Part Two

The Challenge of Financing Development in The Least Developed Countries

Domestic resource mobilization, external finance and vulnerability

Chapter 1

A. Introduction

The issue of development finance in the LDCs involves the analysis of three interrelated themes namely, resource requirements for economic growth, poverty reduction and sustained development; the effort made to mobilize domestic resources; and the need for, and availability and effects of, external sources of finance. This chapter examines resource requirements in the LDCs in the context of their specific structural characteristics, and it assesses the effort made in domestic resource mobilization and the degree of reliance on external sources of finance.

Domestic resource mobilization and reliance on external resource flows are examined from a comparative perspective, in which the patterns in different LDC sub-groups and other non-LDC developing countries are compared. Section B presents an overview of the specific structural characteristics that distinguish the LDC economies from other developing countries. The findings of that section inform the analysis of the resource flows in the subsequent sections in an important way. Lack of attention to country group heterogeneity of the type described in that section has been one of the main weaknesses of policies and prescriptions that address the problem of financing development. Section C examines the domestic sources of finance and the constraints on domestic resource mobilization arising from the special characteristics of the LDCs. It also discusses the resource mobilization effort by the LDCs, as indicated by savings responsiveness, and the responsiveness of domestic resources available for finance in general, to economic growth. Section D assesses the size of external shocks experienced by the LDCs relative to the domestic resources available for finance in those economies. This relationship underlies the high degree of vulnerability of most LDC economies. Section E discusses the degree of reliance on external finance, and sets out the issue that is at the heart of the financing problems of the LDCs – namely, the dominance of external sources of finance in the central accumulation and budgetary processes in the LDC economies. It also examines the requirements for external finance, taking account of the vulnerability of the LDC economies. The main findings and policy implications of the chapter are summarized in the concluding section.

Despite important differences amongst the LDCs in terms of size and resource endowments, they share extremely low levels of income, a low degree of industrialization and human capital development, high levels of export concentration, often in one or two primary commodity lines, and a high level of vulnerability to external shocks.

B. Distinguishing features of the LDCs

Despite important differences amongst the LDCs in terms of size and resource endowments, they share important characteristics, a fact which distinguishes them from other developing countries. These include extremely low levels of income, a low degree of industrialization and human capital development, high levels of export concentration, often in one or two primary commodity lines, and a high level of vulnerability to external shocks. Since most of these variables have formed the United Nations' selection criteria for the LDCs, the average indicators shown in table 6 can provide a broad sketch of the distinguishing characteristics of individual countries in this group as well.

TABLE 6: SELECTED ECONOMIC AND SOCIAL INDICATORS FOR THE LDCs AND OTHER DCs

	Year/Period	LDCs	Other DCs
A. Economic indicators			
GNP per capita, PPP	1980	724	2 587
(current international dollars)	1990	1 179	4 078
	1997	1 343	4 598
Share of labour in agriculture (%)	1990	75	32
Share of agriculture in GDP (%)	1997	34	17
Share of primary commodities	1980	86.3	79.6
in total merchandise exports (%)	1997	68.9	31.9
Export concentration index	1997	0.553	0.378
Export instability index	1980–1997	20.3	13.4
Energy consumption (kg coal eq. per capita):			
Coal, oil, gas and electricity	1980	64	508
	1996	69	898
Feulwood and charcoal	1980	212	125
	1996	210	135
Annual population growth (%)	1960–1970	2.4	2.3
	1990–1997	2.6	1.7
Age dependency ratio	1975	0.93	0.88
(dependents to working-age population)	1998	0.87	0.68
B. Social indicators			
Mortality rate, under-five (per 1,000 live births)	1997	108	65
Life expectancy at birth (years)	1990–1995	49	62
Hospital beds (per 1,000 population)	1990	1.1	4.8
Physicians (per 1,000 population)	1990	0.1	1.6
Adult literacy rate (age 15 and above)	1995	48.9	81.4
Gross school enrolment (%):			
Primary	1995	72.0	100.0
Secondary	1995	16.0	65.0
Tertiary	1995	1.6	17.7
Telephone mainlines (per 1,000 population)	1998	4.0	58.0[a]
Telephone average cost of local call	1997	0.1	0.05
($ per three minutes)			

Source: UNCTAD, 1999a, and World Bank, *World Development Indicators 2000, UNDP 2000*.

Notes: Export instability index is the simple group average of the standard deviation of annual growth rates of exports (deflated by import price index). Export Concentration ratio is the Hirschman index as calculated by the UN. In the case of energy consumption, the other developing country group also included LDCs.

a All developing countries.

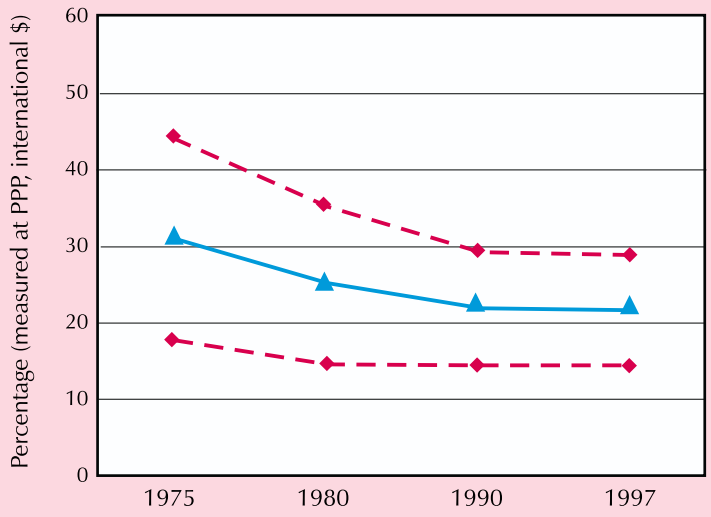
1. LOW INCOME AND UNDERDEVELOPED ECONOMIC STRUCTURE

On average 44 per cent of the population have a per capita income of under one dollar a day, and about 75 per cent have a per capita income of less than two dollars a day.

The average per capita GNP in the LDCs is only a quarter of the developing country average. In fact, in African and Asian LDCs, where the majority of the LDC populations live, per capita GNP is barely above 20 per cent of the other developing country average levels (chart 14).[1] At the prevailing levels of per capita income, it is not difficult to see that most of the LDC population in sub-Saharan Africa and Asia live close to subsistence level. The available data on a number of LDCs show that on average 44 per cent of the population have a per capita income of under one dollar a day, and about 75 per cent have a per capita income of less than two dollars a day (table 7).

The extremely low levels of per capita income in the LDCs are, of course, a reflection of the underdeveloped structures of these economies as compared with other developing countries, and their meagre stock of capital. On average, more than two thirds of the population and labour force in the LDCs live in the countryside and work in the agricultural sector, and the share of agriculture in

CHART 14: AVERAGE PER CAPITA GNP IN AFRICAN AND ASIAN LDCS RELATIVE TO OTHER DCS, 1975–1997
(Per cent)



Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators, 1999*.
Note: The dashed lines show one standard deviation band.

TABLE 7: INCIDENCE OF POVERTY IN SELECTED LDCS

	Survey year	Percentage of population with per capita income *Below $1 a day*[a]	*Below $2 a day*[a]
Bangladesh	1996	29.1	77.8
Burkina Faso	1994	61.2	85.8
Central African Republic	1993	66.6	84.0
Ethiopia	1995	31.3	76.4
Gambia	1992	53.7	84.0
Lesotho	1993	43.1	65.7
Madagascar	1993	60.2	88.8
Mali	1994	72.8	90.6
Mauritania	1995	3.8	22.1
Mozambique	1996	37.9	78.4
Nepal	1995	37.7	82.5
Niger	1995	61.4	85.3
Rwanda	1983–1985	35.7	84.6
Sierra Leone	1989	57.0	74.5
Uganda	1992	36.7	77.2
United Republic of Tanzania	1993	19.9	59.7
Yemen	1998	5.1	35.5
Zambia	1996	72.6	91.7
Average LDCs [(b)]		**43.7**	**74.7**
Average 55 other DCs [(b)]		**13.1**	**34.6**

Source: UNCTAD secretariat estimates, based on World Bank, *World Development Indicators 2000*.
a Measured at purchasing power parity exchange rates. *b* Simple averages.

gross domestic product (GDP) is more than double the average for other developing countries. The low level of industrialization in the LDCs is also reflected in the extremely low levels of modern sources of hydrocarbon-based energy use, as compared with other developing countries. The per capita consumption of combined coal, oil, gas and electricity in the LDCs is on average one tenth of the prevailing levels in the developing countries as a whole. In contrast, fuel-wood sources of energy still constitute the bulk of energy consumption in the LDCs (table 6).

While many other developing countries are completing their population transition phase and on average have had rapidly declining population growth and dependency rates over the past few decades, the LDCs have witnessed an acceleration in the rate of population growth with increasing dependency rates. This, amongst other things, has important implications for savings generation, and for the provision of education, health and other basic needs.

The underdeveloped production structure of the LDC economies is also reflected in the composition of their exports, with on average close to 70 per cent of exports consisting of primary commodities – more than double the primary export share for all the developing countries. The export concentration ratio in the LDCs is also much higher than in other developing countries, indicating the high degree of dependence of export revenues on a single product or a narrow range of products, mostly agricultural commodities and minerals. The decline in the share of primary products during the period 1980–1997 has been by and large the result of the collapse in the value of primary exports rather than the faster growth of non-primary exports.[2]

The growth and structure of population in the LDCs also show distinct characteristics as compared with the other developing countries. Population growth in LDCs is on average about one percentage point higher than the developing country average. While many other developing countries are completing their population transition phase and on average have had rapidly declining population growth and dependency rates over the past few decades, the LDCs have witnessed an acceleration in the rate of population growth with increasing dependency rates (table 6). This, amongst other things, has important implications for savings generation, and for the provision of education, health and other basic needs.

2. Poor socio-economic infrastructure

The LDCs substantially lag behind other developing countries with regard to health indicators such as infant mortality and life expectancy, and there is an even greater gap with respect to health care provisions such as the number of physicians and hospital beds per head (table 6).

The LDCs also substantially lag behind other developing countries with regard to educational attainment and other aspects of human capital development. The latest available data indicate that the adult literacy rate is on average 49 per cent in the LDCs as compared with 81 per cent in other developing countries. Primary and secondary school enrolment rates in the LDCs are respectively, on average, about 30 and 50 percentage points below the other developing country averages, and tertiary enrolment rates are on average a tenth of those of other countries (table 6). These indicators also suggest that the LDCs are fast falling behind other developing countries with respect to human capital formation, despite their meagre initial stocks. Considering that the vast majority of the LDC population are either rural-based or recent migrants to urban sectors, and taking into account the degree of economic regression in a number of LDCs during the past two decades, the gap between these countries and other developing countries in terms of the stock of human capital is likely to be even more glaring than the educational attainment data suggest.

Another outstanding characteristic of the LDCs is their exceedingly weak physical infrastructural base, which is particularly exemplified by the gap in their

TABLE 8: TRANSPORT INDICATORS FOR THE LDCS AND OTHER DCS

	Year/ period	LDC average[b]	Other DCs country average	t-test for the Difference between the means
Roads, normalized index[a] (LDC index=100)	1997	100	160.3	2.46
Paved road, normalized index[a] (LDC index=100)	1997	100	248.5	4.26
Railways, goods transported (1000 ton-km. per PPP $ million of GDP)	1990–1997	34.4	321.0	2.91
Railways, 1000 passenger-km. (per PPP $ million of GDP)	1990–1997	24.6	84.7	3.85
Air transport, passengers carried (per PPP $ million of GDP)	1990–1997	46.2	58.9	0.465
Air transport, freight (1000 tons. per km.) (per PPP $ million of GDP)	1990–1997	1.5	1.8	0.631

Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators 1999*.

a Normalized taking into account population, area, population density, per capita income and special regional dummies.

b Simple averages.

telecommunications and transport facilities as compared with other developing countries. For example, the number of telephone lines per thousand people in the LDCs is about four, which is one fifteenth of the average for other developing countries, and the cost of local telephone calls in the LDCs is a hundred per cent higher than the average for the latter.[3] The considerable disparity in the development of telecommunication infrastructure between the LDCs and other developing countries is likely to lead to increasing marginalization of the LDCs in the global economy with the growing importance of information and telecommunication technologies in all spheres of economic activity.

A similar situation exists with regard to the development of transport infrastructure in the LDCs. The poor state of that infrastructure in sub-Saharan African LDCs is well documented.[4] The problem of lack of development of transport infrastructure, however, is not confined to the African LDCs although it is particularly acute in those countries. As shown in table 8, even after one normalizes for population, area, per capita income and regional specificities, other developing countries on average have 60 per cent more road networks and almost two and a half times more paved roads compared with the LDCs. To this should be added the much poorer quality of roads and road transport facilities in the LDCs. A similar picture is conveyed with regard to rail transport, although the gap in air transport indicators in the two country groups does not seem to be significant (table 8). Another aspect of the transportation problems of the LDCs, which exacerbates the problem of poor internal transport facilities, is that a large number of them are landlocked countries, depending on long transit routes through neighbouring countries with similarly poor transport facilities, which are often subject to closures because of political instability.[5] The island LDCs face transportation problems of their own, arising from their small size, isolation and remoteness, and the existence of sizeable economies of scale in transportation.[6] The weak transportation infrastructure in the LDCs, apart from

reducing international competitiveness and adding to export instability, leads to fragmentation of the national markets and imposes prohibitive transportation costs on a large segment of the rural population – a problem which is particularly acute in the sub-Saharan African LDCs.[7]

3. Economic vulnerability

The low income levels, underdeveloped economic structures and poor state of infrastructure have made the LDCs highly vulnerable to external shocks resulting from natural causes or those arising from fluctuations in the world economy. LDCs have been subject to numerous natural disasters such as cyclones, floods, droughts and earthquakes. It is estimated that during the period 1975–1999 there have been 1,138 instances of natural disasters in the LDCs, directly affecting more than 600 million people, and inflicting direct damage of close to $16 billion.[8] While some of the LDCs have had more than their fair share of natural disasters in terms of both frequency and intensity, what really makes the difference in their case compared with other countries is that because of their economic vulnerability such events can have much more persistent and deeper economic and social consequences. Poor peasants with meagre resources may never recover from the loss of assets resulting from a drought, flood or cyclone. By encroaching upon their fragile environment as a survival strategy, they are likely to further intensify their economic vulnerability. The next mild natural mishap can easily assume disaster proportions. Similarly, natural disasters can divert a disproportionately large amount of government resources from essential developmental investment, thus seriously hampering the long-term growth prospects in an LDC economy. Another example of the vulnerability of the LDC economies to natural shocks is the rapid spread of contagious diseases, often assuming disaster proportions, because of low levels of sanitation, and inadequacy of information and education. The spread of AIDS in a large number of sub-Saharan African LDCs is a prime example of this type of vulnerability.[9]

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The LDCs' degree of vulnerability to exogenous shocks arising from sharp fluctuations in real export revenues, either because of supply shocks or external demand and price shocks, is also very high. To begin with, the LDCs, because of the nature of their export specialization, are subject to much more acute export instability than other developing countries. The export instability index in the LDCs is at least 50 per cent higher than in other developing countries (table 6).[10] As we shall demonstrate in the next section, the intensity of the external shocks, as measured by maximum annual income losses relative to the resources which can be mobilized to cope with them, is also many times greater in the LDCs than in other developing countries. However, as in the case of natural disasters, what really distinguishes the LDC economies from other developing countries is their higher degree of vulnerability to such shocks, which is due to lack of flexibility in their production structures. For example, as the experience of other developing countries shows, economies that have a higher degree of export diversification have been in a much better position to deal with adverse terms-of-trade shocks. As well as having foreign exchange implications, such shocks in the case of the LDCs often directly strike at the main source of government revenues. In the absence of compensatory foreign financing, they can have serious debilitating effects on the developmental role of LDC Governments (see chapter 6 on aid effectiveness).

To sum up, the above discussion highlights three broad aspects of the LDC economies, which have an important bearing on the issue of financing

development. First, a major part of the LDC population lives in countries with very low per capita incomes and underdeveloped production structures. Second, extremely low levels of social and physical infrastructure inhibit the efficient use of productive resources in these countries. And third, largely as a consequence of the first two characteristics, the LDCs are highly vulnerable to external shocks arising from the vagaries of nature or those arising from external, international economy-related factors. These factors have important financing implications in terms of the magnitude of resource requirements for development, the availability of domestic finance, and the required degree and characteristics of external financing. We shall begin with domestic financing issues in the next section.

C. Domestic sources of finance

1. The scope of development finance in an LDC context

Development finance is understood here as the mobilization of resources and their effective use for the expansion of production capacities as well as for better utilization of existing capacities. Conventionally, domestic sources of finance are defined as gross (net) domestic savings, which are measured as gross (net) investment minus the net inflow of external finance. This is the same as gross (net) domestic product minus consumption expenditure. Adding net factor incomes from abroad gives a measure of national savings. In the conventional national accounting framework, investment is measured as the additions to physical capital stock (both fixed capital and additions to inventories), which is intended to measure additions to the production capacity of the economy. The determinants of savings are normally analysed after being appropriately disaggregated into private and government savings.[11] Disaggregated data on private and government savings for the LDCs do not exist, and even the available aggregate data on domestic or national savings should be treated with due care. Since they are estimated as the residual between two relatively large national accounting variables, the data on savings in the LDCs are likely to be subject to large measurement errors.[12] Before the evidence on savings is discussed, a number of other caveats regarding this conventional measure of domestic finance should be entered.

First, the conventional measures of net investment in national accounts take into account only the depreciation of man-made physical capital, thus ignoring the effect of the depletion of natural assets and environmental resources on the productive capacity of the economy. The ongoing work on "green national accounting", which aims at measuring and including environmental resource depletion in national accounts, is intended to address this caveat.[13] Although measures of environmental resource depletion for the LDC economies do not exist, this is likely to be an important source of overestimation in net investment – and net domestic savings, given net capital inflows – as indicators of additions to productive capacities in these economies. The evidence on the extent of environmental resource depletion through deforestation, soil degradation and desertification in the LDC economies suggests that such effects can be quite substantial. Another important source of likely overestimation of investment and savings in the LDC statistics is the fact that aid-financed expenditures are conventionally recorded as development expenditure or public sector investment, although a large part of these expenditures are in fact recurrent – a point which we shall elaborate in chapter 6. These factors can indeed go a long

way in explaining the lack of commensurate response of output to investment in the case of some LDCs and in cross-country regression analyses involving such countries.[14]

Another shortcoming of the conventional measures of investment and savings is that they take into account only physical capital formation and exclude human capital formation. The importance of human capital formation in enhancing productive capacities is being increasingly recognized in the economics literature. With the increasing importance of automated and knowledge based technologies, education is becoming an even more important component of human capital formation than before, and the additions to the educational stock should play a significant role in enhancing production capacities in the economy. By excluding investment in human capital, the conventional definition of investment and savings in the national accounts is therefore, likely to miss an important component of development finance. Public expenditure on education, after adjustment for its efficiency, should be included as an important element of development finance as defined above.

With the inclusion of human capital formation as an important component of investment and savings, other components of social expenditure necessary for the preservation and upkeep of the stock of human capital should be also included as a part of development finance. For example, consider the case of a country, not untypical of many LDCs, where owing to low levels of public resources spent on health and education, a relatively large part of the working age population is incapacitated because of the prevalence of AIDS and other infectious diseases. This loss, whether it entails total or partial withdrawal from the labour force or lost efficiency, should be treated as a depreciation of the stock of human capital. On the same grounds, preventive and curative expenditure on health, which is necessary in order to prevent the depreciation of the human capital stock, should be treated as a component of development finance.[15] Since in developing countries the most important component of preventive health expenditure is in the public sphere, a basic minimum amount of government expenditure on health, adjusted for its efficiency, becomes an important component of development finance.

Our broad definition of development finance, which in addition to capacity creation includes the financing necessary for efficient utilization of existing capacities, encompasses even broader categories of public expenditure than those mentioned above. For example, minimum expenditures necessary for the maintenance of an efficient civil service, the enforcement of law and the maintenance of stable social relations within civil society all become essential elements of development finance. In the absence of those elements, not only would additions to physical productive capacities be ineffective in increasing production, but also the existing production capacities would remain underutilized. For example, in a country where lack of finance prevents the Government from providing these prerequisites for development, but at the same time various aid agencies are busy creating new capacities through numerous investment projects, the latter effort is unlikely to lead to increased output and productivity. In the long run, by burdening the Government with large debt service payments and hence further diverting resources from the prerequisites for development, such aid can even prove counter-productive. Similarly, in situations where owing to the lack of an effective central Government the country has regressed to social chaos and factional armed conflict, large direct investments by multinational companies in mineral resources clearly cannot help national economic development, and can even be counter-productive by helping to perpetuate the conflict (e.g. diamonds in

Africa). The allocation of at least a certain minimum necessary funding for efficient public service provision is thus an essential element of development finance. Of course, not all government expenditure plays such a developmental role, and the efficiency of public service provision is central to our definition. However, in situations where the inefficiency of public expenditure is due to shortage of funds in the first place, an initial increase in the allocation of funds to public services would be a prerequisite for economic development.

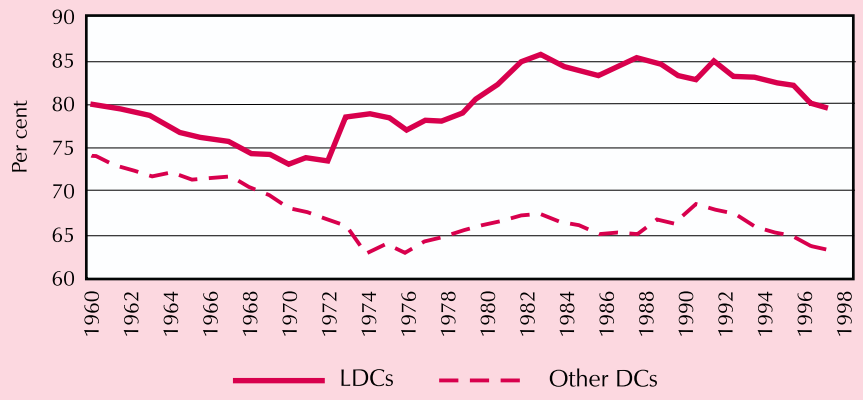
2. Private consumption and savings effort

In poor economies where a large part of the population survives at near-subsistence levels of consumption, private consumption forms a major share of GNP and resources available for finance are constrained by the ability to save. It would be instructive to begin by examining the trends in private consumption in the LDCs in comparison with other developing countries during the past four decades. Chart 15 shows the average private consumption-to-GNP ratio for the LDCs and other developing countries for the period 1960–1997. As can be seen, since the early 1970s a large gap has developed in average consumption ratios between the two groups of countries. Throughout the 1980s and the 1990s, the average consumption ratio for the LDCs has fluctuated at around 80 to 85 per cent, about 20 per cent higher than the average for other developing countries. The African and Asian LDCs have had average consumption ratios of about 85 per cent during the past two decades, while the island LDCs, starting from relatively lower consumption ratios in the 1980s, have rapidly climbed to the 80 per cent level during the 1990s (table 9.A).

The average private consumption ratio for the LDCs has fluctuated at around 80 to 85 per cent of GNP, about 20 per cent higher than the average for other developing countries.

The difference between GDP and private consumption is, as a matter of accounting identity, equal to domestic investment plus government expenditure and investment abroad. We may refer to this residual as "domestic resources available for finance" (DRAF). For a number of reasons the examination of DRAF – in conjunction with, or in addition to the conventional savings concept – may be particularly fruitful in the case of the LDCs. First, as noted above, the measurement of government investment in the LDCs can include a large

Chart 15: Private consumption as a share of GNP in the LDCs and other DCs, 1960–1997
(Per cent)



Source: As for tables 9 and 10.
Notes: LDCs exclude island economies. Average refers to simple means.

TABLE 9: AVERAGE PRIVATE CONSUMPTION RATIO AND DOMESTIC RESOURCES AVAILABLE FOR FINANCE IN THE LDCS AND OTHER DCS, 1960–1997

	African LDCs	Asian LDCs	Island LDCs	LDC average	Other DCs
A. Average private consumption as percentage of GNP					
1960–1965	77.7	86.6	..	..	72.5
1965–1970	72.3	88.8	..	..	70.5
1970–1975	73.7	90.9	72.7	75.9	65.9
1975–1980	77.6	85.2	78.4	78.6	64.5
1980–1985	83.9	84.2	71.5	81.7	66.6
1985–1990	85.9	85.1	70.9	81.6	65.8
1990–1997	84.6	84.0	80.0	82.2	66.3
B. Domestic resources available for finance (DRAF) as percentage of GNP					
1960–1965	22.3	13.4	..	..	27.5
1965–1970	27.7	11.2	..	..	29.5
1970–1975	26.3	9.1	27.3	24.1	34.1
1975–1980	22.4	14.8	21.6	21.4	35.5
1980–1985	16.1	15.8	28.5	18.3	33.4
1985–1990	14.1	14.9	29.1	18.4	34.2
1990–1997	15.4	16.0	20.0	17.8	33.7

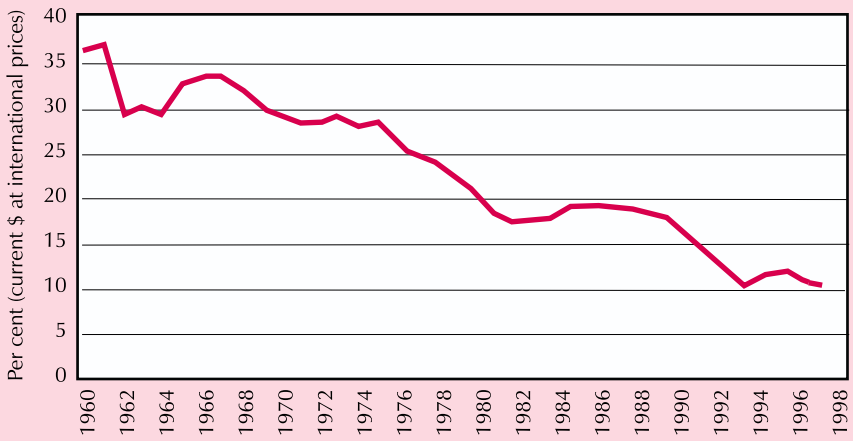
Source: UNCTAD secretariat calculations based on World Bank, *World Development Indicators 1999*.
Notes: Averages refer to simple group and period averages. DRAF is measured as defined in the text.

element of recurrent expenditure, and hence the savings data can contain a large systematic measurement error. In the case of DRAF, however, the data at least correspond more closely to what they are supposed to measure. Secondly, in the absence of data on private income and private savings, DRAF can be used to illuminate the constraints on financing development from the real side in the case of poor economies where a large part of the population live at near-subsistence levels of consumption.[16] Finally, since, in contrast to savings, DRAF is a positive magnitude in most LDCs and is relatively more stable than savings, it is more suitable for use as an accounting magnitude relative to which the size of external shocks (vulnerability) can be compared across countries.

The above trends in private consumption-to-GNP ratios indicate that in the case of the LDC economies the domestic resources available for finance represent a much smaller share of GNP than in other developing countries. In fact, the DRAF-to-GDP ratio in the LDCs has on average varied between 15 per cent (in the case of Asian and African countries) and 20 per cent (for island LDCs) during the 1980s and the 1990s. In contrast, the domestic resources available for finance in other developing countries were on average about 34 per cent of GNP over this period.

Before considering the consequences of this phenomenon for financing development, we need to investigate further some of the underlying reasons for these contrasting trends. The first important point to note is that the rising private consumption ratios in the LDC economies are not due to rapid rates of growth of private consumption in these economies, financed by the availability of concessionary aid, as is sometimes alleged.[17] On the contrary, both relative to other developing countries and in absolute terms, per capita consumption in the LDCs has exhibited a declining trend. In particular, precisely during the period when LDC private consumption ratios were rising, per capita consumption in these countries relative to other developing countries showed a steep decline, falling from 30 per cent of the average of other developing countries in the late 1960s to a mere 15 per cent by the 1990s (chart 16 and table 10). In absolute

CHART 16: AVERAGE PER CAPITA PRIVATE CONSUMPTION IN THE LDCS RELATIVE TO OTHER DCS, 1960–1997



Source: As for tables 9 and 10.
Notes: LDCs exclude island economies. Average refers to simple means.

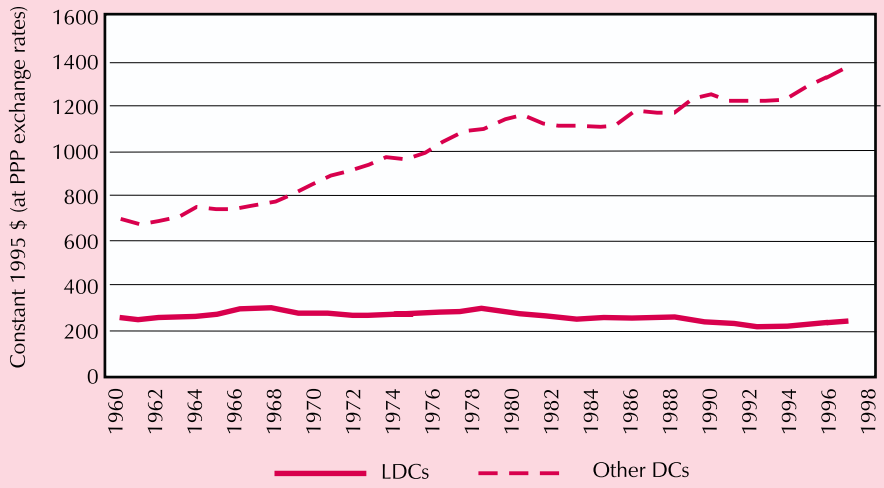
TABLE 10: AVERAGE PER CAPITA PRIVATE CONSUMPTION IN THE LDCS AND OTHER DCS, 1960–1997

	African LDCs	Asian LDCs	Island LDCs	LDC average[a]	Other DCs
A. Average per capita private consumption, constant 1995 dollars					
1960-65	266.5	191.6	..	261.2	711.1
1965-70	292.3	196.7	..	286.6	778.2
1970-75	286.9	172.0	..	277.1	923.7
1975-80	298.6	152.0	460.5	283.1	1056.8
1980-85	275.4	165.6	480.1	265.3	1130.1
1985-90	261.5	185.6	485.3	255.5	1167.8
1990-97	230.9	212.1	507.1	228.9	1256.7
B. Average per capita private consumption as percentage of other DCs					
1960-65	32.5	34.5	..	32.6	100
1965-70	31.9	34.0	..	32.0	100
1970-75	28.8	23.7	..	28.7	100
1975-80	25.4	15.3	44.1	24.5	100
1980-85	18.7	13.3	30.1	18.7	100
1985-90	18.5	14.8	33.4	19.0	100
1990-97	13.3	11.5	27.2	13.1	100

Source: UNCTAD secretariat calculations based on World Bank, *World Development Indicators 1999*.
Notes: *a* Refers only to Asian and African LDCs.
Averages refer to simple group and period averages.
Part B percentages are measured at current international dollars.

terms, the average per capita private consumption in the LDCs was lower in the 1990s as compared with the 1960s and the 1970s (chart 17). The decline was particularly noticeable in the case of African LDCs, while average per capita consumption in Asian LDCs remained more or less stagnant with signs of moderate recovery in the 1990s, and with island LDCs showing moderate increases over the past two decades (table 10). Even in the case of the island LDCs, however, average per capita consumption levels declined precipitously relative to other developing countries, falling from about 44 per cent in the late

CHART 17: AVERAGE REAL PER CAPITA PRIVATE CONSUMPTION IN THE LDCS AND OTHER DCS, 1960–1997



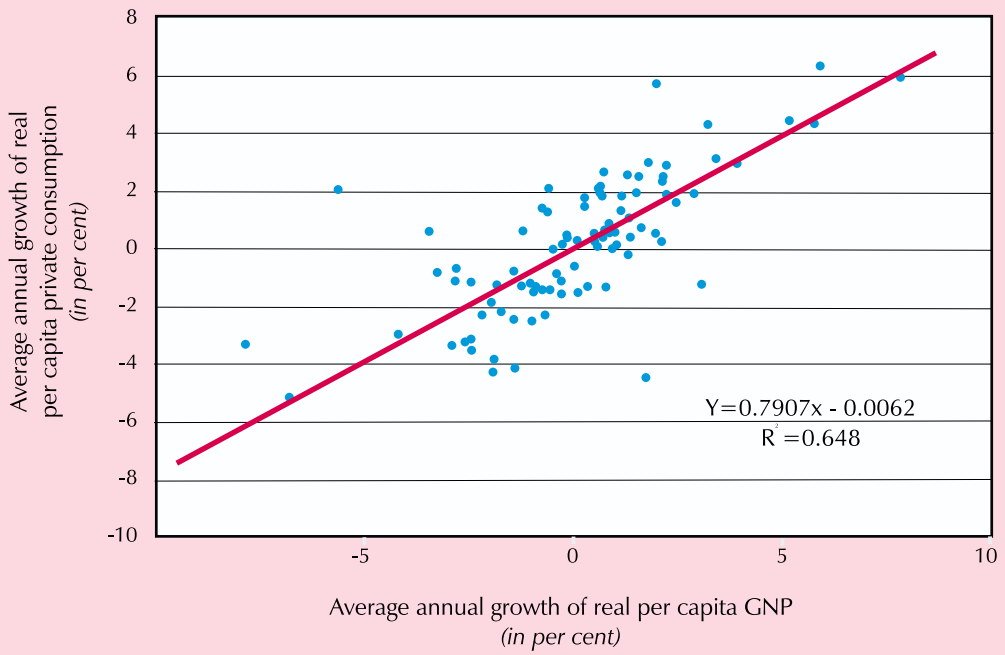
Source: As for tables 9 and 10.
Notes: LDCs exclude island economies. Average refers to simple means.

1970s to 27 per cent in the 1990s relative to average per capita consumption in other developing countries.

These two phenomena, namely the increasing private consumption ratio and the declining per capita private consumption levels in the LDC economies, are both explained by sluggish, and for long sub-periods for most countries negative, per capita GNP growth rates. For example, the rapid increases in the private consumption ratio, combined with falling consumption levels in sub-Saharan African LDCs during the past two decades, have been associated with falling average per capita incomes in this group. Similarly, the decline in the private consumption ratio that coincided with the increase in the real per capita consumption level in Asian LDCs during the 1990s was concomitant with the growth of per capita GNP in those countries during that period. This association can be clearly seen in chart 18, which shows the long-run relationship between the average annual growth rate of per capita private consumption and per capita GNP for the LDC economies for four sub-periods during 1960–1997.[18] The fitted trend line in chart 18 shows a robust long-term relationship between private consumption and income, with an income elasticity of consumption of about 0.8.[19] The implication is that as per capita income rises in the LDCs, private per capita real consumption increases and the consumption ratio falls, or the DRAF ratio rises.[20] The same relationship implies that as per capita income rises, the resources made available for finance (DRAF) in the LDCs rise in real per capita terms by a faster rate than per capita income. More precisely, at the prevailing DRAF rates of about 20 per cent in the LDCs, it is easy to see that on the basis of the relationship in chart 18, the income elasticity of real per capita DRAF is just below 2. That is, as real per capita GNP increases by 1 per cent, the domestic resources made available for finance rise by about 2 per cent.

This suggests a high degree of development effort, as defined by the LDC economies'propensity to refrain from consumption as their income level rises. A similar conclusion is arrived at if we define development effort in terms of conventional savings propensities, as discussed in the annex to this chapter. The

CHART 18: THE RELATIONSHIP BETWEEN PRIVATE CONSUMPTION AND GNP GROWTH IN THE LDCS DURING THE 1970S, 1980S AND 1990S
(Per capita, in real terms)



Notes: Annual growth rates refer to average 10-year trends during the 1970s, 1980s and 1990s.

econometric estimates in the annex indicate a relatively high marginal propensity to save in the LDCs as compared with other developing countries. According to these estimates, an increase of $20 in per capita income leads to a 1 per cent increase in the domestic savings ratios in LDCs, whereas for other developing countries an equivalent percentage increase in per capita income (i.e. an increase of $100) leads to a 0.44 per cent increase in the domestic savings ratio. It is not difficult to see that given the prevailing DRAF (or savings) elasticities, with sufficiently high rates of growth of per capita incomes, the LDCs would in due time achieve self-sustained growth. The prevailing financing crisis in the LDC economies does not seem to be due to lack of development effort as defined by low savings propensity, but is by and large the result of a long period of slow and in many cases declining per capita income growth. As can be seen from the turning points in charts 15 and 16, the growth and financing crises in the LDCs date back to the first half of the 1970s. During the 1970s the LDCs, together with other developing countries, faced major adverse external shocks arising from significant negative terms of trade movements, combined with a decline in export volumes as a result of the world recession, and rising interest rates in the industrial countries. For most primary-commodity exporters this also heralded a long period of declining terms-of-trade which has continued up to the present. In addition, since the early 1970s developing countries have increasingly been faced with major adverse income term-of-trade shocks, which in the case of the LDCs have put considerable pressure on available resources.

The prevailing financing crisis in the LDC economies does not seem to be due to lack of development effort as defined by low savings propensity, but is by and large the result of a long period of slow and in many cases declining per capita income growth.

D. External shocks and vulnerability

Chart 19 shows the magnitude of maximum annual terms-of-trade loss during the past three decades relative to resources available for finance (DRAF) for a number of LDCs.[21] It also shows the median ratio for the LDCs and other developing countries. The negative terms-of-trade shocks are measured in terms of annual income losses, and in order to demonstrate the persistence of such shocks, two- and three-year maximum income losses are also shown in chart 19.[22] As can be seen, relative to the size of its DRAF, the average LDC economy has been exposed to adverse external shocks, with an impact in the worst years of more or less double the developing country average.

The relatively higher average ratio for the LDCs is largely due to their higher degree of openness relative to their meagre DRAF base. This can be seen by noting that in relation to GDP or private consumption the maximum adverse terms-of-trade shocks do not seem to be significantly different between the LDCs and other developing countries (chart 20). With the diminution of their DRAF base over the years, the impact of external shocks as measured by the income terms-of-trade losses as a ratio of DRAF in the LDC economies has been increasing rapidly, as shown in Chart 19. The short-term income losses due to terms-of-trade effects in many LDC countries during the 1990s is indeed staggering. For example, in 8 out of 28 LDC countries for which data are available, the maximum annual shocks during the 1990s led to income losses of over 100 per cent of their DRAF in one year. In 14 out of 24 LDCs for which data are available, the maximum two-year income losses during the 1990s were over 100 per cent of DRAF. It is also important to note that the adverse external shocks are often persistent, in the sense that the two- and three-year maximum income losses are often larger than those resulting from the annual shocks. In addition, as we have seen in the previous section in the discussion of the vulnerability of the LDCs, the frequency of external shocks in the case of the LDCs is also much higher than in other developing countries.

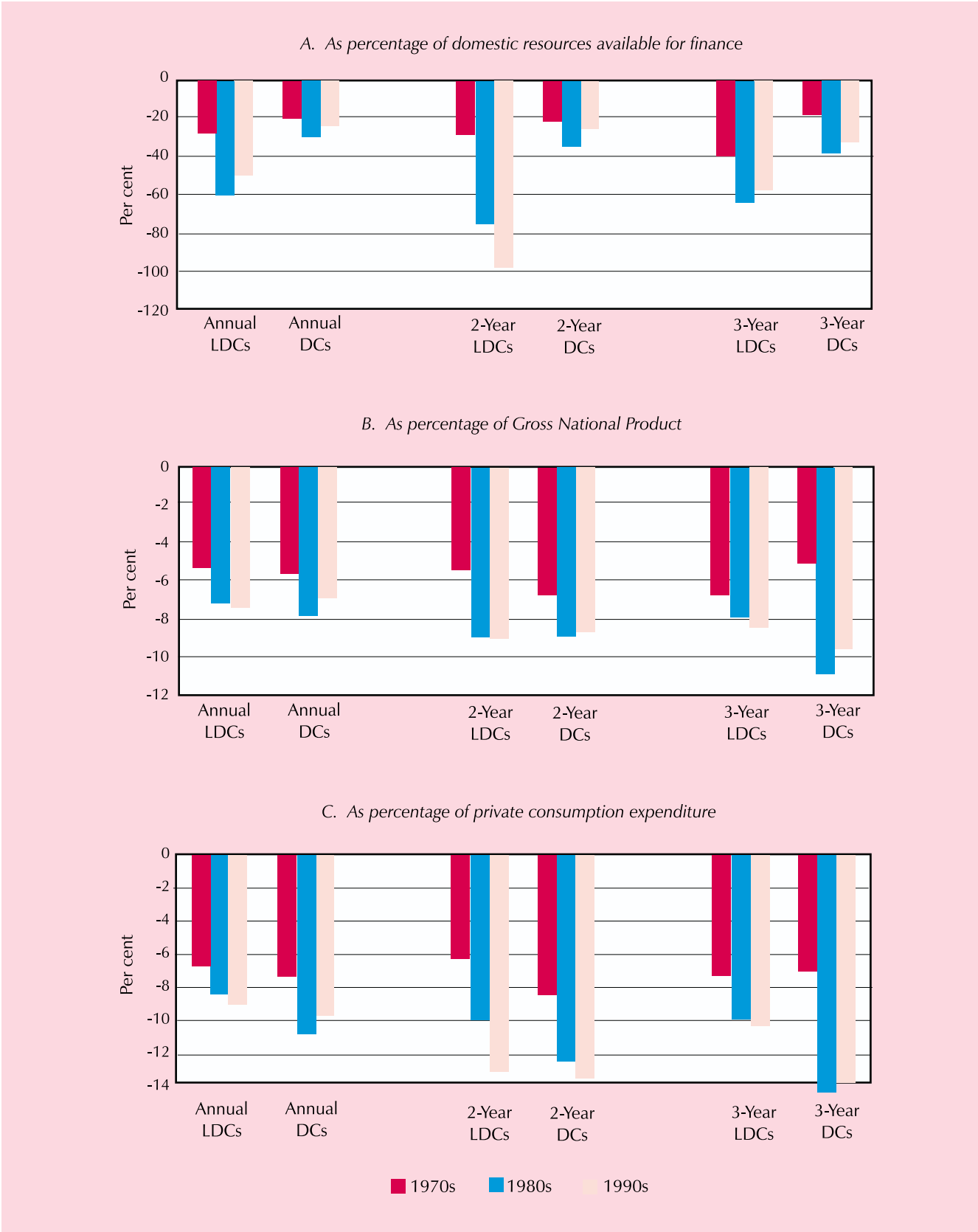
Without access to appropriate external financing, the distributional tensions resulting from such large external shocks would inevitably give rise to mounting instabilities.

Other developing countries with higher levels of DRAF, per capita income and private consumption, as well as more diversified export structures, than the LDCs, have been in a better position to cope with these adverse external shocks, although, as we shall see, not without recourse to large amounts of external resources. With near-subsistence levels of private consumption, and meagre resources available for finance, the LDC economies also would certainly not be in a position to cope with adverse external shocks without access to sufficient and timely external finance. Without access to appropriate external financing, the distributional tensions resulting from such large external shocks would inevitably give rise to mounting instabilities as reflected in rising inflationary pressures, widening budget deficits, foreign exchange rationing and widening parallel-market foreign exchange premiums, and foreign trade contraction.[23] Not only the amount of foreign resources available, but also the timing of the inflow, and the mechanisms for access to and control over such resources are crucial elements in avoiding such instabilities. We shall start in the next section by examining first the relative magnitude of external resource inflows and the nature of external resource requirements in the LDCs.

CHART 19: MAXIMUM INCOME TERMS-OF-TRADE LOSS AS PERCENTAGE OF DOMESTIC RESOURCES AVAILABLE FOR FINANCE DURING THE 1970S, 1980S AND 1990S

Source and methods: As explained in the text.

CHART 20: MAXIMUM INCOME TERMS-OF-TRADE LOSS AS PERCENTAGE OF DRAF, GNP AND PRIVATE CONSUMPTION FOR MEDIAN LDC AND OTHER DC GROUPINGS DURING THE 1970S, 1980S AND 1990S



Source and methods: As explained in the text.

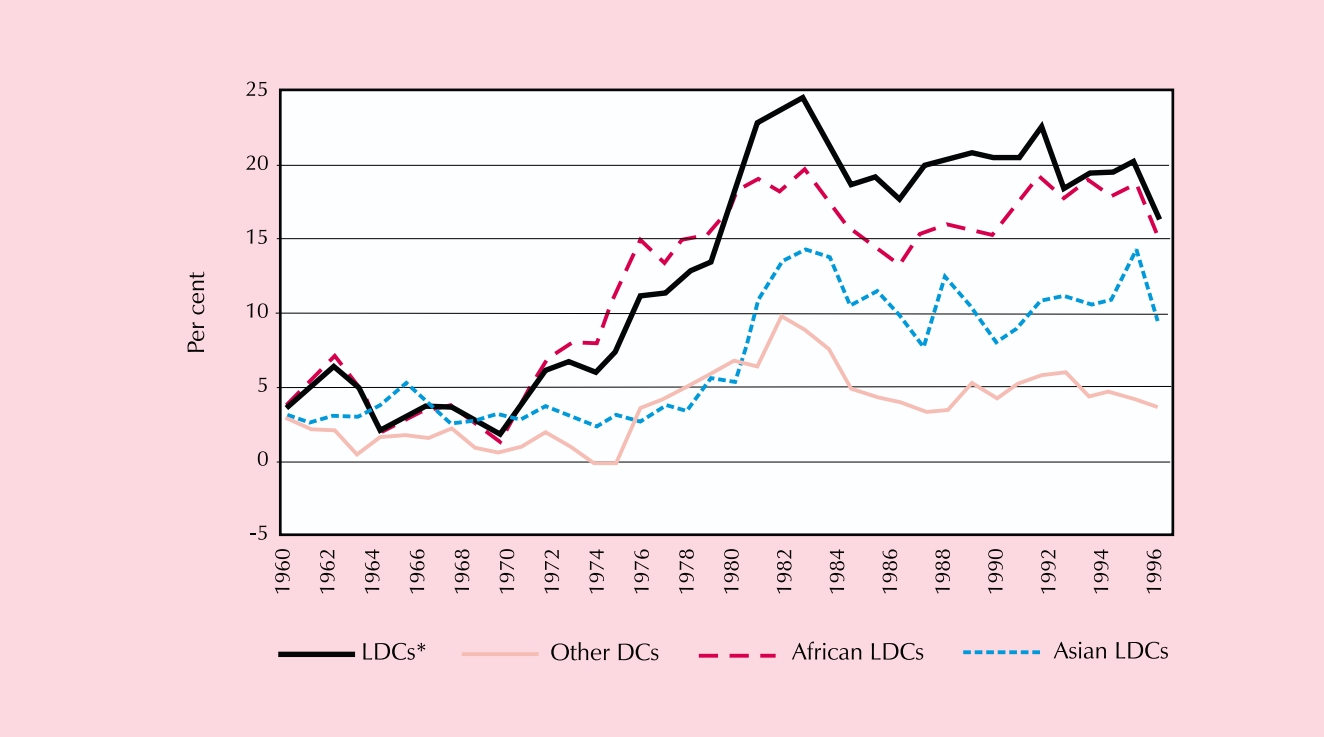
E. External resource flows and requirements for finance

With the prevailing levels of resources available for finance, very low levels of per capita income and private consumption, and vulnerability to frequent and large external shocks, it would not be surprising to find that the LDC economies have been reliant on large amount of external financing. As shown in chart 21, the LDC economies on average have relied on external financing equivalent to about 20 per cent of their GDP since the early 1980s. The average for African LDCs has fluctuated between 15 and 20 per cent in this period, while for the Asian LDCs the external resource gap has fluctuated around the 10 per cent mark. As noted above, the LDCs' financing crisis began in the 1970s. As shown in chart 21, there was a steep increase in resort to external financing in the LDCs and in other developing countries during that period. With the onset of the debt crisis of the early 1980s, the external finance-to-GDP ratio in the other developing countries stabilized at about 5 per cent, and the LDC average ratio stabilized at about 20 per cent. There are, of course, wide variations in the intensity of external resource dependence among different LDC sub-groups.

The LDC economies on average have relied on external financing equivalent to about 20 per cent of their GDP since the early 1980s.

As shown in table 11, the island LDC economies are overwhelmingly dominated by external resource inflows, with a financing gap of over 40 per cent of GDP on average. In these economies the external resource inflows are far larger than gross domestic investment and government consumption expenditure. As explained in box 1, this arises from the special characteristics of the small island economies which distinguish them from other LDC economies.

CHART 21: EXTERNAL RESOURCE GAP AS A PERCENTAGE OF GDP IN AVERAGE LDCS AND OTHER DCS



Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators, 2000*.
Notes: External resource gap is defined as current account deficit excluding official transfers.
* LDC average includes Island LDCs. Average refers to simple means.

TABLE 11: EXTERNAL RESOURCE GAP AS SHARE OF INVESTMENT, GOVERNMENT EXPENDITURE, GOVERNMENT CONSUMPTION EXPENDITURE AND GDP IN THE LDCS AND OTHER DCS, 1980–1998

	African LDCs	Asian LDCs	Island LDCs	LDC average	Other DCs
Percentage of gross domestic investment					
1980-85	99.3	55.8	117.6	101.8	27.8
1985-90	85.5	53.6	123.6	94.6	16.5
1990-95	93.5	44.4	133.0	92.5	21.2
1995-98	82.7	41.7	124.7	79.3	22.5
Percentage of total Government expenditure					
1980-85	70.5	75.4	121.2	86.2	24.5
1985-90	57.6	52.3	111.1	72.2	14.0
1990-95	72.2	43.3	97.5	75.1	19.7
1995-98	61.9	43.6	84.0	62.0	21.4
Percentage of Government consumption expenditure					
1980-85	104.4	118.9	146.7	116.7	41.1
1985-90	101.1	101.5	144.8	113.4	22.6
1990-95	109.2	85.2	193.1	119.4	32.8
1995-98	117.4	89.7	211.5	123.0	37.6
Percentage of GDP					
1980-85	17.1	13.0	42.7	21.6	6.9
1985-90	14.9	10.2	42.7	19.6	3.7
1990-95	17.5	9.9	48.7	19.9	5.0
1995-98	17.2	10.8	42.1	18.1	5.5

Source: UNCTAD calculations based on World Bank, *World Development Indicators 2000.*
Notes: Averages refer to simple group and period means.

However, even in the case of the African and Asian LDCs, where the GDP share of external resource inflows is relatively much smaller than that of the island economies, the investment and budgetary processes have been clearly dominated by external resource inflows. The external resource gap in the case of the average sub-Saharan African LDC has fluctuated at between 80 and almost 100 per cent of gross domestic investment over the period 1980–1998, while the same ratio in the case of the Asian LDCs has been between 40 and 55 per cent over the same period. External resources also formed between 60 and 70 per cent of total government expenditure for the average sub-Saharan African LDC, and 40 to 75 per cent for the average Asian LDC (table 11). Although there are considerable variations across individual countries in relation to these average ratios, the group averages are characteristic of the degree of external resource dependence of the individual LDC economies within each sub-group, as well as being good indicators of their distinct differences in this regard in comparison with the rest of the developing countries.

The relatively much higher degree of dependence of the LDC economies on external sources of finance is not merely a quantitative difference between the LDCs and other developing economies. As argued in the subsequent chapters of this Report, this has introduced important qualitative differences in terms of mechanisms of control in the accumulation and government service provision processes between the LDCs and other developing countries, with significant implications for efficiency of resource use and overall developmental potential. Chart 22, which shows the long-term relationship between savings and investment in the LDCs and in other developing countries, helps to shed light on

Box 1: External resource requirements of the island LDCs.*

The island LDCs, with an average external resource gap of over 40 per cent of GDP, are among the most highly aid-dependent countries in the world. In addition, as shown in Chart 23 (panels (e) and (f)), investment rates and government expenditure shares in these economies are amongst the highest in the world. These phenomena are a direct result of the peculiarities of island economies, discussed in section B, which cause serious balance-of-payments constraints for them. As pointed out, because of their small size and extreme limitations as regards agricultural land and other resources, most of these economies are highly dependent on imports for a major part of their consumption and production requirements. Unless they can find high-value export niches – high value in relation to transport costs and to domestic labour requirements for production – these economies are bound to remain dependent on external resources to bridge their balance-of-payments gap, even with low standards of living. Such an inflow of external resources would, of course, allow higher rates of investment and government expenditure without the need to curtail private consumption. The question of the optimal allocation of resources between investment, private consumption and public services in these economies needs to be dealt with at the specific country level. A key element in such allocation, from a strategic point of view, should be the development of the export potential of these economies, which can allow the creation of viable economies with the possibility of self-sustained growth at some future date. Maldives and Cape Verde, and to some extent Samoa and Vanuatu, have taken relatively successful steps in this direction by developing their tourist industry. But this option may not be open to some other island economies. At a general level it seems good policy for these countries to concentrate a major part of their development effort in building up their human capital base through education. The increasing significance of knowledge-based industries and services, and the rapid growth of global telecommunications systems and modern information technology, may provide new opportunities for these economies in the future if in the meantime they can muster the necessary skills and infrastructure to take advantage of this. As shown by experience, there is likely to be a high rate of brain drain amongst the educated population in these countries. However, having a large number of educated and skilled workers living and working in other countries with links to their home country can do the island economies more good than harm. With the creation of a critical mass of educated people, new technologies may provide these countries with as yet unforeseen opportunities for generating the high-value export niches that have so far eluded most of them.

* The list of island LDCs used in the statistical analysis in this Report is given in note 1.

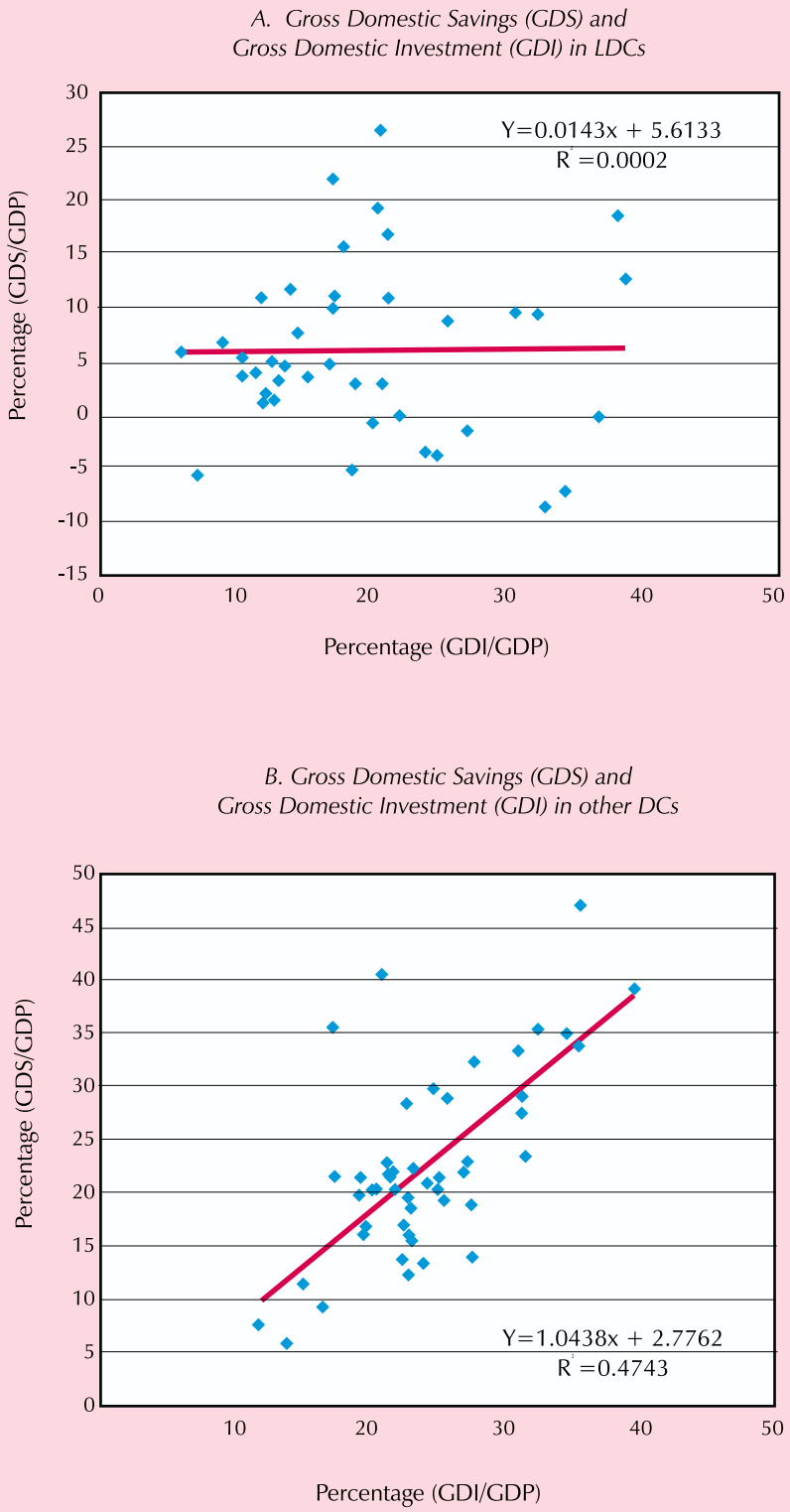
aspects of these relationships. As can be seen from chart 22(b), the long - term relationship between savings and investment in other developing countries shows the familiar picture as painted for examples, by, Feldstein and Horioka (1980) and others for different samples of countries, including the OECD countries; namely, a robust positive relationship between savings and investment rates, which some have interpreted as indicative of lack of perfect capital mobility across the countries.[24]

As shown in chart 22(a), however, this relationship breaks down in the case of the LDCs. This breakdown in the long-term relationship between savings and investment highlights two important aspects of the accumulation processes in these economies. First, investment in them is driven by external resource inflows rather than by internal processes. Second, the "investment - growth - savings" nexus in these economies does not work well. While in other developing economies greater investment leads to higher economic growth and hence higher savings rates, in the case of many LDCs this chain appears to be broken in at least one of its links. The most likely point of rupture in this relationship in the case of the LDCs is the "investment - growth" link; because as observed in the previous section, the existing evidence suggests that the "growth – savings" link in the LDCs seems to be relatively robust. The issue that lies at the heart of the financing problems of the LDCs, therefore, appears to be the lack of effectiveness of the externally driven accumulation processes in these economies.

The issue that lies at the heart of the financing problems of the LDCs appears to be the lack of effectiveness of the externally-driven accumulation processes in these economies.

Before the question of the efficiency of resource use is addressed, it may be helpful to examine also the issue of sufficiency of resources that is, the extent to which the available domestic and external sources of development finance have catered for the minimum developmental requirements of the LDCs. This is not a straightforward question to answer, as the minimal development finance

CHART 22: LONG-TERM RELATIONSHIP BETWEEN SAVINGS RATE AND INVESTMENT RATE IN THE LDCS AND IN OTHER DCS, 1970–1997



Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators, 1999*.

requirements are not easy to define precisely, and, in addition, resource requirements are not independent of the efficiency of resource use. Furthermore, issues of this type can be best addressed within an individual country context. It can be instructive, however, to pose the issue of resource requirements in the LDCs in a comparative context, where the actual investment and government expenditure rates are compared with what may be regarded as the international "norms" in the case of more successful developing countries. Such an exercise would be worthwhile because it can highlight the extent to which the breakdown of the "investment - growth - savings" nexus in the LDCs has been the result of low levels of investment in the first place. In order to separate the issues of resource requirements from the issues of efficiency of resource use, it may be useful to start with a static analysis, where, to begin with, the efficiency of resource use in the LDC economy is assumed as given.

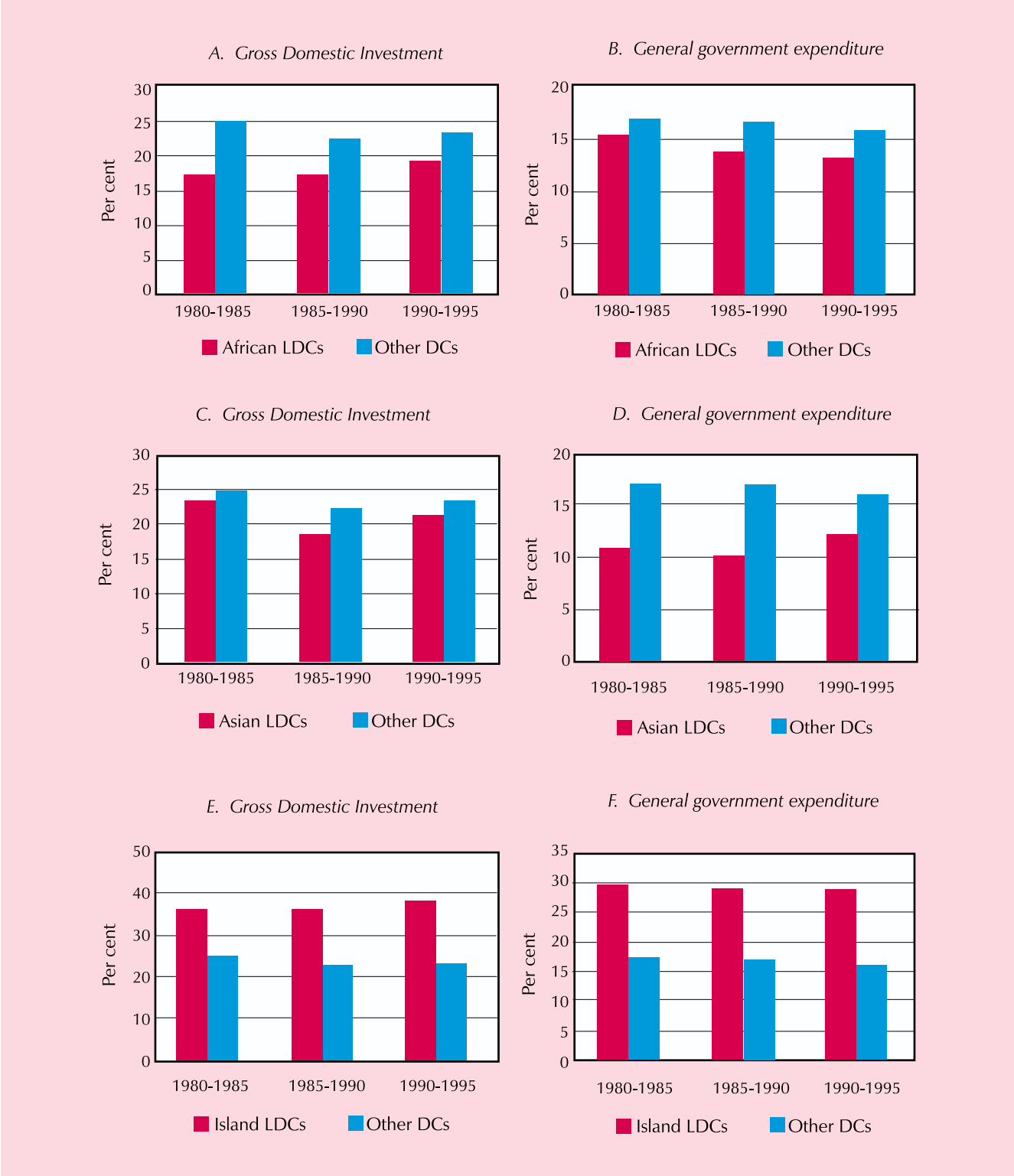
For the comparison of investment rates one can take the average investment rates in the other developing country group and compare them with the actual rates prevailing in the LDCs. For the comparison of government consumption expenditure rates one has to be more selective in choosing the comparator group, because expenditure rates normally increase with the level of development (the so-called Wagner's Law). For government consumption expenditure "norms", therefore, the average for a sample of countries with a per capita income range similar to that of the LDCs was selected. The investment and expenditure rates for the African, Asian, and Island LDCs, as compared with other developing country groups, are shown in chart 23. As can be seen, in the case of African and Asian LDCs, both the investment rates and government consumption rates fall short of the developing country "norms" throughout period 1980–1995. In the case of the island LDCs, the reverse is true, but as argued in box 1, these economies are special cases which need to be discussed separately from the other LDCs.

Despite heavy dependence on external finance, the African and Asian LDCs in no period during the past two decades managed to match the investment and government expenditure rates prevailing in other developing countries on average.

It appears, therefore, that despite heavy dependence on external finance, the African and Asian LDCs in no period during the past two decades managed to match the investment and government expenditure rates prevailing in other developing countries on average. In view of the exceptionally high gross investment requirements of the LDCs discussed in the first part of this chapter (for example, because of higher rates of environmental resource depletion, higher rates of human capital resource depletion arising from the prevalence of diseases such as AIDS, very low levels of socio-economic infrastructure, and the high degree of vulnerability to external shocks), these lower-than-average investment and government expenditure rates can in part explain the low rates of growth and development in the LDCs.

The question of external resource requirements can also be posed in relation to the requirements for finance in order to achieve certain growth and poverty alleviation objectives. For example, it would be important to form some idea of the external resource requirements of the Asian and African LDCs in order to achieve the international development targets, such as the commitment to reduce rates of poverty by half by the year 2015. On the basis of its estimates of growth elasticity of poverty in Africa, the Economic Commission for Africa (ECA) (1999) has provided estimates of necessary growth and hence investment requirements in various parts of Africa for achieving the poverty reduction targets. According to those estimates, to achieve the poverty reduction target the sub-Saharan African countries (which comprise 32 LDCs) should be able to sustain on average a GDP growth rate of over 7 per cent per annum. With the prevailing savings propensities and investment efficiency, ECA estimates that at least a doubling of investment rates, and hence a more than doubling of the inflow of external resources, are necessary for sub-Saharan Africa on average to achieve the OECD poverty reduction targets (ECA, 1999: 25–37).

CHART 23: AVERAGE GROSS DOMESTIC INVESTMENT AND GENERAL GOVERNMENT CONSUMPTION EXPENDITURE AS PERCENTAGE OF GDP IN AFRICAN, ASIAN AND ISLAND LDCS COMPARED TO OTHER DCS, 1980–1995



Source: UNCTAD secretariat calculations, based on World Bank, *World Development Indicators, 2000*.

Such projections are, of course, highly sensitive to the assumptions made about investment efficiency and savings rates. However, on the basis of different assumptions regarding the marginal savings rates and investment efficiency, UNCTAD (2000b) estimates external resource requirements of between 50 and 150 per cent higher than the existing flows in the short run in sub-Saharan Africa, for escaping the low-level equilibrium trap and achieving self-sustained growth rates of 6 per cent a year. Such average projections for sub-Saharan Africa are likely to be relevant to most African and Asian LDCs that have low savings rates and are caught in the low-level equilibrium trap.

The above does not mean, of course, that there is a one-to-one relationship between external resource inflows and investment and provision of public services. Moving to a more dynamic context, we need to relax the assumption of a given amount of domestic resources available for finance. In such a dynamic context it is not difficult to conceive of a situation where even lower levels of external resources, if used more effectively, could have given rise to a better investment environment, a higher growth of investment and productivity, and a greater availability of domestic resources for finance. This seems to have been so in the other developing country average case. The efficiency of resource use, therefore, takes centre stage in a more dynamic and long-term perspective.

The efficiency of investment may have itself been adversely affected by low rates of investment.

However, to the extent that the level of investment itself affects the efficiency of resource use, the analysis of resource requirements may also be helpful in partly explaining the apparent lack of efficiency of resource use in the LDCs. This arises, for instance, in a situation where the efficiency of each investment project depends on a cluster of other complementary investment projects being implemented concomitantly. For example, the efficiency of an agricultural extension project may critically depend on an adequate level of investment in transport and irrigation projects. Another example may be where the level of investment is adequate, but the financing problems lead to an inadequate provision of complementary public services, thus adversely affecting the efficiency of investment. This can become a particularly acute problem if the requirements of finance in the public sector during periods of intense economic reform are misjudged. The fact that the average rates of investment and public expenditure in the Asian and African LDCs over the past few decades have been persistently below the average for other developing countries suggests that the efficiency of investment may have itself been seriously affected by low rates of investment.

F. Conclusions

This chapter has three major findings. First, it appears that the marginal propensity to save, and more generally the marginal propensity to raise domestic resources available for finance (DRAF), in relation to per capita income in the LDCs, are relatively high. Yet the level and the rate of increase of domestic resources available for finance are low primarily because of a low base and a slow growth of per capita income. The crisis in domestic finance in the LDCs, therefore, has arisen mainly because of those two factors rather than because of a high propensity to consume. The problem of slow economic growth in the LDCs is linked to low rates of investment as well as to the low efficiency of resource use.

Secondly, despite the extremely low levels of domestic resources available for finance, the LDCs have managed to some extent to raise their investment

levels. In doing so they have had to resort to a large amount of external financing. Nevertheless, investment and government expenditure in the African and Asian LDCs as a share of the GDP are still well below the average for non-LDC developing countries, thus indicating inadequate access to external sources of finance. In the light of the special needs of the LDCs, this has implied serious under investment in those economies. The low level of investment may itself have adversely affected the efficiency of investment.

Thirdly, the size of the external shocks in the LDC economies, in terms of income losses caused, is often many times the size of the resources that these countries can muster internally to cope with those shocks (DRAF). This has important implications for the requirement for external resources the use of those resources and the timing of external finance. It also has implications for the plausibility of the common practice of treating variables such as the budget deficit, inflation and trade openness as exogenous policy variables in the special case of the LDCs. In the LDC context, these variables are themselves likely to be the outcome of processes set in motion by external shocks much greater than the national Governments with their meagre resources can cope with.

The central accumulation and budgetary processes of the LDC economies are dominated by external sources of finance rather than domestically-generated resources.

It is clear from this chapter that the central accumulation and budgetary processes of the LDC economies are dominated by external sources of finance rather than domestically-generated resources. The high degree of LDCs' vulnerability to external shocks, combined with their high degree of dependence on external resources, can limit the scope and influence of independent government policy in the economies. For a better understanding of policy options in the latter, it is therefore important to investigate the mechanisms of external resource flow and the criteria that are likely to have affected the allocation of external funds. The problems associated with the inefficiency of investment in the LDCs also go beyond the lack of sufficient investment, discussed in this chapter. In order to gain a better understanding of these problems we need next to address the agency question, i.e. the question of control and allocation mechanisms for external finance. For this purpose, it would be helpful to consider first the sources of external finance and the form they take in the case of LDC and non-LDC developing economies. This will be taken up in the next chapter.

Annex to Chapter 1:

Determinants of savings in the LDCs: some econometric estimates

This annex, based on Hussein (2000), reports the results of estimating a domestic savings function for 18 LDCs over the period 1968-1996. The savings model is estimated by regressing the ratio of domestic saving to GDP (DS) on real GDP per capita (Y), real GDP per capita growth (g), population growth (pop), the ratio of exports to GDP (EX), inflation (π), and the ratio of private credit to GDP (CR) as a proxy for financial development. Gross domestic savings are measured as the difference between GDP and total consumption. The explanatory variables used in estimation are standard variables in the literature on savings functions in developing countries with various theoretical underpinnings (see, for example, Schmidt-Hebbel, Webb and Corsetti, 1992; Schmidt-Hebbel, Serven and Solimano, 1996; Edwards, 1996; Hussein and Thirlwall, 1999).

Before examining the results, a number of important cautionary points are in order. First, the data on savings in developing countries, and particularly the LDCs, are not very accurate. This can be easily seen by comparing the magnitude of the measurement errors in GDP (income and expenditure side differences), as reported in the World Bank data bank, with the estimated savings in the developing countries. Secondly, while economic theory is by and large about private savings, in this annex, as in most works on developing countries, the estimation is made with regard to overall savings, including government savings, because of lack of data. Thirdly, the estimated coefficients using panel data are likely to be biased because of omitted heterogeneity, particularly those related to slope and dynamic heterogeneity. Because of these problems, the results here, as in any works using cross-country panel regression, should be interpreted with due care.

To choose between a simple Ordinary Least Squares (OLS), fixed effects and random effects estimations, two tests are performed: the Breusch-Pagan test and the Hausman specification test. The Breusch-Pagan test rejects the simple OLS specification, which means that either the fixed effects model or the random effects model is superior. The Hausman specification test shows that the fixed effects model outperforms the random effects model. Results are based on the fixed - effect instrumental variables model where the model incorporates fixed country-specific effects in the intercept term. The endogeneity between domestic saving and other explanatory variables such as growth rate is taken into account by using the lagged independent variables as instruments. The following are the estimation results for 18 LDCs with available data:[a]

(1) $$DS = -12.86 + 0.05\,Y + 0.06\,g + 0.41\,pop - 0.26\,CR + 0.31\,EX + 0.004\,\pi$$
(-5.16)** (5.83)** (1.75) (1.42) (-4.22)** (5.78)** (1.65)
Adjusted $R^2 = 0.56$ No. of observations = 504 Standard error of regression = 6.18

Equation (1) shows that real income is an important variable to explain savings behaviour. An increase of $20 in per capita income leads to a 1 per cent increase in the ratio of domestic savings in LDCs. The same exercise was repeated using a sample of 42 other developing countries (the results are not reported here).[b] The marginal propensity to save with respect to per capita income is much higher in LDCs than in other developing countries. For 42 developing countries with an average per capita income of $1,200, an increase of $100 in per capita income leads to a 0.44 per cent increase in the domestic savings ratio.

Another important factor that affects domestic savings in LDCs is the export ratio. The estimated coefficient shows that a 1 per cent increase in the export ratio leads to 0.31 per cent increase in domestic savings rate. Although the propensity to save may be higher in the export sector than in other sectors, the strong association between domestic savings and exports is partly due to the heavy reliance of government savings on taxes on foreign trade.

Equation (1) also shows that the relationship between private credit and domestic savings is negative. A l per cent increase in the private credit ratio causes a reduction of 0.26 per cent in the domestic savings ratio.

On the other hand, inflation has no effect on domestic savings where the coefficient of the inflation rate is too small and insignificant. The two components of real GDP growth (real GDP per capita growth and population growth) also have an insignificant impact on domestic savings. Real GDP per capita is significant only in the following estimation when the inflation rate and population growth are dropped out of the model and financial development is measured by money growth (m).

(2) $$DS = -13.83 + 0.04\,Y + 0.11g + 0.002\,m + 0.31\,EX$$
(-5.65)** (5.16)** (2.09)* (2.00)* (5.75)**
Adjusted R2 = 0.55 No. of observations = 504

To further examine the role of financial development, the money supply measure, M3, is used as proxy for financial development.

(3) $$DS = -11.91 + 0.04\,Y + 0.10g - 0.08\,M3 + 0.33\,EX$$
(-4.73)** (4.80)** (1.90) (-1.36) (5.99)**

Adjusted R2 = 0.54 No. of observations = 504

The findings are unexpected as M3 does not have any effect on savings and its coefficient has the wrong sign. Money growth (m) is therefore the only financial indicator variable that has a (small) positive and significant effect on domestic savings. These results indicate that the formal financial system in LDCs may not be playing the role it should play in the growth process. In fact, most of the financial transactions, especially of the household sector and small and medium sized business enterprises, are carried out in the informal financial markets (curb markets). In many LDCs, a great proportion of the small firms do not have access to the formal financial markets.

a The 18 LDCs are Benin, Burkina Faso, Burundi, Central African Republic, Chad, Democratic Republic of the Congo, Gambia, Haiti, Madagascar, Malawi, Mali, Mauritania, Nepal, Niger, Rwanda, Sierra Leone, Togo and Zambia.

b The 42 countries are Algeria, Argentina, Brazil, Cameroon, Chile, Colombia, Costa Rica, Côte d'Ivoire, Democratic Republic of the Congo, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, Ghana, Guatemala, Guyana, Honduras, India, Jamaica, Kenya, Korea Republic of, Malaysia, Mauritius, Mexico, Morocco, Nicaragua, Nigeria, Pakistan, Paraguay, Peru, Philippines, Saudi Arabia, Senegal, Singapore, South Africa, Thailand, Trinidad and Tobago, Tunisia, Turkey, Uruguay and Venezuela.

Notes

1. Throughout this report (unless otherwise specified) African, Asian and island LDCs are as follows: African LDCs: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Sudan, Togo, Uganda, United Republic of Tanzania and Zambia. Haiti is normally included in the African LDC group unless otherwise stated. Asian LDCs: Afghanistan, Bangladesh, Bhutan, Cambodia, Lao People's Democratic Republic, Myanmar, Nepal and Yemen; island LDCs: Cape Verde, Comoros, Kiribati, Maldives, Samoa, Sao Tome and Principe, Solomon Islands, Tuvalu and Vanuatu.
2. For a discussion of trends and the composition of exports from the LDCs, see *The Least Developed Countries, 1999 Report*, part two chapter 1, pp. 79 - 91.
3. In small island economies such as Cape Verde, Kiribati, Maldives, Samoa, Sao Tome and Principe and Vanuatu, amongst the LDCs, access to telephones is much better than the group average. But even these economies are way behind the developing country average, with telephone lines per person being between 20 and 50 per cent of the developing country average.
4. See, for example, UNCTAD (1999b).
5. Eighty per cent of the 20 landlocked developing countries are in fact LDC; this makes landlockedness a predominantly LDC problem.
6. Economies of scale and indivisibilities in transportation substantially increase transportation costs for the island LDCs. For example, the cost of building a 3.4 kilometre-long causeway between two main islands (Betio and Bairiki) in Kiribati in the 1980s was about 20 per cent of the country's GNP. The same phenomenon affects the cost of other infrastructure such as electricity and telecommunications. Being highly specialized economies, they also need to import a large variety of goods over long distances in relatively small quantities. In addition to the high transport costs involved, this entails the keeping of much larger stock relative to sales.
7. According to some estimates, in most sub-Saharan African countries the freight costs for imports are 50 per cent higher than the average for other developing countries (UNCTAD, 1999b). Internal transport costs are also said to double or triple the free - on - board. cost of exportable agricultural products relative to farm-gate prices in outlying agricultural areas in most sub-Saharan African economies (Delgado, 1997:156).
8. EM-DAT (2000).
9. According to the World Health Organization (1998), by the end of 1997 the estimated percentage of the adult population living with HIV/AIDS in some LDCs was as follows: Zambia 19%, Malawi 14.9 %, Mozambique 14.1 %, Ethiopia 9.3 %, Rwanda 12.8%, Lesotho 8.3%, United Republic of Tanzania 9.4%, Uganda 9.5%, Togo 5 %, Djibouti 10.3 %, Burkina Faso 7.7 %, Burundi 8.3 %, and Central African Republic 10.8 %, these figures compare with the average sub-Saharan African rate of 7.4 per cent, and the other developing countries average rate of about 0.5 per cent.
10. The index shown in table 6 refers to the instability of real exports in terms of import purchasing power, thus including the instability resulting from both quantity shocks and terms - of - trade shocks. The instability index is measured as the standard deviation of the annual growth rates for each country over the specified period.
11. For reference to some recent studies of savings behaviour in developing countries, see the sources quoted in the annex to this chapter, p.49.
12. See the annex to this chapter.
13. Some economists have even gone so far as to include the depletion of exhaustible natural resources such as oil and minerals in the measure of net investment and savings. This, however, may be inappropriate, since the depletion of such resources does not directly the reduce productive capacities of the economy (unless it leads to sharply rising extraction costs), and only affects future foregone revenue. But with the uncertainties about future prices and the probable appearance of new technologies that can displace the resource in question, the value of the latter in future can be very uncertain.
14. With the availability of cross-country panel data sets some economists have been hasty in using the data in cross - country regression analysis without pausing to ponder whether the variables indeed measure the same thing in different countries. The conventional national accounting measures of investment in a country such as Ethiopia with widespread environmental resource degradation problems mean something totally different in terms of additions to productive capacities compared with another country with less severe environmental problems.
15. Comparative international statistics on this issue are quite revealing. According the WHO estimates (WHO, 1998: 41), in 1995 over 77 per cent of deaths in the developed market economies occurred after retirement the age of 65+. This share is projected to

increase to 85 per cent by the year 2025. In the LDCs, on the other hand, over 84 per cent of deaths in 1995 were in the below - 65 age group. If the age structure of deaths in the LDCs were in a steady state, we could not count these early deaths as a depreciation of the human capital stock. However, the accelerating number of premature deaths in most LDCs as a result of AIDS and other diseases and natural disasters means that there is a large element of human capital depreciation involved. In any event, the medical expenses associated with these premature deaths are a substantial cost to society.

16. In economies where private consumption is close to subsistence level, it would be difficult to increase DRAF without adversely affecting the productive efficiency of the workers in the short run. This is the classic case of the low equilibrium trap,where external resources may be necessary in order to increase output and productivity and hence potential savings in the domestic economy. Of course, to the extent that part of DRAF may be used for unproductive activities such as arms purchase, a re-switching of this expenditure to more productive uses can achieve the same result.
17. This is not, of course, to say that foreign aid has not been used or should not be used to support private consumption in poor economies. An important developmental role of foreign aid in poor countries which are subject to external shocks is indeed the smoothing of consumption.
18. Average annual growth rates in chart 18 are calculated for 1960-1970, 1970-1980, 1980-1990 and 1990-1997. Each country, depending on the availability of data, is hence represented by at most four observations in the graph.
19. This relationship holds even when we purge the extreme and outlying observations.
20. It should be noted that this is not, of course, a steady - state relationship, or a relationship that is likely to characterize the co-movements of private consumption and GDP in the very long run. What it signifies is that in the periods of transition or traverse from a low investment rate low growth rate situation to a high investment high growth situation, DRAF or savings will also increase commensurately.
21. The LDCs shown in chart 19 are countries for which the relevant data are available for the relevant periods. The annual income terms - of - trade loss and DRAF are both measured in dollar terms. Income terms of trade are measured as $X(1/Pm - 1/Px)$, where X is the value of exports in dollars and Pm and Px are import and export price indices with the previous year as the base year. Dollar DRAF is measured as GNP minus private consumption, both measured in United States dollars as given in World Bank databank.
22. Two- and three-year terms - of - trade effects are measured in the same way as one-year effects, with the difference that the base years, rather than being the previous year, are set at two - and three - year lags respectively.
23. Economists who are trained in analysing industrial economies often refer to these variables as policy choices. In the industrial economies, however, the size of maximum income losses due to external shocks relative to resources available for finance is only a tiny fraction of that in the LDCs. When the size of the external shock becomes many times larger than the size of the supposed policy variable which is meant to deal with it (e.g. government revenue or expenditure) the use of such terminology becomes problematic.
24. The high correlation between savings and investment rates was first discussed in Feldstein and Horioka (1980), and later supported by findings of other studies. See, for example, Feldstein and Baccheta (1991), Dooley, Frankel and Mathieson (1987) and Summers (1988). The causes and implications of this phenomenon in terms of international capital mobility and the internal links between investment, growth and savings processes are discussed in Feldstein (1994) Mussa and Goldstein (1993) and Obstfeld (1994), amongst others.

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