant of a country's debt repayment capacity: the larger the country, the wider its economic base and consequently the stronger its debt repayment capacity. This is the underlying rationale of the Bank's Charter mandate that special consideration be given to small countries in allocating resources. Country size can be defined in terms of, inter alia, land area, population, and size of economy measured by the GNP. The last factor, i.e., size of economy, has the strongest linkage with debt repayment capacity and has therefore been selected. It was found that the alternatives of GNP estimates using (i) the Atlas method based on official exchange rates, and (ii) PPP-based estimates generally produced similar results in terms of the composite debt repayment capacity index. The data source is the *World Bank Atlas 1998*.

## 2. Country Coverage

11. Of the Bank's 34 borrowers, 26 (including Tajikistan that has recently become a member of the Bank) have been covered in the quantitative assessment. The remaining eight DMCs (Afghanistan, Cook Islands, Kiribati, Marshall Islands, Micronesia, Myanmar, Nauru, and Tuvalu) could not be covered because of gaps in data for one or more of the indicators.

## 3. Construction of a Composite Index

12. The four indicator values can be aggregated into a composite index through (i) normalization of the different indicator values to a common scale and the subjective assignment of weights to construct a composite index or (ii) econometric procedures. The UNDP's Human Development Index is an example of the first type of composite index while the Commonwealth Secretariat's composite vulnerability index (CVI)<sup>3</sup> is an example of the second type. While the subjective assignment of weights can be justified by using economic reasoning, the results would depend on the weighting scheme(s) used. This appendix takes the second route but uses a different procedure for aggregation from the one used in the CVI.<sup>4</sup>

13. A clearly defined, unique, dependent variable that represents the debt repayment capacity construct may not exist. It is therefore necessary to use an econometric procedure for obtaining indices that does not require the *a priori* specification of a dependent variable. Principal components analysis (PCA) meets this requirement. PCA is essentially a data reduction method that produces linear combinations of the variables (principal components) that measure different dimensions of the data. The extraction of principal components amounts to a variance maximizing rotation of the original variable space to facilitate discrimination between similar, though not necessarily identical, profiles.<sup>5</sup> Because each consecutive principal component is defined to maximize the variability that is not captured in the preceding principal component, the consecutive principal components are orthogonal to each other. Since each consecutive component explains less and less variability, it makes sense to stop extracting components when there is very little variability left to explain.

14. The first principal component accounts for 75 percent of the total variance. The remaining 25 percent is associated with components whose eigenvalues are all less than 1. Interpreting such components is usually not recommended.<sup>6</sup> If the objective is to substitute just one combined measurement for the selected variables, the best choice is the first principal

<sup>3</sup> A Composite Index of Vulnerability. Draft Report Prepared for the Commonwealth Secretariat. London. March 1998.

<sup>4</sup> The construction of the CVI depends on the choice of the dependent variable. Output growth volatility has been chosen as the dependent variable, and based thereon, a set of regression coefficients have been obtained. A different choice of the dependent variable (e.g., export growth volatility) with the same predictor variables would have yielded a different set of regression coefficients and indexes. While the regression procedure may be model-driven and may avoid the subjectivity inherent in the subjective assignment of weights, the choice of the dependent variable determines the weights assigned. Also, the output volatility indicator does not discriminate between (a) frequent changes in the direction of indicator values, and (b) rapid acceleration or deceleration of indicator values in the same direction. In effect, the indicator cannot discriminate between a stable but low level equilibrium and accelerating strength of performance. This could perhaps be the reason why Nepal exhibits a lower degree of vulnerability on the index than People's Republic of China, India, Indonesia, Malaysia, and Thailand. In fact, viewed from the perspective of the need for development assistance, some of the results of the CVI would appear to be counter-intuitive.

<sup>5</sup> See Marascuilo, Leonard A. and Joel R. Levin. 1983. *Multivariate Statistics in the Social Sciences—A Researcher's Guide*. Brooks/Cole Publishing Company.

<sup>6</sup> Originally proposed by H.F. Kaiser and known as Kaiser's rule.

component which is maximally correlated with them and explains more of their variance than any other composite measurement could. Based on the scores obtained from the first principal component, countries have been grouped into three categories of debt repayment capacities: adequate (Group 1), limited (Group 2), weak (Group 3). The grouping of countries obtained from PCA is:

- (i) Group 1: People's Republic of China, India, Indonesia, Kazakhstan, Malaysia, Papua New Guinea, Philippines, Thailand, and Uzbekistan;
- (ii) Group 2: Bangladesh, Fiji, Maldives, Pakistan, Sri Lanka, and Viet Nam; and
- (iii) Group 3: Bhutan, Cambodia, Kyrgyz Republic, Lao PDR, Mongolia, Nepal, Samoa, Solomon Islands, Tajikistan, Tonga, and Vanuatu.

Group 1 corresponds to DMCs with adequate debt repayment capacity, Group 2 corresponds to DMCs with limited debt repayment capacity and Group 3 corresponds to DMCs with weak debt repayment capacity.

## **B. Assessment Based on Qualitative Variables**

15. The results of the PCA are supplemented by an analysis of qualitative or categorical variables that have a bearing on debt repayment capacity. The procedure used for this purpose is correspondence analysis. The description of the categorical variables and the results of the analysis are discussed below.

### **1. Selection of Categorical Variables**

#### **a. Classification as Heavily Indebted Poor Country (HIPC)**

16. A two-level categorization based on categorization as an HIPC is used. HIPCs comprise a group of countries considered by the IMF and the World Bank for their debt initiative, known as the HIPC Initiative.<sup>7</sup> The HIPC classification is reported in the *World Economic Outlook 1998*.

#### **b. Vulnerability to Fluctuations in Export Growth**

17. A sustained capacity to repay foreign currency debt is dependent upon consistently strong export performance for the generation of foreign exchange receipts. Fluctuations in export growth indicate that foreign exchange receipts and in turn debt repayment capacity is vulnerable to external shocks. To measure such volatility, the coefficient of variation of export growth may be used to divide countries into two main groups: countries with volatility of export growth above and below the median, respectively. The level of exports must also be factored in because (i) small countries with low volatility but also low levels of exports could be in a low level equilibrium that indicates weak debt repayment capacity, and (ii) smaller countries are more dependent on export earnings than larger countries with sizeable domestic markets. Accordingly, the following levels of classification are proposed: (i) above median coefficient of

<sup>7</sup> Boote, Anthony R. and Kamau, Thugge. *Debt Relief for Low-Income Countries: The HIPC Initiative*. Pamphlet Series, No. 51 (December 1997).

variation of export growth and below median level of exports (highly vulnerable), (ii) below median coefficient of variation of export growth and below median level of exports (moderately vulnerable), (iii) above median coefficient of variation of export growth and above median level of exports (less vulnerable), and (iv) below median coefficient of variation of export growth and above median level of exports (least vulnerable).

### c. Main External Financing Source

18. A three-level categorization by main source of external financing source is used for the third categorical variable: (i) official financing, (ii) diversified financing, and (iii) private financing. The categorization is taken from the *World Economic Outlook 1998*. Other factors being the same, countries dependent on official financing are those that lack creditworthiness and access to international markets; countries relying on private financing are creditworthy and are able to tap international capital markets; and countries with diversified sources of external financing fall in between.

### 2. Rating for Sovereign Borrowing

19. DMCs that have access to and tap the international capital markets are rated by Moody's and Standard & Poor's, the leading commercial credit rating agencies. A two-level categorization is used for the fourth categorical variable: (i) rated, and (ii) not rated.

### 3. Degree of International Development Association (IDA) Access

20. IDA uses creditworthiness as one of two criteria (the other being per capita GNP) as the basis for determining access to IDA. The degree of IDA access could therefore be considered for inclusion among the categorical variables with a three-level categorization: (i) IDA-only, (ii) IDA-IBRD blend, and (iii) IBRD-only.

21. Correspondence analysis was used to analyze the selected categorical variables.<sup>8</sup> The PCA procedure was not employed because the extraction of principal components is based on a correlation matrix using Euclidean distance that is suitable for quantitative variables measured on a continuous scale. For categorical/qualitative variables, the "distance" between DMCs is in terms of similarities and differences between their profiles made up of the selected attributes. The data matrix that is suitable for such variables is the contingency table and the appropriate analytical procedure is correspondence analysis. Correspondence analysis displays categorical data points in high dimensional space in a lower-dimensional subspace that comes "closest" to all the data points. An examination of the relative positions of the points suggests similarities and differences among the cases (DMCs) based on the categorical variables.

22. The results obtained from the correspondence analysis are:

- (i) Group 1: People's Republic of China, Fiji, India, Indonesia, Kazakhstan, Malaysia, Papua New Guinea, Philippines, Thailand, and Uzbekistan;
- (ii) Group 2: Bangladesh, Kyrgyz Republic, Pakistan, Sri Lanka, and Viet Nam; and

<sup>8</sup> See Greenacre, Michael J. 1984. *Theory and Applications of Correspondence Analysis*. Academic Press.

- (iii) Group 3: Bhutan, Cambodia, Kiribati, Lao PDR, Maldives, Mongolia, Myanmar, Nepal, Samoa, Solomon Islands, Tajikistan, Tonga, and Vanuatu.

DMCs in Group 1 share the following attributes: (i) their main external financing is not official (it is either private or diversified), (ii) most of them are rated by Moody's and Standard & Poor's, (iii) they comprise less and least vulnerable DMCs in terms of fluctuations in export growth, and (iv) most of the DMCs are IBRD-only borrowers of the World Bank. Group 3 DMCs share the following attributes: (i) their main external financing source is official, (ii) they are not rated by credit rating agencies, (iii) they comprise highly and moderately vulnerable DMCs, (iv) they are IDA-only borrowers of the World Bank, and (v) they include HIPC. Group 2 has some attributes common with Group 1 and some with Group 3. Consequently, they fall between the two groups.

23. As with the results obtained from PCA, Group 1 corresponds to DMCs with adequate debt repayment capacity, Group 2 corresponds to DMCs with limited debt repayment capacity, and Group 3 corresponds to DMCs with weak debt repayment capacity.

24. An overall assessment of debt repayment capacity can be made by reconciling the results of the assessments based on quantitative and qualitative variables as shown in the Table below.

**Table 1: Reconciliation of Results of Analysis of Quantitative and Qualitative Indicators of Debt Repayment Capacity**

		QUALITATIVE VARIABLES		
		Weak	Limited	Adequate
Q U A N T I T A T I V E  V A R I A B L E S	Weak	Bhutan Cambodia Lao PDR Mongolia Nepal Samoa Solomon Island Tajikistan Tonga Vanuatu	Kyrgyz Republic	
	Limited	Maldives	Bangladesh Indonesia <sup>a</sup> Pakistan Sri Lanka Viet Nam	Fiji
	Adequate			PRC India Malaysia Papua New Guinea Philippines Thailand Uzbekistan

<sup>a</sup> Assessed as having adequate repayment capacity over the medium term but due to fragile social and political situation over the short term, shown as having limited debt repayment capacity here and in the main text.

Along the diagonal of the matrix, from top left to bottom right, the assessments based on quantitative and qualitative variables match. Reconciliation is required for the off-diagonal DMCs, i.e., Maldives, Kyrgyz Republic, and Fiji. As a rule of thumb, when the assessments on the quantitative and qualitative variables do not match, the current classification will be maintained.

#### a. Maldives

25. The assessment based on quantitative variables that Maldives has limited debt servicing capacity must be reconciled with the assessment based on qualitative variables that it has weak debt repayment capacity. The more favorable assessment on quantitative variables is because Maldives scores well on the debt sustainability ratio and the gross domestic saving rate. The less favorable assessment on qualitative variables reflects Maldives' position as (i) highly vulnerable to fluctuations in export growth, (ii) dependent on official financing, (iii) categorization as an IDA-only country, and (iv) not rated by Moody's or Standard & Poor's. Overall, it is proposed to go along with the qualitative assessment that Maldives has weak debt repayment capacity.

**b. Kyrgyz Republic**

26. The assessment on quantitative variables that the Kyrgyz Republic has weak debt repayment capacity has to be reconciled with the assessment on qualitative variables that it has limited debt repayment capacity. The less favorable assessment on quantitative variables is due to (i) the very small share of private capital inflow in total capital inflow, (ii) the high vulnerability to fluctuations in export growth, (iii) the low gross domestic saving rate, and (iv) the relatively small size of the economy. The more favorable assessment on qualitative variables is because the Kyrgyz Republic is (i) not an HIPC, (ii) categorized as an IDA-IBRD blend borrower by the World Bank. Overall, it is proposed to go along with the assessment on quantitative variables that the Kyrgyz Republic has weak debt repayment capacity.

**c. Fiji**

27. The assessment on quantitative variables that Fiji has limited debt repayment capacity has to be reconciled with the assessment on qualitative variables that it has adequate debt repayment capacity. The less favorable assessment on qualitative variables is due to (i) a low value for the gross domestic saving rate, and (ii) the relatively small size of the economy. The more favorable assessment on qualitative variables is due to (i) the main external financing source being private, and (ii) categorization as an IBRD-only borrower of the World Bank. Notwithstanding low investment rates leading to sluggish growth performance, the case for going along with the qualitative assessment and maintaining the status quo is supported by Fiji's historical record of macroeconomic stability and comfortable external debt service position. Overall, it is proposed to assess Fiji as having adequate debt repayment capacity.

**C. DMCs Not Covered under Assessment on Quantitative Variables**

28. Two countries, Kiribati and Myanmar, that were not covered under the assessment on quantitative variables, were assessed on qualitative variables as having weak debt repayment capacities.

29. Kiribati is dependent on official sources of external financing and is highly vulnerable to fluctuations in export growth. Additional considerations are (i) the limited scope for agricultural crops given the small land mass and poor quality of soil, (ii) the fragile environment, and (iii) the dependence on transfer payments from the trust fund from sales of phosphates (now depleted) in past years.

30. Myanmar has been assessed as having weak debt repayment capacity on the qualitative variables. It is classified as an HIPC. It is quite vulnerable to fluctuations in export growth. Additional considerations are the low rates of saving and investments and very limited availability of external finance.

31. Countries not covered either under the assessment on quantitative variables or qualitative variables due to paucity of data are discussed below.

32. Afghanistan is proposed to be categorized as having weak debt repayment capacity on account of (i) its categorization as a severely indebted country by the World Bank, and (ii) the collapse of the physical infrastructure following years of civil strife.

33. Cook Islands is proposed to be categorized as having weak debt repayment capacity. The country's inability to meet its debt repayment obligations recently led to rescheduling of the

country's debt. Prior to the debt write-off, a report<sup>9</sup> was prepared that underscored the country's precarious fiscal and debt situation. Following the debt rescheduling, the Government is committed to financing development expenditures from concessional or nondebt-creating sources.

34. Marshall Islands and Micronesia have been experiencing contraction in output over the past few years. These economies are almost entirely dependent on Compact Funds which are scheduled to cease in 2001. Marshall Islands has been issuing bonds to finance its capital expenditures and has used Compact Funds as collateral against the bonds. Excluding foreign grants, the fiscal and current account balances have been in deficit over the last 10 years. For these reasons, it is proposed to categorize Marshall Islands and Micronesia as having weak debt repayment capacity.

35. Nauru is proposed to be categorized as having limited debt repayment capacity. The country is in the midst of financial crisis caused by running unsustainable budget deficits and mismanagement of National Phosphate Royalty Trust (NPRT) funds. However, Nauru still owns several substantial assets that if managed judiciously could return the country to its previous levels of per capita income: (i) phosphate reserves that could last another five to six years, (ii) substantial unmortgaged offshore assets in NPRT, and (iii) considerable wealth and trust fund earnings accruing to landowners.<sup>10</sup>

36. Tuvalu is proposed to be categorized as having weak debt repayment capacity because of severe development constraints imposed on the country by its small size and fragmentation of land area, remoteness from markets, and limited resource endowments.<sup>11</sup>

#### **D. Overall Assessment of Debt Repayment Capacity**

37. Pulling together the quantitative and qualitative assessments of debt repayment capacity, DMCs are proposed to be categorized according to debt repayment capacity as in Table 2.

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<sup>9</sup> Asian Development Bank. The Cook Islands. Economic Situation, Prospects, and the Outlook on Debt. May 1998.

<sup>10</sup> Nauru. Country Assistance Plan. 1999–2001.

<sup>11</sup> Tuvalu. 1997 Economic Report. Pacific Studies Series. Asian Development Bank.

**Table 2: Overall Assessment of Debt Repayment Capacity**

<b>Debt Repayment Capacity</b>	<b>Developing Member Country</b>
<b>Weak</b>	Afghanistan, Bhutan, Cambodia, Cook Islands, Kiribati, Kyrgyz Republic, Lao PDR, Maldives, Federated States of Micronesia, Mongolia, Myanmar, Nepal, Marshall Islands, Samoa, Solomon Islands, Tajikistan, Tonga, Tuvalu, Vanuatu
<b>Limited</b>	Bangladesh, Indonesia, <sup>a</sup> Nauru, Pakistan, Sri Lanka, Viet Nam
<b>Adequate</b>	People's Republic of China, Fiji, India, Kazakhstan, Malaysia, Papua New Guinea, Philippines, Thailand, Uzbekistan

<sup>a</sup> Assessed as having adequate repayment capacity over the medium term but due to fragile social and political situation over the short term, shown as having limited debt repayment capacity here and in the main text.