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Economic Growth and Capital Accumulation

Chapter 2

A. Introduction

The core processes through which productive capacities develop are capital accumulation, technological progress and structural change. This chapter and the next one examine how these processes are working in the LDCs. Although they are closely interrelated, the present chapter focuses, for analytical purposes, on capital accumulation, whilst the next one examines technological progress and structural change. The working of all three processes within the LDCs is strongly affected by the degree and form of integration of the LDCs with the global economy. Thus, the analysis in the present chapter discusses the extent to which external capital flows, including both ODA and FDI, hinder or facilitate domestic capital accumulation, and includes estimates of the brain drain from the LDCs, whilst the next chapter includes discussion of trade integration. The nature of institutions also affects how these core processes work within the LDCs, but this issue is discussed in chapter 6.

The first section of the present chapter (section B) provides an overall framework for the discussion of the two chapters by comparing the actual growth rates of the LDCs in the past with the potential GDP growth rates which the LDCs could achieve if the productivity of their labour force was increased in ways which are feasible for late-developing countries and if their growing labour force was fully employed. The comparison shows that there is a major opportunity for accelerated economic growth in the LDCs through the development and full utilization of productive capacities. But to realize this opportunity, strong constraints on capital accumulation, technological progress and structural change must be overcome. Increased investment, encompassing both physical and human capital formation, and increased effort in building technological capabilities are both required. Moreover, exports must grow sufficiently fast to finance the necessary imports for developing productive capacities and sustaining accelerated economic growth.

There is a major opportunity for accelerated economic growth in the LDCs through the development and full utilization of productive capacities.

After section B, the rest of the chapter focuses on processes of capital accumulation. Sections C and D examine trends in physical and human capital formation in the LDCs respectively.[1] Section E discusses the limits and potential for domestic resource mobilization, whilst section F discusses the relationship between external resource inflows, particularly in the form of ODA and FDI, and domestic capital accumulation processes. The concluding section summarizes the main messages of the chapter.

B. Economic growth in the LDCs: Potential versus actual

1. The growth potential of the LDCs

The least developed countries have the potential to achieve very high rates of economic growth and to reduce poverty rapidly. The high growth potential of very poor countries can be explained in different ways. For example, it has been argued that poor countries should grow more rapidly than rich ones because of diminishing returns to capital in capital-abundant rich countries. This is at the

heart of the neo-classical growth model formalized by Solow (1956). Economic historians, on the other hand, have focused on the potential for technological latecomers to achieve rapid economic progress because they are "technologically backward", in the sense of being behind the global technological frontier, and thus they can innovate by adopting existing technologies rather than have to invent from scratch (Gerschenkron, 1962). However, the best evidence of the high growth potential of very poor countries is the economic performance of the handful of developing countries, most notably the newly industrializing economies in East Asia, which have managed to sustain rapid economic growth over a number of decades and thereby reduce poverty drastically.

It is not utopian to imagine that the least developed countries could achieve the rapid growth rates which some very poor countries have already achieved.

It is not utopian to imagine that the least developed countries could achieve the rapid growth rates which some very poor countries have already achieved. This section presents an analytical framework and empirical estimates of how fast LDCs could grow during the period 2002–2015. The analytical framework adopted is a modified and extended version of a catching-up model proposed by Taylor and Rada (2005) for the analysis of the growth potential of several developing regions. It draws on the methodology used for the analysis of the growth prospects of Mexico and Central America (Ros, 2006), and is based on Ros (2005a), who applies this methodology for 23 LDCs for which the necessary data are available.

In the catching-up model the potential growth rate is estimated assuming that there is full employment of the labour force and that a number of sources of potential labour productivity growth within poor countries are exploited. Thus, potential GDP growth rate is estimated as a function of the labour force growth and the potential labour productivity growth rate (see box 7). Following Taylor and Rada (2005), the analysis identifies three major factors as determinants of potential labour productivity growth. These factors reflect both the heterodox and orthodox traditions in the analysis of the growth potential. They are as follows:

Simulations were made for two scenarios — a fast catch-up scenario and a slow catch-up scenario — based on different assumptions regarding the ability to take advantage of the technological gap between LDCs and other developing countries.

1. The effects of increasing returns to scale in industrial sectors of the economy. Here it is assumed that the overall labour productivity growth rate responds to the GDP growth rate with a 'Verdoorn elasticity', which varies according to the structure of the economy. The term 'Verdoorn elasticity' is used as Verdoorn was the first economist to identify empirically the tendency for a fast growth of manufacturing output to induce a fast rate of labour productivity in manufacturing as a result of static and dynamic returns to scale — Verdoorn's Law (see McCombie, Pugno and Soro, 2003).
2. The effects of human capital accumulation. Here it is assumed that a more rapid increase in educational level (rather than a higher level) will lead to a higher productivity growth rate.
3. The effects of technological backwardness. Here it is assumed that the size of the gap between the income level of a given country and the prevailing level in more developed countries is related to productivity growth rates associated with technological catch-up. This can be explained, following Gerschenkron (1962), as the result of the "advantages of backwardness", or can be seen as the result of a convergence process in a neoclassical growth model.

The potential growth rate can be derived from projections of the growth of the labour force and assumptions regarding the values of parameters related to these three factors. Simulations were made for two scenarios — a fast catch-up scenario and a slow catch-up scenario — based on different assumptions regarding the ability to take advantage of the technological gap between LDCs and other developing countries (see box 7).

Box 7. A catching-up model for the LDCs

On the basis of Taylor and Rada (2005) and on Ros (2006), Ros (2005a) developed a model to analyse the growth potential of the least developed countries. It relies on an identity on the basis of which the potential GDP growth rate (y^*) is equal to the labour force growth rate (l^*) and also on the potential labour productivity growth rate (r), in other words:

$$y^* = l^* + \rho \qquad (1)$$

where $\rho = \rho o + \gamma y + \eta h + G$ (2)

The potential labour productivity growth rate (ρ) is determined by (i) the autonomous rate of productivity growth (ρo); (ii) the impact of the Verdoorn elasticity (γ) on GDP growth (y); (iii) the effect of human capital accumulation (h), whereby the rate of the increase in educational level leads to a productivity growth rate according to the parameter η; and (iv) the extent of technological backwardness (G), assumed to be equal to the gap between a country's income level and the one prevailing in more developed countries.[1]

Combining (1) with (2) gives the following:

$$y^* = A + B\,G \qquad (3)$$

where: $A = [1/(1-\gamma)]\,(l^* + \rho o + \eta h)$

$B = 1/(1-\gamma)$

Term G is an inverse function of the "income gap", $I = (Y/P)_{ldc}/(Y/P)_{odc}$, between per capita income in the LDCs and the per capita income of other developing countries, such that when $I = 1$, a situation in which there is no income gap between LDC and ODC, productivity growth arising from the catching up process is nil.

The precise speed of catch-up associated with the income gap is specified with a parameter E as follows:

$G = E(1 - Io)$

where Io is the initial value of I

The higher the value for parameter E, the faster the rate of technological catch-up.

In estimating the potential growth rates of the LDCs in the sample for the period 2002–2015, a number of assumptions were made.

Firstly, the labour force grows at the same rate as the population aged 15–64. This assumes that there is no change in the labour force participation rates. Any upward trend in the women's participation rate will be offset by a reduction in the rate among school-aged youth.

Secondly, countries are grouped according to their major export specialization – agricultural exporters, oil and mineral exporters, manufactures exporters and services exporters — and apparent historical estimates were made of Verdoorn elasticities (the relationship between output growth and labour productivity growth). Manufactures exporters show the highest Verdoorn elasticity (0.27) and oil and mineral exporters the lowest (0.08), with agricultural exporters (0.11) and service exporters (0.16) falling somewhere in between.

Thirdly, human capital accumulation in the LDCs is estimated on the basis of the growth of the educational level index used in the UNDP *Human Development Report* (a weighted average of the literacy rate and enrolment in the three levels of education). The assumption made is that, with few exceptions, the rate of human capital accumulation is the same in all the LDCs in the sample, such that by 2015 the educational index converges towards today's average level of education in developing countries. This implies a rather high rate of human capital accumulation (2.4 per cent per year). The exceptions are Cape Verde ($h = 1.8$ per cent), Maldives ($h = 0.3$ per cent) and Sao Tome and Principe ($h = 1.7$ per cent), with relatively high initial educational indexes, which are assumed to converge towards today's average level of education in high human development countries. Labour productivity growth is assumed to respond to human capital growth with a parameter of 0.5 (η). This is based on Ros (2000) who finds this parameter for a sample of developing and developed countries.[2]

Fourthly, two scenarios are assumed with regard to the effect of the income gap on technological catch-up — a slow catch-up scenario and a fast catch-up scenario. In the slow catch-up scenario, the value of the parameter E, which governs the speed of catch-up associated with any given income gap, is 0.013, which is equivalent to the historical experience of the LDCs in the sample during the period 1980–2003. In the fast catch-up scenario, the parameter E is set equal to 0.04, which assumes that GDP per capita in the LDCs will converge towards the average level in other developing countries at a rate equal to one third the rate at which Japan converged towards developed country levels in the post-war period.[3] The growth of per capita income in developing countries is assumed to be 2.8 per cent per year (the value recorded for the period 1990–2002).

Source: Ros (2005a).

[1] The technological backwardness can be seen as an "advantage" (Gerschenkron, 1962) or as a result of a convergence process in a neoclassical growth model.

[2] Maddison's estimate (1995) ($\eta = 1$) is more optimistic.

[3] See Taylor and Rada (2005). There are two exceptions — Cape Verde and Maldives — with levels of per capita income in 2002 higher than the developing country average. These two countries are assumed to converge towards the world average.

The results of the simulations for the two catch-up scenarios are presented in table 24. For comparison, the table also presents actual GDP and per capita GDP growth rates for 1990–2003. Several observations can be made on the basis of the table.

The potential GDP growth rate of the LDCs in the fast catch-up scenario is 7.5 per cent per annum... which meets the target growth rate of the Brussels Programme of Action.

First, the potential GDP growth rate of the LDCs in the fast catch-up scenario is 7.5 per cent per annum (table 24). This growth rate is similar to the type of catch-up growth rates which China and India are now achieving, and which newly industrializing economies such as the Republic of Korea, Thailand and Malaysia sustained in the past. It also meets the rate of growth which the Brussels Programme of Action declares the LDCs, with the support of the development partners, should strive to attain.[2] Moreover, it is a growth rate which would enable the realization of one of the aspirations of the "Spirit of Monterrey" declaration which emerged from the Heads of State retreat at the Financing for Development Conference held in Monterrey in 2002. This stated as follows: "We undertake to assist the world's poorest countries to double the size of their economies within a decade, in order to achieve the MDGs (Millennium Development Goals)".

TABLE 24. PROJECTIONS OF POTENTIAL GROWTH OF GDP AND GDP PER CAPITA IN SELECTED LDCS AND INCOME GAP RELATIVE TO OTHER DEVELOPING COUNTRIES

	GDP growth *(% per annum)*			**Per capita GDP growth** *(% per annum)*			**Income gap**[a] *(%)*		
	1990–2003 *Actual growth rate*	**2002–2015** *Potential growth rate*		**1990–2003** *Actual growth rate*	**2002–2015** *Potential growth rate*		**2002** *Actual gap*	**2015** *Potential gap*	
		Slow catch-up scenario	***Fast catch-up scenario***		***Slow catch-up scenario***	***Fast catch-up scenario***		***Slow catch-up scenario***	***Fast catch-up scenario***
Angola	3.2	5.2	6.7	0.3	2.3	3.7	53	50	59
Bangladesh	4.9	5.6	7.9	2.6	3.8	6.0	42	48	62
Benin	5.0	5.8	8.3	2.2	3.3	5.7	26	28	37
Bhutan	6.7	5.3	7.1	4.6	2.8	4.5	49	49	60
Burkina Faso	4.2	5.7	8.3	1.3	2.7	5.1	27	27	36
Cape Verde	5.9	5.3	6.4	3.8	3.5	4.5	64[d]		
Eritrea	3.7[b]	6.4	9.2	1.4	3.5	6.1	22	24	32
Ethiopia	4.3	5.6	8.3	1.4	3.2	5.8	19	20	27
Guinea	4.2	5.2	6.8	1.7	2.7	4.2	52	51	62
Guinea Bissau	0.4	5.9	8.8	-2.6	3.0	5.7	18	18	26
Haiti	-0.1	4.6	6.8	-2.2	3.3	5.4	40	43	55
Lao PDR	6.3	6.0	8.3	4.0	3.9	6.1	42	48	63
Malawi	3.0	5.0	8.0	1.0	3.1	6.0	14	15	21
Maldives	7.1[c]	4.7	6.1	4.2	1.8	3.0	61[d]		
Mali	4.9	6.3	9.0	2.1	3.1	5.5	23	24	32
Mozambique	7.0	5.1	8.0	4.4	3.6	6.4	26	29	40
Rwanda	2.3	4.9	7.3	-0.5	2.8	5.0	31	31	41
Sao Tome and Principe	2.2	5.4	7.7	-0.4	3.1	5.2	32	33	43
Uganda	6.8	5.9	8.3	3.8	2.3	4.5	34	32	42
United Rep. of Tanzania	3.7	5.3	8.3	1.0	3.5	6.4	14	15	22
Vanuatu	2.6	5.3	6.5	-0.1	3.1	4.2	71	74	84
Yemen	5.8	6.6	9.3	1.8	3.0	5.4	21	22	29
Zambia	1.4	4.3	6.8	-0.8	2.9	5.3	21	21	29
Simple average	4.1	5.5	7.5	1.5	3.1	5.2	32[e]	33	43[e]

Source: Ros (2005a).

Note: For explanation of growth scenarios see text and box 1 of the chapter.
a GDP per capita in LDCs as percentage of GDP per capita in other developing countries.
b 1992–2003; *c* 1995–2003; *d* Relative to world average; *e* Excludes Cape Verde and Maldives.

With the potential growth rates which are possible within the fast catch-up scenario, potential GDP per capita would grow at 5.2 per cent per annum on average, which would enable substantial and rapid poverty reduction given that economic growth is founded on full employment and growth of labour productivity. In the slow catch-up scenario, potential GDP growth would be slower, but nevertheless potential GDP per capita would grow at 3.1 per cent per annum, enabling substantial poverty reduction.

Second, in the fast catch-up scenario potential growth rates of both total GDP and per capita GDP in the period 2002–2015 are much higher than in the period 1990–2003. For the whole sample of countries potential GDP growth during 2002–2015 is on average 3.4 percentage points higher than in the period 1990–2003 and potential per capita GDP growth is 3.7 points higher. Potential GDP growth is higher than in the past in all but one country (Maldives) and per capita GDP growth is higher in all but two countries (Bhutan and Maldives).

In the fast catch-up scenario, potential GDP growth during 2002–2015 is on average 3.4 percentage points higher than in the period 1990–2003 and potential per capita GDP growth is 3.7 points higher.

In the slow catch-up scenario, potential GDP growth rates are significantly lower (by two percentage points) than in the first scenario but still higher than in the period 1990–2003 (by 1.4 percentage points). However, even in this slow catch-up scenario, potential per capita GDP growth is 1.6 percentage points higher than in the period 1990–2003. In this case, potential GDP growth and potential per capita GDP growth are higher than in 1990–2003 in all but six countries (Bhutan, Cape Verde, Lao People's Democractic Republic, Maldives, Mozambique and Uganda).

Third, the highest growth rates are found in the poorest LDCs. For example, in the fast catch-up scenario all but one of the LDCs with below average incomes have above average potential GDP growth rates and all but three LDCs with above average potential GDP growth rates have below average incomes. This is an indication of the important role that the assumptions about technological catch-up are playing in the simulations. It also implies that there will be a process of convergence amongst LDCs as GDP per capita differentials amongst them diminish and also between the LDCs and other developing countries. In the fast catch-up scenario, assuming that the growth rate of GDP per capita in other developing countries continues at the same rate as the period 1990–2002, the GDP per capita of the least developed countries would be expected to rise from 32 per cent of the average in other developing countries in 2002 to 43 per cent of that average in 2015 (see table 24). Of course, this process of convergence would be much slower in the slow catch-up scenario. The income gap between the LDCs and other developing countries would decrease by less than one percentage point, and in fact the income level in a few LDCs (Angola, Guinea and Uganda) tends to diverge from the average income level prevailing in developing countries.

In the slow catch-up scenario, potential GDP growth rates are significantly lower than in the first scenario but still higher than in the period 1990–2003.

Fourth, the highest potential growth rates of per capita GDP are found among the manufactures exporters (3.7 per cent to 6.0 per cent), followed by the agricultural exporters (3.0 per cent to 5.5 per cent), the oil and mineral exporters (2.7 per cent to 4.7 per cent) and the services exporters (2.8 per cent to 3.9 per cent). The contrast between the manufacturing exporters on the one hand and the oil and mineral exporters on the other reflects the role of returns to scale in the growth simulations since the highest "Verdoorn elasticity" is estimated to exist in the manufactures exporters and the lowest "Verdoorn elasticity" in the oil and mineral exporters.[3] The relatively low rates of potential growth of the services exporters are due to their relatively high income levels and as a result the reduced scope for technological catching-up effects.

These growth scenarios are obviously sensitive to the assumptions which have been made with regard to key parameters. But the assumptions are empirically grounded in the experience of either least developed countries or developing countries. They thus provide a realistic indication of what a full employment growth path for the LDCs could look like if productive capacities were developed. The estimates indicate that there are major opportunities for increased growth rates. However, for these opportunities to be realized, various constraints on the achievement of the potential growth rates must be addressed.

Achieving these potential growth rates will first of all require substantially increased investment rates (see box 8). These must be financed from substantially increased domestic savings, or substantially increased external resource inflows, or some combination of the two. Accelerated export growth will also be necessary in order to pay for the increased imports which will be required for sustaining faster economic growth. There will also need to be increased technological effort to acquire and use modern technologies in use in other countries. The full-employment output growth trajectory will not be achieved if investment demand falls short of the investment requirements. Macroeconomic policies will thus need to ensure macroeconomic stability, which is vital for investment expectations, and also to create an environment in which there are strong demand-side incentives to invest.

Achieving these potential growth rates will be possible only if key constraints on the development of productive capacities are addressed.

Realizing the potential growth rates outlined in these scenarios, and particularly the fast catch-up scenario which conforms to the aspirations of the Brussels Programme of Action, will be possible only if key constraints on the development of productive capacities are addressed. These constraints are very strong in the LDCs, and they are also interlocking to create vicious circles of persistent mass poverty and underdevelopment. If the growing labour force is not being fully employed and also not being equipped with more skills, capital and technology to increase productivity, the negative effects of fast population growth can quite simply swamp any potential positive effects of a faster labour force growth on the overall potential growth rate. The policy challenge is to relax key constraints in order to break down the vicious circles of poverty and underdevelopment and to start and sustain the potential growth rates which these catch-up scenarios suggest are achievable.

Box 8. Investment requirements for potential catch-up growth rates

This box extends the catch-up model introduced in the main text by estimating the investment rates required in order to achieve the potential growth rates which are achievable under the fast and slow catch-up growth scenarios.

The required investment rates as a share of GDP are estimated on the basis of assumptions regarding the rate of capital depreciation (which is assumed to be 10 per cent per annum) and the marginal capital–output ratio. The latter varies between countries and may be expected to change over time. But in the present analysis it is assumed to be 3.2, which is the trimmed average for the sample of LDCs for the period 1990–2003. The required gross investment rate (I/Y)* is estimated as the net investment required plus the rate of depreciation, with the required net investment rate being the potential growth rate multiplied by the capital–output ratio.[1] The assumption that the average productivity of capital is the same in all countries and remains the same is obviously a simplification. But it is difficult to identify a better method of estimating the ratios of capital to potential output — which is what is ideally required. The problem with using country-specific capital–output ratios is that these estimates are very sensitive to the rate of capacity utilization, and there are no data on changes in capacity utilization to adjust the country–specific estimates.

Using these assumptions, box table 3 shows estimates of the gross investment rates, (I/Y)*, required in order to achieve the potential growth rate in the LDCs for the period 2002–2015 together with the average investment rate observed during the period 1990–2003. The estimates are given for both the slow and the fast catch-up scenarios.

As can be seen from the table, achieving the potential growth rate will require increasing investment well above the levels recorded in the 1990–2003 period. The average investment requirement for the slow catch-up scenario is 28 per cent of GDP, whilst the average investment rate for the fast catch-up scenario is 35 per cent. For the sample as a whole, it implies an additional investment effort of over 4 percentage points of GDP in the slow convergence scenario and of almost 12 percentage points of GDP in the fast convergence scenario. The results — which, to emphasize again, depend

Box 8 (contd.)

BOX TABLE 3. INVESTMENT REQUIREMENTS TO ACHIEVE ESTIMATED POTENTIAL GROWTH RATES

(Percentage of GDP)

	Actual investment rate (a)	Investment requirement rate (b)		% point change (b-a)	
		Slow catch-up scenario	*Fast catch-up scenario*	*Slow catch-up scenario*	*Fast catch-up scenario*
	1990–2003	*2003–2015*		*2003–2015*	
Angola	32.5	26.6	31.4	-5.9	-1.1
Bangladesh	21.1	27.9	35.3	6.8	14.2
Benin	17.6	28.6	36.6	11.0	19.0
Bhutan	45.5[a]	27.0	32.7	-18.5	-12.8
Burkina Faso	21.2	28.2	36.6	7.0	15.4
Cape Verde	24.7	27.0	30.5	2.3	5.8
Eritrea	27.0[b]	30.5	39.4	3.5	12.4
Ethiopia	16.7	27.9	36.6	11.2	19.9
Guinea	17.9	26.6	31.8	8.7	13.9
Guinea Bissau	17.1	28.9	38.2	11.8	21.1
Haiti	24.6	24.7	31.8	0.1	7.2
Lao PDR	21.4[c]	29.2	36.6	7.8	15.2
Malawi	10.3	26.0	35.6	15.7	25.3
Maldives	29.9	25.0	29.5	-4.9	-0.4
Mali	22.5	30.2	38.8	7.7	16.3
Mozambique	29.3	26.3	35.6	-3.0	6.3
Rwanda	16.7	25.7	33.4	9.0	16.7
Sao Tome and Principe	38.0	27.3	34.6	-10.7	-3.4
Uganda	18.0	28.9	36.6	10.9	18.6
United Rep. of Tanzania	18.1	27.0	36.6	8.9	18.5
Vanuatu	..	27.0	30.8	..	..
Yemen	20.2	31.1	39.8	10.9	19.6
Zambia	20.1	23.8	31.8	3.7	11.7
Simple average	23.2	27.5	34.8[d]	4.3	11.8

Source: Ros (2005a).

a 1990-2002; *b* 1992-2003; *c* 1995-2003; *d* Excludes Vanuatu.

on the assumptions — imply that the additional investment effort will be particularly great in Benin, Ethiopia, Guinea-Bissau, Malawi, Rwanda, Uganda, the United Republic of Tanzania, and Yemen. In all but four countries (Angola, Bhutan, Maldives, and Sao Tome and Principe) the average investment requirements are above historical levels (average of the slow and fast catch-up scenarios). It is worth noting that three of these four exceptions (Angola, Bhutan, and Sao Tome and Principe) have relatively low investment requirements because the assumed capital–output ratio is well below the actual capital–output ratio recorded over the period 1990–2003 (the actual capital–output ratios are 7.0, 5.4 and 12.7 respectively).

It is possible to extend the analysis further by considering the extent to which domestic savings are sufficient to finance the higher level of investment, given past inflows of foreign savings. The results (which are not shown) indicate that domestic savings will have to be 5 percentage points higher than they were in 2000–2003 for the slow catch-up scenario and as much as 12 percentage points higher for the fast catch-up scenario. The additional savings effort, which is required even for the slow catch-up scenario, will be difficult to achieve. But if one assumes that domestic savings do not increase, financing the investment requirements for catch-up growth will require a similar major increase in resource inflows from abroad as a share of GDP.

Although these results depend on the assumptions of the scenarios, the findings have two important implications. Firstly, within most LDCs low domestic savings rates are the key constraint on achieving fast catch-up economic growth through the development of productive capacities. Ros (2005b) identifies this as the most ubiquitous constraint on attaining the higher potential growth rates of the catch-up scenarios. Secondly, there is a need for a combination of increased domestic savings and increased external resource inflows to support the realization of the growth potential of the LDCs.

Source: Ros (2005a).

[1] The capital depreciation rate follows from the assumption that the rate of depreciation as a fraction of the capital stock is 3 per cent (the estimate in Mankiw, Romer and Weil, 1992) and that the capital–output ratio is 3.2 per cent. The trimmed average excludes the two highest and two lowest values of the ratio in the sample.

2. Actual growth experience of the LDCs

The analysis above shows that the potential growth rates which LDCs could be expected to achieve are higher than the actual growth rates which occurred during the period 1990–2003. But the gap between the potential and the actual is considerably larger if one takes a longer time perspective. Between 1980 and 2003, real GDP per capita grew at only 0.72 per cent per annum for the group of LDCs as a whole. The overall growth rate over the period was slower than in other developing countries. The gap between the GDP per capita of the LDC group and other developing countries was actually greater in 2003 than in 1980.

Between 1980 and 2003, real GDP per capita grew at only 0.72 per cent per annum for the group of LDCs as a whole.

Within this long-term performance, there are significant differences in economic performance amongst the LDCs. Table 25 classifies the LDCs into three groups — converging economies, weak-growth economies and regressing economies — according to their growth performance over the period 1980–2003. The converging economies are those in which real GDP per capita exceeded 2.15 per cent per annum over the period, which was the average annual real GDP per capita growth rate in high-income OECD countries over that period. The weak-growth economies are those in which the average annual real GDP per capita growth rate was below this rate over this period, but still positive. The regressing economies are those in which the average annual real GDP per capita growth rate was negative over the period. As can be seen from the table, amongst the 41 LDCs for which data are available, there are 9 converging economies, 15 weak-growth economies and 17 regressing economies. Only 2 of the weak-growth economies — Guinea and Sudan — achieved a real GDP per capita growth rate which was greater than 1.26 per cent per annum, the average in other developing countries over the period 1980–2003.

Closer analysis of the year-to-year changes which have occurred in the LDCs over the period 1980–2003, shows more complex patterns of economic growth which are characterized by periods of sustained economic growth, economic crises in which there are often quite severe output losses, and economic recoveries of varying strengths and completeness.[4] From this perspective, the LDCs actual growth performance has three major features.

Over the period 1980–2003, 21 out of 40 LDCs have experienced severe growth collapses, 12 experienced severe output losses in the 1980s but managed to recover subsequently and 7 LDCs have been able to sustain steady growth.

- Very few LDCs have been able to sustain steady growth and have not experienced economic crises with significant output losses.
- About half the LDCs have experienced severe growth collapses, which are defined here as a situation in which output losses have been sufficiently large and the subsequent economic recovery so weak or delayed that their GDP per capita is below the level it was in the 1970s or early 1980s.[5]
- Some LDCs experienced severe output losses in the 1980s but managed to recover subsequently, thus contributing to an improvement in the overall growth performance of the LDCs as a group after 1990.

For 40 LDCs for which data are available (see annex charts to this chapter), there are only 7 which have experienced steadily sustained growth — Bangladesh, Bhutan, Burkina Faso, Cape Verde, the Lao People's Democratic Republic, Lesotho and Nepal. All the other LDCs have experienced economic contractions of varying length and severity since achieving political independence. Of the 7 countries, Bhutan, Cape Verde and the Lao People's Democratic Republic are the only ones in which actual growth rates in the period 1990–2003 reached the potential growth rates in the scenarios above. Moreover, amongst this group, although Burkina Faso has not experienced a major prolonged negative shock, growth of GDP per capita was slow in both the 1980s and the 1990s.

TABLE 25. REAL GDP PER CAPITA GROWTH RATES OF LDCS, 1980–2003
(Percentage per annum)

	Growth rate
Converging economies	
Bangladesh	2.2
Bhutan	4.0
Cape Verde[a]	3.0
Equatorial Guinea[b]	11.2
Lao People's Democratic Republic[c]	3.3
Lesotho	2.9
Mozambique	2.3
Nepal	2.4
Uganda[d]	2.7
Weak-growth economies	
Benin	0.7
Burkina Faso	1.2
Chad	0.8
Ethiopia[a]	0.1
Guinea[e]	1.5
Kiribati	1.1
Malawi	0.4
Mali	0.6
Mauritania	0.7
Samoa	1.1
Senegal	0.4
Solomon Islands	0.4
Sudan	1.8
United Republic of Tanzania[f]	0.8
Vanuatu	0.2
Regressing economies	
Angola	-1.1
Burundi	-1.7
Central African Republic	-1.2
Comoros	-1.0
Democratic Republic of the Congo	-5.7
Djibouti	-4.2
Gambia	-0.4
Guinea-issau	-0.4
Haiti	-2.9
Liberia	-9.6
Madagascar	-1.3
Niger	-1.8
Rwanda	-1.2
Sao Tome and Principe[e]	-0.6
Sierra Leone	-4.3
Togo	-0.8
Zambia	-1.7

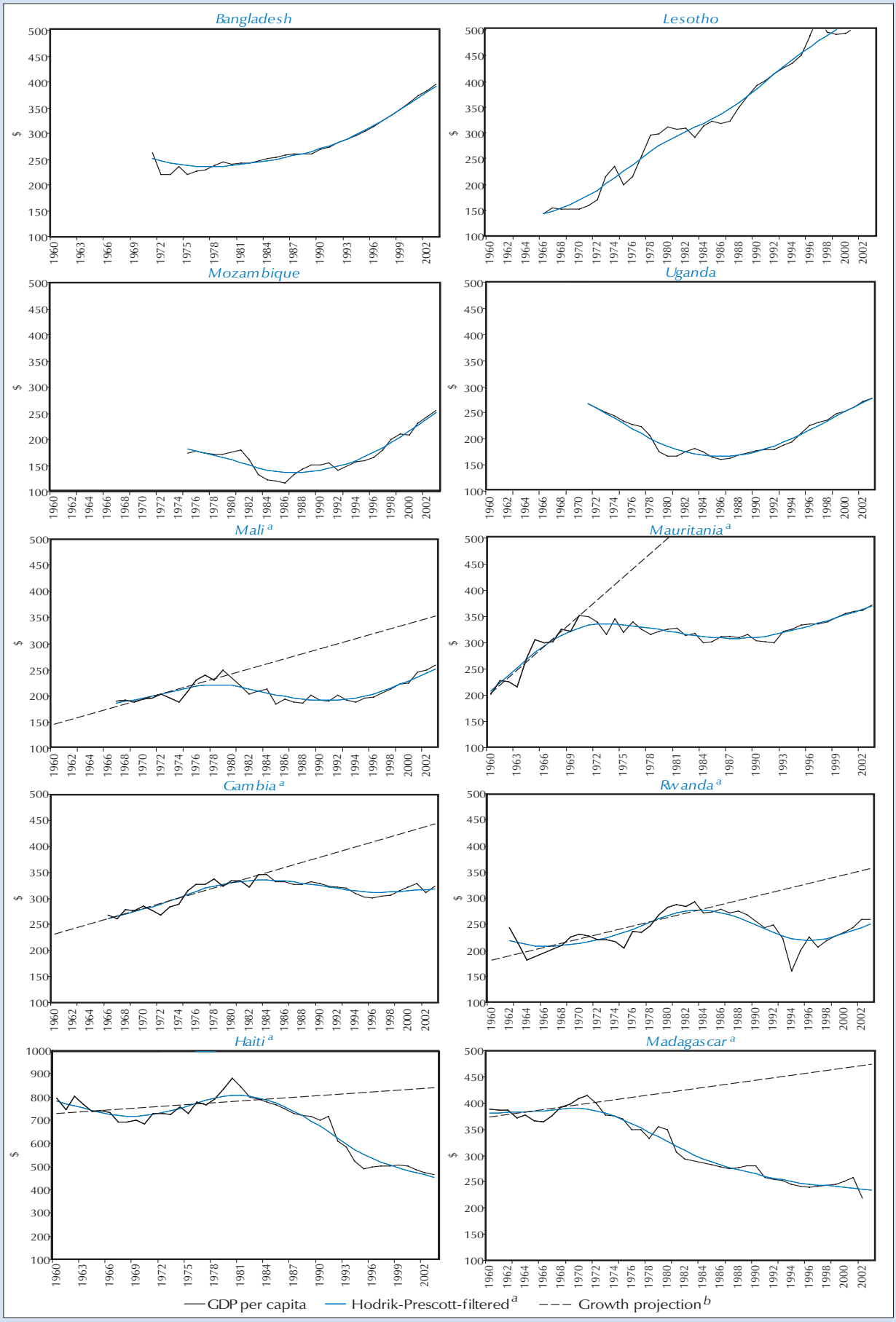
Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators 2005*.

Note: LDCs with recent data only have the following real GDP per capita growth rates: Cambodia 4.02 (1993–2003); Eritrea 1.04 (1992–2003); Maldives 4.65 (1995–2003); Yemen 2.42 (1995–2003).
a 1981–2003; *b* 1985–2003; *c* 1984–2003; *d* 1982–2003; *e* 1986–2003; *f* 1988–2000.

Of the 33 LDCs which have experienced economic crises with major output losses, there are only 12 whose GDP per capita is now higher than it was at its peak in the 1970s or early 1980s. These countries include a number of high-performing economies such as Mozambique and Uganda which have grown rapidly after economic collapse (see chart 12). During the 1990s, these countries were also, like Bhutan, Cape Verde and the Lao People's Democratic Republic,

Chart 12. Trends in real GDP per capita in selected LDCs

(Constant 2000 $)



Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators 2005*, CD-ROM.

a Hodrik-Prescott filter was used to identify long-term trends in GDP per capita and remove short-term fluctuations.

b Growth projections are based on the trends before major negative economic shocks.

growing at rates similar to their potential growth rates as estimated in the scenarios above.

The other 21 LDCs — that is, just over half of the countries for which data are available — have experienced growth collapses in the sense that their GDP per capita in 2003 was lower than it had been between 20 and 30 years earlier. Eleven out of these 21 LDCs have simply not recovered at all from the growth collapse. In some of these countries, such as Haiti and Madagascar, economic contraction continues. However, amongst the other 10, there are a number of countries, such as Gambia and Rwanda, whose growth record since the mid-1990s has been good but which still have not recovered to achieve earlier levels of GDP per capita (see chart 12).

There are a few LDCs which have managed to achieve the sustained high growth rates which the potential growth scenarios indicate are attainable for the LDCs. However, in most of them, GDP per capita is not much higher, or is even lower, than it was at its peak in the 1970s or early 1980s.

Finally, although a few LDCs have achieved higher growth rates after economic crisis than before, the more common tendency is for their growth rates to be lower afterwards. They do not conform to a V-shaped recovery in which there is a growth acceleration following the output loss and the post-crisis growth rate then returns to the pre-crisis growth rate.[6] Instead, the negative shocks not only derail economic growth, but also have a longer-term negative impact on actual growth rates. Even amongst those countries which have achieved their earlier peak GDP per capita, there are cases, such as Mali and Mauritania, which have been unable to regain the growth rates which they had before economic collapse (see chart 12). It is this slowness of post-collapse growth rates which, together with the severity of the growth collapse, explains why many countries have not been able to achieve again their earlier income per capita. Out of 17 countries for which one can reconstruct a pre-collapse growth rate, the post-collapse growth rate is slower in 14 countries.

To summarize, there are a few LDCs which have managed to achieve the sustained high growth rates which historical experience suggests should be possible for very poor countries and which the potential growth scenarios discussed above indicate are attainable for the LDCs. In most of them, GDP per capita is not much higher, or is even lower, than it was at its peak in the 1970s or early 1980s. Generally, the economic stagnation or regression of the LDCs is not due to the fact that they have not experienced any economic growth whatsoever. Rather, they have grown, sometimes rapidly, but have been unable to sustain that growth. These empirical regularities support the idea that many LDCs are caught in a poverty trap (see box 9). But they suggest that a key feature of the trap is vulnerability to economic crises and negative output shocks, and the consequences of such vulnerability.

The potential for rapid economic growth certainly exists in very poor countries. But realizing this potential requires that the vicious circles which create an interlocking set of constraints be addressed and that the foundation for sustained economic growth be laid.

Box 9. Does recent evidence support the idea that poor countries are enmeshed in a poverty trap?

In the LDC Report 2002, UNCTAD argued that many LDCs were caught in an international poverty trap in which an interlocking complex of domestic and international vicious circles led to economic stagnation and persistent poverty. The importance of country-level poverty traps for understanding the persistence of extreme poverty has also been strongly argued for sub-Saharan Africa (see Sachs et al., 2004) and made central to the policy recommendations of the UN Millennium Project Report entitled *Investing in Development* (UN Millennium Project, 2005). However, there have also been critiques of this idea. Both Easterly (2005) and Kraay and Raddatz (2005) have argued that there is no empirical evidence for the existence of poverty traps. Does this mean that the idea of the poverty trap is no longer valid?

Close examination of the evidence of Easterly and of Kraay and Raddatz suggests that this conclusion would be premature. The nature of the poverty trap is formally specified in Sachs et al. (2004) in a neoclassical model which includes low productivity of capital because minimum thresholds of capital (particularly infrastructure) per worker are not attained, low domestic savings rates and high population growth rates. Kraay and Raddatz test for the existence of a poverty trap by examining whether the savings and productivity functions behave empirically in the way that Sachs et al. suggest in their model of Africa's poverty trap. Even though they find that evidence does not conform to the conditions required for a poverty trap as specified by Sachs et al., they do find that an economy in which consumption is close to subsistence can exhibit low savings rates and low growth for a significant period of time (p. 14). In effect, although countries are not stuck in a poverty trap in the sense defined by the mechanisms within Sachs' formal model, Kraay and Raddatz state that the growth dynamics of these countries may well conform to "something that looks like a poverty trap over the medium term" (p. 14). In effect, there is a poverty trap, but its nature does not conform to that specified by Sachs et al.

Easterly, in contrast, tests for the existence of a poverty trap by asking the following: do the poorest countries have significantly lower per capita growth than the rest, and is their growth zero? What he finds is that the answer depends on the time period. Taking per capita growth from 1950–2001, 1950–75 and 1975–2001 for the poorest fifth of the countries at the start of each period, he finds no evidence for a poverty trap as he defines it. But the growth rate of the poorest fifth is not statistically distinguishable from zero in the period 1980–2001; and in the period 1985–2001, it is also not significantly different from zero and is statistically significantly lower than the growth rate of all the other countries. This actually indicates the existence of a poverty trap.

However, he rejects this as supporting the idea of a poverty trap since almost a third of the poorest countries were richer in 1950 than 1985 (and thus "had gotten into poverty by declining from above rather than being stuck in it from below", p. 11). He also rejects the idea of the poverty trap as specified in the UN Millennium Project since he argues that it is linked to a case for increased aid. He finds that in the last period, when there is empirical evidence of the poverty trap, the poorest countries actually received more aid. Thus, he suggests that they cannot be caught in a poverty trap of the type which Sachs et al. and the UN Millennium Project are talking about.

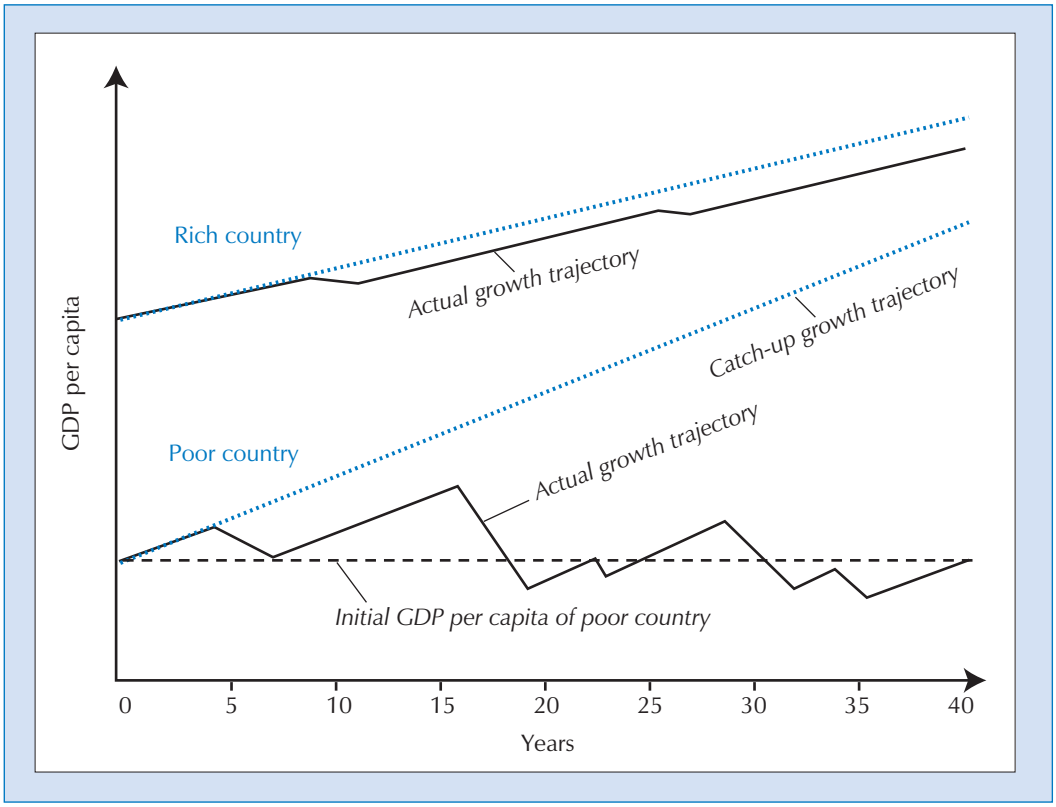
Whilst the conclusions of these two studies must be read carefully and closely, it should be noted that recent research has deepened understanding of the nature of poverty traps within which the poorest countries are enmeshed. Cerra and Saxena (2005) show that if one focuses solely on periods of expansion the poor countries can actually catch up with the rich as they experience stronger expansions. However, because the poor countries have more frequent and deeper recessions than initially rich countries, the long-term result is divergence between the richer countries and the poorer countries, and also a situation in which, over the long term and despite spurts of rapid growth, output per capita may be the same as it was 30–40 years earlier (see box chart 4). Ros (2005b) shows that the form of integration into the world economy is a source of growth collapse. Analysing the different frequency of growth collapses since the 1960s in developing countries classified according to their initial GDP per capita (1960), economic size, resource abundance, export specialization and inequality, he finds that:

- In terms of initial income level, the major divide is between the low- and low-middle-income countries on the one hand, and the high-middle and high-income countries on the other hand, with growth collapses much more frequent in the former group. Fifty-nine per cent of the low-income countries and 59 per cent of the low-middle-income countries experienced growth collapses.
- The incidence of growth collapses is much greater in small economies than in large economies.
- Collapses in natural-resource-rich economies are more frequent than in natural- resource-poor economies, and they are particularly more frequent in economies which specialize in mineral and oil exports.
- Fifty-two per cent of high-inequality and 55 per cent of medium-inequality countries experienced growth collapses, but none of the low-inequality countries did so.

As Ros puts it, "These processes of growth collapse reflect the combined influence of unequal income distribution and the pattern of specialization, as determined by the abundance of natural resources and the size of the economy" (Ros, 2005a: 228).

Box 9 (contd.)

BOX CHART 4. NEGATIVE ECONOMIC SHOCKS, GROWTH DIVERGENCE AND LONG-TERM ECONOMIC STAGNATION OF POOR COUNTRIES



Source: Based on Cerra and Saxena (2005).

To summarize, the weight of the recent evidence does not undermine the notion that countries can get stuck in a poverty trap; rather it reinforces it. But the nature of the poverty trap needs to be understood in a way which incorporates the vulnerability of poor countries to negative shocks and growth collapses. Also, it is clear that the form of integration into the world economy, which is central to the UNCTAD analysis of the poverty trap but not part of the Sachs et al. and UN Millennium Project analysis, should be included as a critical aspect of the poverty trap.

C. Trends in physical capital formation

Increased investment is essential for achieving the potential GDP growth rates which are possible in the LDCs. It is through such increased investment that technological progress and structural change will be possible, productive capacities will develop and the LDC economies will become less vulnerable to negative shocks and growth collapses. Investment rates have actually increased over the last 15 years. As table 26 shows, the ratio of gross capital formation to GDP for the LDCs for which data are available increased from 16.6 per cent during 1989–1993 to 22 per cent during 1999–2003. However, the level of investment is still below the average level in other developing countries. It is also below the investment target of the Brussels Programme of Action for the LDCs (25 per cent of GDP). In addition, it is still well below the investment requirements of either the slow catch-up scenarios or the fast catch-up scenarios discussed above.

Increased investment is essential for achieving the potential GDP growth rates which are possible in the LDCs.

Within this average improved performance there is much diversity amongst the LDCs. The ratio of gross capital formation to GDP actually worsened in one third of the LDCs for which data are available. Whether it improved or not is

TABLE 26. GROSS CAPITAL FORMATION AND DOMESTIC SAVINGS IN LDCS AND OTHER DEVELOPING COUNTRIES, 1989–1993 AND 1999–2003

(Percentage of GDP)

	Gross capital formation		Gross domestic savings		External resource gap[a]		Net FDI inflows	
	1989–1993	*1999–2003*	*1989–1993*	*1999–2003*	*1989–1993*	*1999–2003*	*1989–1993*	*1999–2003*
LDCs	16.6	22.0	7.2	13.6	-9.4	-8.4	1.0	2.6
African LDCs	15.8	21.5	5.8	10.6	-10.0	-10.9	1.0	4.6
Other LDCs	17.8	22.5	9.2	17.0	-8.6	-5.5	0.9	0.3
Other developing countries	24.8	25.2	24.5	26.4	-0.3	1.2	1.2	2.8

Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators,* online data, May 2005.

Note: Weighted averages for 28 LDCs and 84 other developing countries for which data are available.

a External resource gap is gross domestic savings minus gross capital formation.

closely related to the form of trade integration with the global economy. It improved substantially in the manufactures- and oil-exporting LDCs. But it worsened in one quarter of the agricultural-exporting LDCs, half of the mineral-exporting LDCs and all the service-exporting LDCs for which data are available.

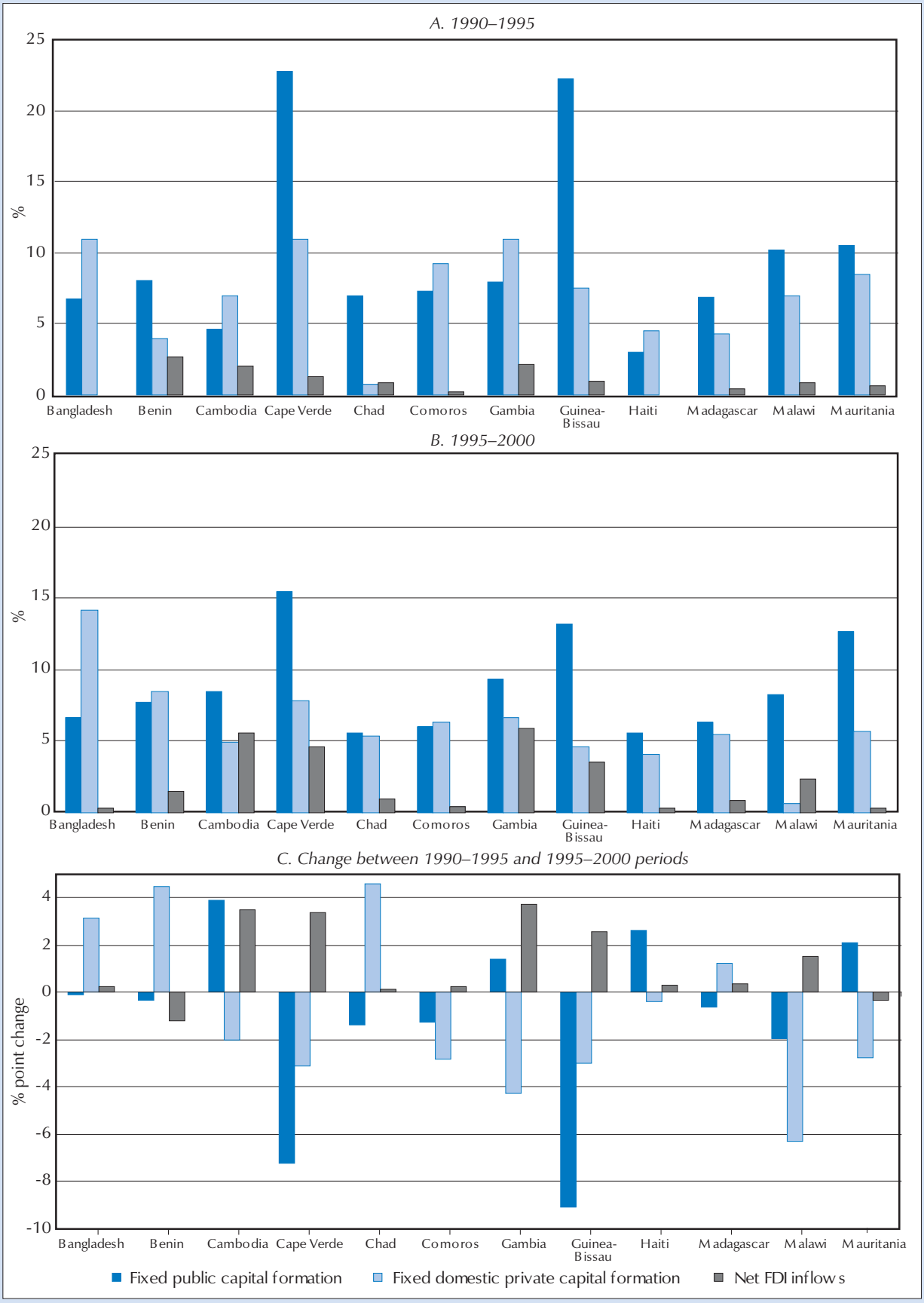
Capital formation in the LDCs also remains highly dependent on external finance. For the LDCs as a group, the resource gap (measured as the difference between gross capital formation and gross domestic savings) was 8.4 per cent of GDP in 1999–2003, which implies that external finance supported nearly 40 per cent of capital formation in the LDCs. In contrast, it was only 1 per cent of GDP in other developing countries. During the 1990s, an increasing proportion of capital formation was financed by domestic savings in the LDCs. But this result mainly reflects what is happening in Asian LDCs. Increasing levels of investment in African LDCs are largely attributable to foreign capital inflows, particularly FDI.

For the LDCs as a group, the resource gap was 8.4 per cent of GDP in 1999–2003, which implies that external finance supported nearly 40 per cent of capital formation in the LDCs.

It is possible to decompose data on gross fixed capital formation into public fixed investment, domestic private fixed investment and foreign direct investment for 12 LDCs during the 1990s (chart 13). A number of significant patterns are revealed:

- Public investment was very low in most LDCs in the sample, exceeding 10 per cent of GDP in only 4 of the 12 countries (two barely) in the early 1990s and only 3 in the late 1990s;
- Public investment was also in general declining during the 1990s. It decreased as a share of GDP between the first half of the 1990s and the second half of the 1990s in 8 out of the 12 LDCs;
- Domestic private investment is even weaker than public investment in the majority of the countries in this sample. Domestic private investment as a share of GDP exceeded public investment in only 5 countries in the first half of the 1990s and only 3 countries in the second half of the 1990s;
- Domestic private investment became *less* important in animating capital formation in the 1990s. Domestic private investment as a share of GDP declined in 8 out of the 12 LDCs in the sample;
- The foreign private sector became *more* important in animating capital formation in the 1990s. FDI as a share of GDP increased in 10 out of the 12 LDCs. Nevertheless, the ratio of domestic private investment to GDP remained higher than the ratio of FDI to GDP in all the LDCs except two — Cambodia and Malawi.

CHART 13. COMPOSITION OF GROSS FIXED CAPITAL FORMATION IN SELECTED LDCs, 1990–1995 AND 1995–2000
(Percentage of GDP)



Source: UNCTAD secretariat estimates based on World Bank data (direct communication) and *World Development Indicators 2005,* CD-ROM.

Note: Gross fixed capital formation has been disaggregated into three components: gross fixed public capital formation, gross fixed domestic private capital formation and FDI. The sum of gross fixed domestic private capital formation and net FDI inflows equals gross fixed private capital formation.

Although this is a small sample, these patterns are very significant. They suggest that an important feature of the investment process in the LDCs is the low level of investment by the domestic private sector. Public investment is also very low.

An important feature of the investment process in the LDCs is the low level of investment by the domestic private sector.

On face value, the data indicate few positive associations between public investment, domestic private investment and FDI. There are *no* LDCs in the sample in which both public and domestic private investment are higher as a share of GDP in the second half of the 1990s than in the first half of the 1990s. In four countries where the domestic private investment to GDP ratio rises, the public investment ratio falls, and in four countries where the public investment ratio rises, the domestic private investment ratio falls. In the remaining four countries, both ratios fall. Rising FDI inflows are an increasingly important source of investment for many LDCs, but they too do not appear to be associated with increased domestic private investment. This issue will be taken up later in this chapter.

D. Human capital formation and the brain drain

The average years of schooling of the adult population within LDCs in 2000 was 3 years. Despite the progress since 1980, this is less than what it was in other developing countries in 1960.

Human capital formation is an important part of the process of developing productive capacities. Indeed, the potential growth rates in the catch-up model assume significant rates of human capital formation as well as requiring increased physical capital formation. At the present time, least developed countries seriously lag behind other developing countries in terms of levels of educational attainment and other aspects of human capital development.

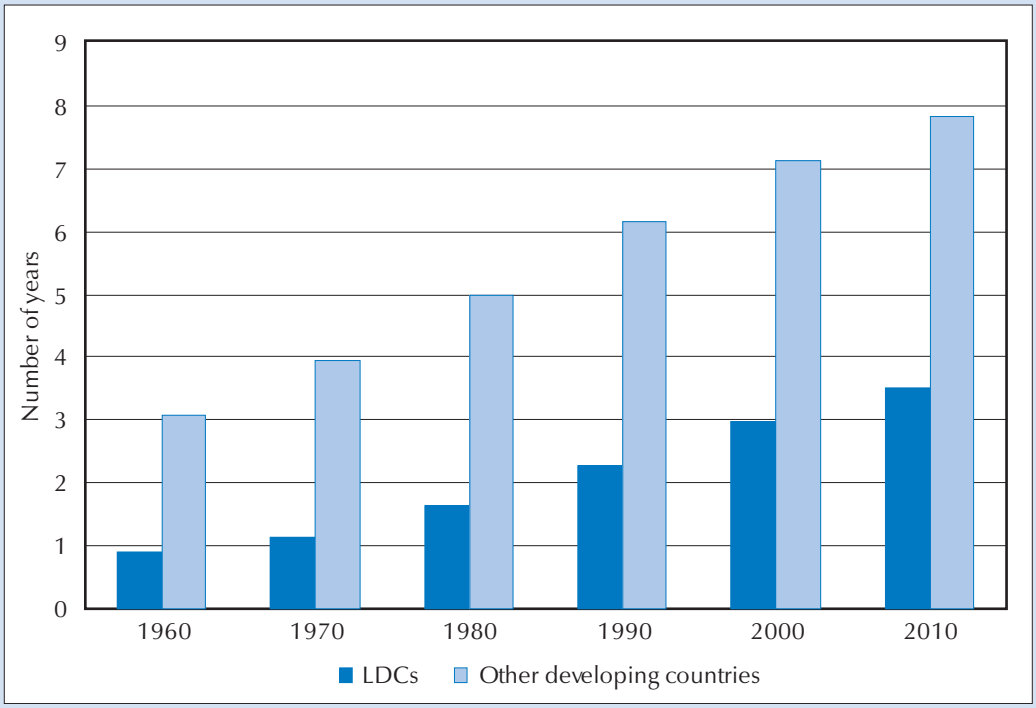
Chart 14 shows estimates of the level of formal education within LDCs. These indicate that the average years of schooling of the adult population within LDCs in 2000 was 3 years. This is almost double the 1980 level. But the number of years of schooling of the population were half the level in other developing countries in 2000 (7.1 years) and less than a third of the level in high-income OECD countries (11.4 years). Despite the progress since 1980, the level of formal education in LDCs in 2000 remains less than what it was in other developing countries in 1960. Moreover, the gap between the LDCs and other developing countries is wider than in 1960 and is progressively widening.[7] This implies that the rate of human capital formation, which is one of the key sources of productivity growth in the catch-up model, has actually been slower in LDCs than in other developing countries.

In 2001, technical and vocational education constituted only 2.6 per cent of total secondary enrolment in the LDCs on average, as against 10.4 per cent in developing countries and 25 per cent in OECD countries.

An immediate consequence of the short period of school attendance is low levels of literacy. As table 27 shows, it is estimated that 32 per cent of adult males and 56 per cent of adult females were illiterate in the LDCs in 2002. Youth illiteracy rates are equally stark. It is estimated that in the same year, 34 per cent of the total population aged 15–24 were illiterate and as much as 41 per cent of the female population in that age group.

Various other indicators of technical skill creation provide an equally bleak picture. Enrolment in secondary technical and vocational education is a small percentage of total secondary school enrolments. In 2001, technical and vocational education constituted only 2.6 per cent of total secondary enrolment in the LDCs on average, as against 10.4 per cent in developing countries and 25 per cent in OECD countries (King and Palmer, 2005). Enrolment in tertiary technical subjects is also very low. The main reason for this is that enrolment in tertiary education in the LDCs in general is much lower than in other developing

CHART 14. AVERAGE NUMBER OF YEARS OF SCHOOLING IN LDCS AND OTHER DEVELOPING COUNTRIES, 1960–2010



Source: Based on Cohen and Soto (2001).

countries and OECD countries. In recent years, only 6 per cent of the population aged 20–24 in LDCs were enrolled in tertiary education, compared with 23 per cent in other developing countries and 57 per cent in high-income OECD countries (see table 28). Within tertiary enrolment, the share of enrolments in science and agriculture in LDCs is at approximately the same levels as in other developing countries and OECD countries. But the share of engineering enrolments within tertiary enrolment is just over half the level in other developing countries. Tertiary-level enrolments, particularly in technical subjects, are important for developing the managerial and technical skills to use modern technologies efficiently and to adapt imported technologies for local conditions. This indicates a major gap in the general competences that provide the basis for technological capabilities.

In recent years, only 6 per cent of the population aged 20–24 in LDCs were enrolled in tertiary education, compared with 23 per cent in other developing countries and 57 per cent in high-income OECD countries... The share of engineering enrolments within tertiary enrolment is just over half the level in other developing countries.

The length of formal education is, of course, not the ideal measure of skills. It ignores the quality of education, as well as on-the-job learning and other forms of training. There are no internationally comparable data on these latter processes of skill formation. However, the nature of the production structure is likely to exacerbate the skills gap. The small size of the manufacturing sector (which will be discussed in the next chapter) means that entrepreneurs and the labour force have little manufacturing experience, a fact which is of crucial significance with regard to the ability to introduce new manufacturing industries. Also, the fact that most people are employed in household enterprises, either small-scale agriculture or the urban informal sector, means that there are definite limits to on-the-job learning in the context of work. There are, for example, highly developed traditional apprenticeship training systems within the informal sector (Atchoarena and Delluc, 2001). But whilst these can serve the needs of the informal economy well, they are not immediately relevant for mass factory production, or applicable without extension advice to modern techniques of intensification of agricultural production.

TABLE 27. ADULT AND YOUTH LITERACY RATES IN LDCs, BY GENDER, 2002

	Adult literacy rate (% of people aged 15 and above)			Youth literacy rate (% of people aged 15-24)		
	Female	Male	Total	Female	Male	Total
Bangladesh	31.4	50.3	41.1	41.1	57.8	49.7
Benin	25.5	54.8	39.8	38.5	72.7	55.5
Burundi	43.6	57.7	50.4	65.1	67.2	66.1
Cambodia	59.3	80.8	69.4	75.9	84.5	80.3
Cape Verde	68.0	85.4	75.7	86.3	92.0	89.1
Central African Republic[a]	33.5	64.7	48.6	46.9	70.3	58.5
Chad	37.5	54.5	45.8	64.0	75.8	69.9
Comoros	49.1	63.5	56.2	52.2	65.6	59.0
Ethiopia	33.8	49.2	41.5	51.8	63.0	57.4
Haiti	50.0	53.8	51.9	66.5	65.8	66.2
Lao PDR	55.5	77.4	66.4	72.7	85.8	79.3
Lesotho[b]	90.3	73.7	81.4	98.5	82.7	90.5
Liberia	39.3	72.3	55.9	55.4	86.3	70.8
Malawi	48.7	75.5	61.8	62.8	81.9	72.5
Maldives	97.2	97.3	97.2	99.2	99.1	99.2
Mali[a]	11.9	26.7	19.0	16.9	32.3	24.2
Mauritania	31.3	51.5	41.2	41.8	57.4	49.6
Mozambique	31.4	62.3	46.5	49.2	76.6	62.8
Myanmar	81.4	89.2	85.3	91.1	91.6	91.4
Nepal	26.4	61.6	44.0	46.0	78.1	62.7
Niger	9.3	25.1	17.1	15.1	34.0	24.5
Rwanda	63.4	75.3	69.2	83.6	86.3	84.9
Samoa	98.4	98.9	98.7	99.5	99.4	99.5
Senegal	29.7	49.0	39.3	44.5	61.3	52.9
Sudan	49.1	70.8	59.9	74.2	83.9	79.1
Togo	45.4	74.3	59.6	66.6	88.3	77.4
Uganda	59.2	78.8	68.9	74.0	86.3	80.2
United Rep. of Tanzania	69.2	85.2	77.1	89.4	93.8	91.6
Yemen	28.5	69.5	49.0	50.9	84.3	67.9
Zambia	73.8	86.3	79.9	86.9	91.5	89.2
LDCs	44.4	67.6	53.8	59.1	72.6	65.6

Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators* 2005, CD-ROM.
a 2000 data; *b* 2001 data.

TABLE 28. INDICATORS OF EDUCATIONAL ENROLMENT IN TECHNICAL SUBJECTS IN LDCs, OTHER DEVELOPING COUNTRIES AND OECD COUNTRIES, RECENT YEARS[a]

(Percentage)

	LDCs	Other developing countries	OECD countries
Enrolment in technical and vocational education as % of secondary school enrolment	2.6	10.4[b]	24.8[c]
Percentage of population aged below 20 -24 enrolled in tertiary education	5.9	23.2	56.9
Of which:			
Science	10.0	10.5	10.8
Engineering	7.5	13.2	14.3
Agriculture	4.0	2.5	1.9

Source: King and Palmer (2005) and Knell (2006).
a Data on enrolment in technical vocational education are for 2001; data on tertiary education are averages for the school years between 1998/1999 and 2002/2003.
b All developing countries.
c OECD countries excluding Ireland, Poland, New Zealand and United States, for which data are not available.

An important feature of the process of human capital formation in the LDCs is that there is a strong propensity for skilled workers to seek work outside the country. This can, of course, be a source of remittances and new skills, and the possibility of out-migration may increase incentives for education. But this "brain drain" seriously diminishes a key component of the human capital stock of the LDCs.[8]

It is difficult to have a comprehensive picture of this phenomenon because of lack of data on emigration from least developed countries to other developing countries. However, there are now estimates of the intensity of the brain drain from developing countries to OECD countries (Docquier and Mafouk, 2004). Using this new database, it is possible to estimate the number of high-skill workers (those with tertiary education — 13 years of schooling and above) born in each LDC who were working in OECD countries in 1990 and 2000. On this basis, "emigration rates" from individual LDCs to OECD countries, which are defined as the fraction of the total stock of high-skill workers of a particular LDC working in OECD countries, can be estimated.

About one in five of the high-skill workers (persons with tertiary education) born in LDCs were working in OECD countries in 2000.

From table 29, which presents the results, a number of key points stand out:

- About one in five of the high-skill workers (persons with tertiary education) born in LDCs were working in OECD countries in 2000.
- This was slightly higher than the proportion in 1990, but the intensity of the brain drain was increasing in almost all of the LDCs, and in some significantly.
- The intensity of the brain drain from the LDCs as a group is slightly less than that of the brain drain from other developing countries. Whilst 21.4 per cent of the high-skill workers born in LDCs were working in OECD countries, 22.9 per cent of the high-skill workers born in other developing countries were working in OECD countries.
- The rates of out-migration rate of high-skill workers to OECD countries are much lower for Asian LDCs (12.4 per cent) than for African and island LDCs (21.9 per cent and 26.8 per cent respectively).
- The intensity of the brain drain from African and Asian LDCs to OECD countries increased significantly in the 1990s. The rate of emigration of high-skill workers from African LDCs increased by about one quarter and the rate for Asian LDCs by one third. The rate of emigration of high-skill workers from the island LDCs to OECD countries decreased significantly in the 1990s, but from very high levels in 1990 (44 per cent).

In the 1990s, the rate of out-migration of high-skill workers from African LDCs increased by about one quarter and the rate for Asian LDCs by one third.

Within these general averages, there is much variation. For almost half the LDCs (23 countries) the intensity of the brain drain exceeds 20 per cent. For 12 LDCs, more than one in three of the high-skill workers born in the country were working in OECD countries in 2000, namely Angola (emigration rate of 33 per cent), Cape Verde (68 per cent), Eritrea (34 per cent), The Gambia (63 per cent), Haiti (84 per cent), the Lao People's Democratic Republic (37 per cent), Liberia (44 per cent), Mozambique (45 per cent), Samoa (76 per cent), Sierra Leone (53 per cent), Somalia (33 per cent) and Uganda (36 per cent). The intensity of the brain drain is a particularly severe problem in island LDCs, small countries and countries which have experienced severe civil conflict. But emigration rates from island LDCs in 2000 were lower than in 1990 in 5 out of the 9 island LDCs. Leaving aside the island LDCs, there are only three LDCs where the emigration rate declined by more than one percentage point between 1990 and 2000 — the Democratic Republic of the Congo, Gambia and Uganda.

TABLE 29. EMIGRATION RATES FOR HIGH-SKILLED WORKERS[a] FROM LDCS TO OECD COUNTRIES, 1990 AND 2000
(Per cent of total high-skilled workforce)

	1990 *(a)*	**2000** *(b)*	**% point change** *(b-a)*
Afghanistan	13.5	23.3	9.8
Angola	4.6	33.0	28.4
Bangladesh	2.1	4.3	2.3
Benin	7.3	11.3	4.0
Bhutan	0.7	0.6	-0.1
Burkina Faso	1.5	2.6	1.1
Burundi	9.5	8.5	-1.0
Cambodia	15.6	18.3	2.7
Cape Verde	56.8	67.5	10.7
Central African Republic	4.0	7.1	3.0
Chad	2.1	2.4	0.3
Comoros	7.0	21.2	14.1
Dem. Rep. of the Congo	21.0	13.7	-7.3
Djibouti	7.6	11.0	3.3
East Timor	..	15.5	15.5
Equatorial Guinea	1.1	13.0	11.9
Eritrea	0.0	34.0	34.0
Ethiopia	8.0	10.1	2.0
Gambia	80.4	63.3	-17.1
Guinea	13.4	11.3	-2.2
Guinea-Bissau	9.3	24.4	15.1
Haiti	78.6	83.6	5.0
Kiribati	68.5	23.1	-45.4
Lao PDR	29.9	37.4	7.5
Lesotho	10.4	4.3	-6.1
Liberia	32.4	45.0	12.6
Madagascar	5.7	7.6	1.9
Malawi	16.8	18.7	1.9
Maldives	1.2	1.2	0.0
Mali	8.2	15.0	6.8
Mauritania	2.8	11.8	9.0
Mozambique	26.6	45.1	18.5
Myanmar	4.3	4.0	-0.2
Nepal	1.8	5.3	3.5
Niger	6.4	6.0	-0.5
Rwanda	17.3	26.0	8.6
Samoa	96.7	76.4	-20.4
Sao Tome and Principe	3.6	22.0	18.3
Senegal	12.3	17.7	5.4
Sierra Leone	34.2	52.5	18.3
Solomon Islands	39.2	6.4	-32.9
Somalia	17.4	32.7	15.3
Sudan	5.2	6.9	1.7
Togo	11.1	18.7	7.7
Tuvalu	74.6	27.1	-47.5
Uganda	44.2	35.6	-8.6
United Rep. of Tanzania	11.6	12.4	0.7
Vanuatu	48.2	8.2	-40.1
Yemen	5.5	6.0	0.5
Zambia	16.7	16.8	0.0
LDCs	20.3	21.4	1.0
African LDCs	16.5	21.9	5.4
Asian LDCs	9.2	12.4	3.2
Island LDCs	44.0	26.8	-17.2
Other developing countries	26.6	22.8	-3.8
Developed countries	11.0	10.4	-0.7

Source: Docquier and Marfouk (2004). *International Migration by Educational Attainment (1990–2000),* release 1.1.
a High-skilled workers are those with tertiary education (13 years and above).

E. The limits and potential for domestic resource mobilization[9]

The rate of physical and human capital accumulation is inadequate in most LDCs for three basic reasons. Firstly, the domestic resources available for financing physical and human capital formation are very limited. Secondly, the surplus that does exist is not being channelled sufficiently into productive investment to create a virtuous circle of expanding capital accumulation. Thirdly, external capital inflows are not adequately supporting processes of domestic capital accumulation. The present section and the next one examine the first and the last of these reasons respectively. The weaknesses of financial systems within the LDCs also critically affect both the magnitude of the investible surplus and the extent to which the latter is channeled into productive investment; but this institutional issue will be discussed in chapter 6.

1. Low domestic savings

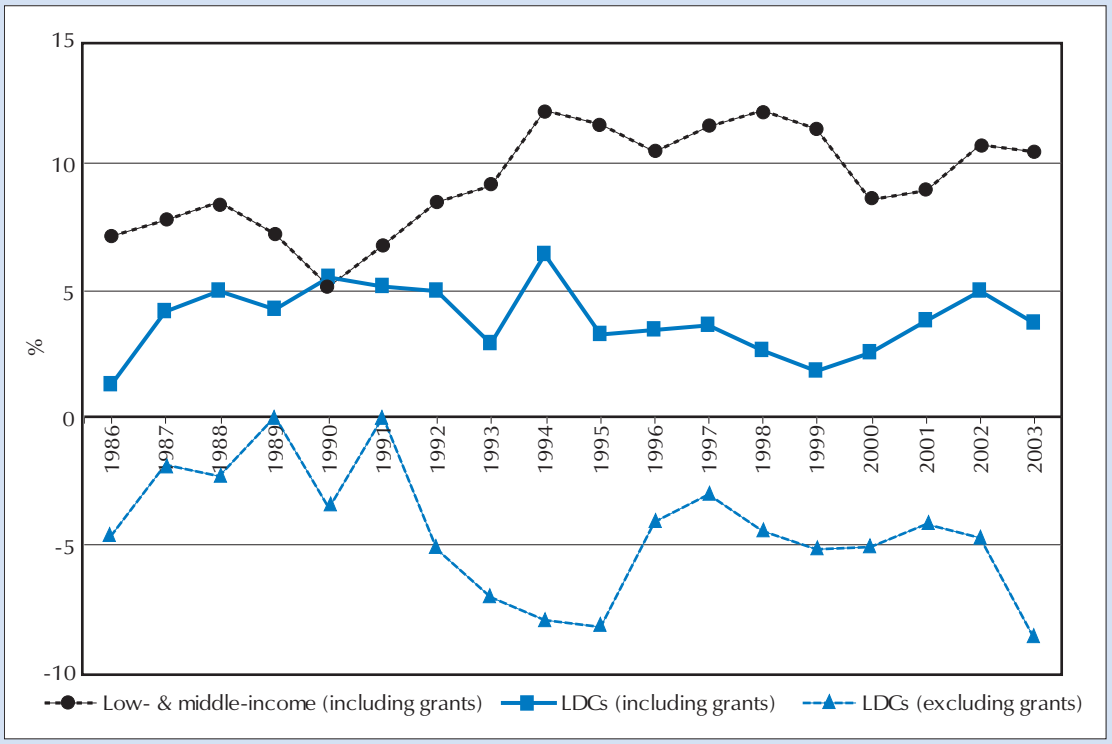
Gross domestic savings were equivalent to 13.6 per cent of the GDP of the LDCs for which data are available in 1999–2003 (see table 26 above). Although this was a significant improvement from 10 years earlier, the domestic savings rate was only about half the savings rate in other developing countries. The domestic savings rate in this period was particularly low in African LDCs – only 10.6 per cent of GDP.

Gross domestic savings were equivalent to 13.6 per cent of the GDP of the LDCs... This is far below the rates required for financing domestically the investment rates for either the slow catch-up growth scenario or the fast catch-up growth scenario.

With such a low domestic savings rate it is impossible to achieve the investment rates required for economic growth and poverty reduction without resort to external finance. The domestic savings rates are far below the rates required for financing domestically the investment rates for either the slow or the fast catch-up growth scenarios discussed above. Indeed, without external resource inflows, the average domestic savings rate for the LDCs as a group is actually insufficient for economic growth to take place at all. The UN Millennium Project estimates that the average domestic savings rate in the LDCs during 1980–2000 was just 6.7 per cent of GDP, and without external resource inflows GDP per capita in the LDCs would have declined by 3.1 per cent per annum even if all these domestic resources had been invested efficiently (UN Millennium Project, 2005: table 3.11).[10] If the same analysis is applied with the higher domestic savings rate of 13.6 per cent of GDP that pertained in 1999–2003 and a slower population growth rate (2.4 per cent per annum rather than 2.5 per cent), it will be seen that domestic savings in the LDCs are still too low to achieve economic growth on their own. Without access to external savings, the real GDP per capita of the LDCs as a group would have declined by 0.66 per cent per annum during 1999–2003 even if all domestic savings had been efficiently invested.

An even starker picture emerges if one estimates "genuine savings rates" which adjust the savings rate from national accounts to take account of depletion of environmental resources. This adjustment is important for LDCs because their economies are generally so heavily dependent on natural resources. For the LDCs for which data are available, it is apparent that average genuine savings rates did not increase between 1990 and 2003. Genuine savings remained at below 5 per cent of GNI for most of the 1990s (chart 15). In 2003, the rate of genuine savings in the LDCs was about half the level in low- and middle-income countries, although it had been about the same in 1990. Genuine savings are also estimated on the basis of gross national savings, which include ODA grants. If the genuine savings rates are further adjusted to take out

CHART 15. GENUINE SAVINGS[a] IN LDCS AND LOW- AND MIDDLE-INCOME COUNTRIES, 1986–2003



Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators* and *Global Development Finance*, online data, November 2005.

Note: Based on 26 LDCs for which data are available.

a For definition of genuine savings, see text.

this external capital inflow, this seriously reduces the estimate of genuine savings in the LDCs. The adjusted genuine savings are actually negative in the LDCs in all years between 1991 and 2003. There is also a declining trend.

Thus, although the growth performance of the LDCs as a group improved considerably in the 1990s, their domestic productive resource base — as measured by genuine savings without ODA grants — has been shrinking. This raises serious questions about the sustainability of the recent acceleration of economic growth, which is apparent in the growth experience discussed in the present chapter and also the most recent growth trends discussed in part I of this Report.

For 17 LDCs, there are only three in which tax revenue exceeds 15 per cent of GDP and it is below 10 per cent of GDP in 7 countries.

2. LOW GOVERNMENT REVENUES

Government revenues are also very low in most LDCs. Some are able to collect major resource rents, notably on oil and minerals, but also, in the case of island LDCs, through fishing licences. However, most LDCs raise revenue domestically mainly through taxation. For 17 LDCs for which recent data on public finances are available, there are only three in which tax revenue exceeds 15 per cent of GDP and it is below 10 per cent of GDP in 7 countries (table 30). This is very low, compared with other developing countries and developed countries. Recent calculations, for example, indicate that tax revenue as a share of GDP is 18 per cent on average in developing countries and 38 per cent in developed countries (McKinley, 2005).

TABLE 30. GOVERNMENT FINANCE IN SELECTED LDCs

(Percentage of GDP)

	Period [a]	Government revenue	Tax revenue	Non–tax revenue [b] (excluding grants)	Grants	Government expenditure
Bangladesh	2001–2003	10.9	7.8	2.3	0.9	9.1
Bhutan	2001–2003	38.8	10.8	11.9	16.2	21.2
Burundi	1998–1999	15.4	14.5	0.9	..	19.9
Dem. Rep. of the Congo	2001–2002	6.1	5.0	1.0	..	6.3
Ethiopia	1998–1999	19.9	12.9	6.1	0.9	21.5
Guinea	1998–1999	16.2	10.8	0.7	4.6	12.8
Maldives	2001–2003	32.6	13.0	17.8	1.9	25.9
Myanmar	1996–1999	6.7	3.5	3.2	..	..
Nepal	2001–2003	13.1	9.4	2.1	1.7	..
Rwanda	1990–1992	9.9	8.7	1.2	..	13.1
Senegal	1999–2001	19.6	17.0	0.7	1.8	13.9
Sierra Leone	1998–1999	11.1	7.0	0.2	3.9	17.3
Sudan	1998–1999	7.5	6.2	1.3	..	7.1
Uganda	2000–2002	18.8	11.2	0.3	7.3	18.0
Vanuatu	1997–1999	23.9	20.0	4.0	..	23.5
Yemen	1998–1999	29.1	10.9	17.6	0.5	25.3
Zambia	1998–1999	25.0	18.1	0.6	6.3	19.2

Source: UNCTAD secretariat estimates based on IMF, *Governmental Financial Statistics March 2005* and World Bank, *World Development Indicators* online data, May 2005.

a Most recent period available.

b Non-tax revenue (excluding grants) include property income, sales of goods and services, fines penalties and forfeits and voluntary transfers other than grants.

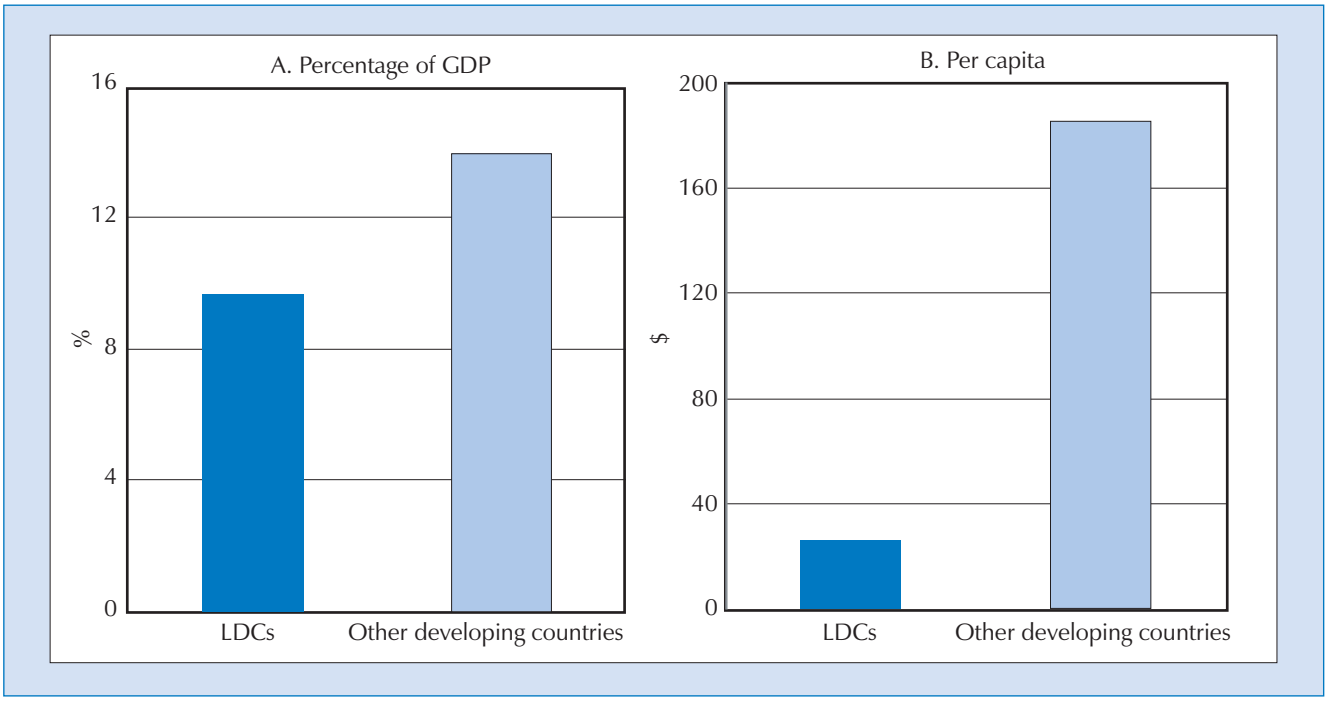
There are certainly important problems of taxation administration which have to be addressed within the LDCs. However, their low tax base should not be seen exclusively as a result of lack of taxation effort or tax reform. A good indication of this is the fact that at least 28 LDCs have introduced value-added taxes, including 24 since 1990. These major reforms, introduced as part of structural adjustment programmes and later within PRSPs, are often partly designed to offset the adverse tax consequences of trade liberalization. But wider evidence shows that whilst they can do so in high-income countries, VAT has been able to compensate for only 45–60 per cent of the revenue lost from trade liberalization in middle-income countries and only about 30 per cent of the revenue lost from trade liberalization in low-income countries (Baunsgaard and Keen, 2004).

The low level of taxation revenue limits the level of government expenditure in all the LDCs which do not have access to resources rents.

The low level of taxation revenue limits the level of government expenditure in all the LDCs which do not have access to resources rents. The extent of this limitation is shown in chart 16. During 2000–2003, government final consumption expenditure was equivalent to about 10 per cent of GDP in the LDCs for which data are available. This is six percentage points below the level in other developing countries. However, because of very low GDP per capita in the LDCs, these shares translate into very little public expenditure per capita. In fact, during 2000–2003, government final consumption expenditure in the LDCs was only $26 per capita compared with $186 per capita in other developing countries. As a result, current public expenditure on health is very low in per capita terms within the LDCs. During 2000–2002, LDCs on average spent $13 per head per annum on public health expenditure, in contrast to an average of $75 per head per annum in other developing countries, and $2,908 in high-income OECD countries.

During 2000–2003, government final consumption expenditure in the LDCs as a group was only $26 per capita compared with $186 per capita in other developing countries.

CHART 16. GOVERNMENT FINAL CONSUMPTION EXPENDITURE IN LDCS AND OTHER DEVELOPING COUNTRIES, 2000–2003



Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators 2005*, CD-ROM.
Notes: Group averages are weighted averages.
Calculations are based on a group of 39 LDCs and 68 other developing countries for which data were available.

3. THE POTENTIAL FOR DOMESTIC RESOURCE MOBILIZATION

There are various reasons why domestic savings rates and government revenues are low in the LDCs, most obviously because of generalized mass poverty. Because the average income per capita is so low in the LDCs, a large proportion of the population survives on incomes which are barely sufficient to meet their basic physical needs. The ability to save and also to raise revenue through taxes is thus highly constrained.[11] Dependency ratios (the number of dependants per working person in each household) are also high and this further dampens the capacity to save.

The strong limitation on the current capacity to save and raise government revenue does not mean that there is a low potential for domestic resource mobilization.

However, the strong limitation on the *current capacity* to save and raise government revenue does not mean that there is a low *potential* for domestic resource mobilization. The contrary is in fact the case. The underdevelopment of the LDC economies has the corollary that there are hidden and underutilized resources that could be tapped to finance increased investment. In thinking about the potential for domestic resource mobilization within the LDCs, it is necessary to have a dynamic perspective which identifies how this potential can be realized. As Albert Hirschman (1958:5) put it, "Development depends not so much on finding optimal combinations for given resources and factors of production as on calling forth and enlisting for development purposes resources and abilities that are hidden, scattered and badly utilized".

The potential for domestic resource mobilization is high within the LDCs for a number of reasons.

Firstly, the level of monetization of the LDC economies is very low. In 2003, the money supply was just 31 per cent of GDP compared with almost 80 per cent in other developing countries (David, 2005). The weak monetization levels are related to weak financial systems (see chapter 6). But they also reflect the continuing subsistence orientation of agriculture, where the main form of

savings is often physical rather than financial assets and where part of agricultural output is consumed within the household and not monetized. The intensification of commercial agriculture and the development of the market economy within rural areas could, together with the development of rural financial institutions in which farmers can, with confidence, deposit savings, lead to significant savings mobilization.

The level of monetization of the LDC economies is very low. In 2003, the money supply was just 31 per cent of GDP compared with almost 80 per cent in other developing countries.

Secondly, as will be discussed in chapter 4, a significant proportion of the labour force within LDCs is either underemployed or has very low productivity as they work applying their raw labour with rudimentary tools and equipment and poor infrastructural facilities. Most agricultural production and a significant part of non-agricultural production are also organized on the basis of household enterprises. When production is organized in this way and productivity is very low, there is often surplus labour. This does not necessarily mean that the marginal productivity of labour is zero or negative, or that labour is totally redundant. Rather, there is surplus labour in the sense that some individuals receive more than the marginal product of the labour. This is likely to occur whenever the marginal product of labour is unable to meet subsistence requirements and when individual earnings are based on institutional sharing norms within the household (Fei and Ranis, 1997; Ranis, 1997).

The existence of surplus labour means that there are some direct opportunities for physical capital formation in rural areas through mobilizing labour for simple infrastructure projects (Griffin, 1996, Griffin and Brenner, 2000).[12] However, beyond this, with fuller and more productive employment for the labour force, domestic savings can be expected to increase. This is indeed apparent in the historical experience of the LDCs. The evidence shows that as income levels rise, there is a high propensity to save within the LDCs. Moreover, the propensity to save is actually higher than in other developing countries (see UNCTAD, 2000: 36–37).

As income levels rise, there is a high propensity to save within the LDCs.

Thirdly, the potential for domestic resource mobilization is high because the domestic capitalist corporate sector of the economy is as yet underdeveloped in most LDCs. This is the mirror image of the importance of household enterprises within the private sector of LDCs. But it has important implications because business savings are a key component of domestic savings. As W.A. Lewis put it in the mid-1950s: "If we ask why the less developed countries save so small, the answer is not that they are so poor but because their capitalist sector is so small" (Lewis, 1955). The evidence shows that a defining feature of the most successful East Asian developing economies has been their ability to raise their domestic savings ratios by increasing business savings (not simply household savings). In the initial stages of the development process the mobilization of the agricultural surplus was important. But after this initial stage the engine of the development of productive capacities was the creation of a strong investment–profits nexus in which expected profits provided the incentive for investment and realized profits were both an outcome of investment and a source for further investment (Akyüz and Gore, 1996). Evidence from Investment Climate Surveys also shows that this is relevant in LDCs. Retained profits are the source of 80 per cent of the working capital and 71 per cent of the new investment in Ugandan manufacturing firms, and 74 per cent of the working capital and 63 per cent of the new investment in Eritrean manufacturing firms (World Bank, 2004: appendix 4, p. 133).

There is latent entrepreneurship which can be harnessed into productive channels to support the expansion of productive investment and employment.

Fourthly, the potential for domestic resource mobilization is high within the LDCs because there is latent entrepreneurship which can be harnessed into productive channels to support the expansion of productive investment and

employment. This requires both macroeconomic stability and household-level economic security. At the present moment, all-pervasive economic insecurity at the household level associated with generalized poverty adversely affects entrepreneurship as it leads to short-termism and limits risk-taking. The existence of production complementarities which render individual investment decision dependent on the decisions of others, together with weak coordinating devices which can enable positive linkage effects, is another reason why entrepreneurial capabilities remain latent. In addition, there are incentives for unproductive (or destructive) entrepreneurial activities, which exist when entrepreneurs establish illegal barriers to entry or engage in predatory behaviour based on monopoly position which can stem from political favours (Baumol, 1990). A major policy challenge is not simply to foster entrepreneuship but also to bring about a switch from unproductive entrepreneuship to productive entrepreneurship.

The low level of financial resources is partly due to the low level of income. But it also reflects weak investment incentives and the lack of profitable investment opportunities.

Fifthly, there is an important potential for domestic resource mobilization which is associated with how the small stratum of rich individuals within LDCs use their wealth. How these people deploy their wealth can make an important difference to the savings-investment process. If their savings are used for productive investment within the country, it will facilitate strong domestic capital accumulation.[13] Many highly-qualified individuals have also migrated to work in other countries, and ensuring that their financial resources could return is yet another avenue for resource mobilization.

In summary, the low level of financial resources is partly due to the low level of income. But it also reflects weak investment incentives and the lack of profitable investment opportunities. If investment increases, there are significant possibilities for increased domestic resource mobilization based on increased monetization of the economy, the mobilization of surplus labour, a shift away from household to corporate financing of investment, the mobilization of entrepreneurship which is latent because of all-pervasive economic insecurity and weak coordination mechanisms to address production complementarities, the turning of unproductive entrepreneurship into productive entrepreneurship, and the increased deployment of the resources of the small stratum of the rich for productive investment within the LDCs. Comparison of the contrasting investment and savings performance of LDCs classified according to their growth experience suggests that these potentials for domestic resource mobilization are not imaginary. Some LDCs have significantly increased both domestic savings and investment in a virtuous circle (box 10).

Box 10. Economic growth and capital accumulation: Diversity amongst LDCs

There is much diversity in the performance of LDCs in terms of capital accumulation. This is quite closely related to the diversity in actual growth performance discussed in this chapter. In order to clarify the relationship, trends in savings, investment and foreign resource inflows were examined in the three groups of LDCs identified in the main text according to their long-term growth performance: converging economies, weak-growth economies and regressing economies. Oil-exporting LDCs (Angola, Equatorial Guinea, Sudan and Yemen) and island LDCs were removed from the sample as they have rather specific patterns of change.

This left the following countries[1] for which there were data:

- Converging economies: Bangladesh, Bhutan, Nepal, Mozambique and Uganda;
- Weak-growth economies: Benin, Burkina Faso, Chad, Ethiopia, Mali, Mauritania, Senegal and Malawi;
- Regressing economies: Burundi, Central African Republic, Democratic Republic of the Congo, Gambia, Guinea-Bissau, Haiti, Madagascar, Niger, Rwanda, Sierra Leone, Togo and Zambia.

There are major differences between these three groups of countries in terms of the rates of physical capital formation and its financing. At the start of the 1980s, there was not that much difference in the investment rates in the three groups of countries. In the converging economies gross capital formation constituted 18 per cent of GDP compared with 16 per cent in the weak-growth economies and 17 per cent in the regressing economies. But in the converging economies, the

Box table 4. Resource availability and investment as percentage of GDP in LDCs and LDCs subgroups with different growth experiences, 1980–1984, 1989–1993 and 1999–2003

(Percentage of GDP)

	Gross capital formation			Gross domestic savings			ODA Grants			Foreign direct investment		
	1980–1984	1989–1993	1999–2003	1980–1984	1989–1993	1999–2003	1980–1984	1989–1993	1999–2003	1980–1984	1989–1993	1999–2003
Converging economies												
Bangladesh	16.6	17.2	23.0	6.3	11.2	17.5	3.7	2.7	1.2	0.0	0.0	0.3
Bhutan	37.4	37.7	48.7	8.0	26.1	26.9	2.7	10.9	5.9	0.0	0.2	0.0
Mozambique	10.3	23.4	32.6	-5.9	-7.0	12.8	3.2	32.1	22.5	0.0	0.8	7.7
Nepal	18.3	20.6	23.8	10.0	9.8	14.2	2.9	4.2	3.3	0.0	0.0	0.0
Uganda	7.6	13.6	19.7	2.6	0.8	6.7	3.4	7.1	7.5	0.0	0.3	2.8
Weak growth economies												
Benin	17.8	14.1	18.3	-2.8	1.2	5.5	2.5	7.4	5.2	0.1	3.6	1.8
Burkina Faso	15.7	18.6	20.1	-5.9	5.5	5.4	5.4	6.8	7.3	0.1	0.1	0.4
Chad	3.3	9.5	42.1	-3.2	-5.1	18.8	6.4	7.2	4.6	0.2	0.6	26.7
Ethiopia	13.6	11.5	18.3	6.5	4.7	1.9	2.6	7.6	8.8	0.0	0.0	1.1
Malawi	19.9	20.4	9.3	13.5	7.3	-4.8	3.9	12.5	13.7	0.8	0.1	1.5
Mali	14.6	22.2	22.4	-0.6	5.8	15.3	7.0	7.9	7.4	0.3	0.0	3.8
Mauritania	28.4	19.2	32.9	-4.2	7.1	8.7	8.8	11.9	17.3	1.7	0.7	9.4
Senegal	12.4	13.3	19.2	-3.6	8.2	9.4	3.6	6.6	4.4	0.6	0.4	1.7
Regressing economies												
Burundi	17.4	15.3	9.7	3.0	-3.2	-2.5	4.5	10.8	16.7	0.4	0.1	0.4
Central African Republic	9.1	11.7	14.6	-3.4	1.1	10.5	6.7	6.1	5.2	0.8	-0.3	0.4
Dem. Rep of the Congo	9.6	7.3	6.9	8.4	7.1	5.6	0.7	2.7	22.7	-0.1	0.0	1.6
Gambia	22.6	21.6	18.4	5.4	8.8	12.0	12.2	13.8	4.3	0.2	2.6	11.4
Guinea-Bissau	28.3	35.5	13.3	-1.9	3.6	-7.9	23.3	19.8	25.6	0.3	1.2	1.2
Haiti	16.9	12.0	27.2	6.2	3.5	4.5	2.6	4.0	2.5	0.5	0.0	0.3
Madagascar	10.6	12.3	16.3	0.5	3.8	9.2	1.3	7.9	3.8	0.1	0.6	1.2
Niger	18.4	8.6	12.6	7.6	4.1	4.5	4.1	9.6	7.3	0.7	0.7	0.7
Rwanda	15.3	14.8	18.4	4.9	3.3	1.3	5.0	7.4	11.1	1.2	0.3	0.3
Sierra Leone	15.1	8.7	7.9	4.1	9.6	-10.3	1.9	7.9	22.6	0.0	1.3	1.5
Togo	22.6	17.2	17.7	17.6	7.9	1.8	2.5	5.8	2.5	1.4	0.3	3.0
Zambia	17.9	13.1	21.4	12.8	7.4	12.9	2.1	14.0	11.0	0.6	4.4	3.0
LDCs	16.8	16.8	20.6	3.4	5.3	7.2	4.9	9.4	9.8	0.4	0.7	3.3
Converging economies	18.0	22.5	29.6	4.2	8.2	15.6	3.2	11.4	8.1	0.0	0.3	2.2
Weak-growth economies	15.7	16.1	22.8	0.0	4.3	7.5	5.0	8.5	8.6	0.5	0.7	5.8
Regressing economies	17.0	14.8	15.4	5.4	4.7	3.5	5.6	9.1	11.3	0.5	0.9	2.1

Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators and Global Development Finance*, online data May 2005.

Note: Group averages are simple averages.

Box 10 (contd.)

investment rate had increased to 23 per cent in the period 1989–1993 and 30 per cent in the period 1999–2003. At the other end of the spectrum, the average investment rate within the regressing economies declined from 17 per cent in 1980–1984 to 15 per cent in 1999–2003. Investment rates increased between 1980–1984 and 1999–2003 in all the converging economies. But they declined in 7 out of 12 regressing economies.

In association with this increase in investment in the converging economies, gross domestic savings increased from 4 per cent of GDP in 1980–1984 to 8 per cent in 1989–1993 and 16 per cent in 1999–2003. In contrast, the savings rate, which actually started higher in the regressing economies than the converging economies, fell from 5 per cent to 4 per cent of GDP from the early 1980s to 1999–2003.

The weak-growth economies fall between these trends. Gross capital formation as a share of GDP does not change in the 1980s, but increases from 16 per cent in 1989–1993 and to 23 per cent in 1999–2003. This level is 6 percentage points higher than the average of the regressing economies but 7 percentage points lower than the converging economies. The domestic savings rate does not fall in the weak-growth economies as it does, on average, in the regressing economies. But the growth of investment in the 1990s is not matched, as in the converging economies, by a strongly rising domestic savings ratio. It increases from 0 per cent in 1980–1984 to 4 per cent in 1989–1993 and to 8 per cent in 1999–2003.

Although the converging economies have a strong domestic savings effort, external resources are still important for their investment processes. The domestic savings–investment gap was about 14 per cent of GDP during each of the three periods. In contrast, the domestic savings–investment gap is somewhat smaller (10 to 12 per cent of GDP) in the regressing economies. Once again the weak-growth economies are in an intermediate position. Their reliance on external resources as measured by the savings–investment gap somewhat decreased between 1980–1984 and 1989–1993, but increased in the subsequent period. But the increase in gross capital formation as a percentage of GDP from 1989–1993 to 1999–2003 is driven by an increase in external resources rather than an increase in the domestic savings rate.

It is also possible to identify trends in FDI and ODA grants as a share of GDP in these countries. This shows that in the period 1999–2003, FDI increased its contribution to gross capital formation in all groups of countries, but was insignificant in the two earlier periods. FDI is also most important as a share of GDP in the weak-growth economies. On average, three-quarters of the increase in the rate of capital formation in these countries can be attributed to increased FDI inflows. With regard to grants, it is clear that during the 1980s grants as a share of GDP increased significantly in all three country groups. However, their share subsequently decreased in the group of converging economies. In contrast, grants are increasing as a share of GDP in both the weak-growth and the regressing economies, although at a lower pace than previously.

These results show that it is possible for LDCs to achieve expanded domestic capital accumulation with a mix of increased domestic resource mobilization and external resource inflows.

[1] This includes all the countries for which data were available except Lesotho, which is treated as an outlier because, unlike in all the other countries, domestic consumption far exceeded GDP in all these periods.

F. External resource inflows and domestic capital accumulation

External finance can play an important catalytic role in kick-starting and supporting a virtuous cycle of domestic resource mobilization.

Realizing these potentials for domestic resource mobilization will certainly be difficult, given the all-pervasive extreme poverty and economic insecurity within LDCs. In these circumstances, external finance can play an important catalytic role in kick-starting and supporting a virtuous cycle of domestic resource mobilization in which expanding investment opportunities generate increased savings and increased savings in turn finance increased investment. Both ODA and FDI inflows are important. They can directly finance investment, and also, as will be discussed in chapter 7, play a significant role in relaxing balance-of-payments constraints on economic growth. But in practice there are various problems which mean that both these types of external resource inflows are not generally playing the catalytic financing role which they could play in expanded domestic capital accumulation.

1. ODA AND DOMESTIC ACCUMULATION AND BUDGETARY PROCESSES

ODA is particularly important. For the LDCs as a group, 67 per cent of aggregate net resource flows to the LDCs in 2000–2003 were official flows compared with 4 per cent in other developing countries.[14] But a major problem with capital formation processes within LDCs is that there are features of the current aid regime which interfere with a strong positive relationship between ODA inflows and domestic processes of capital accumulation in the LDCs.

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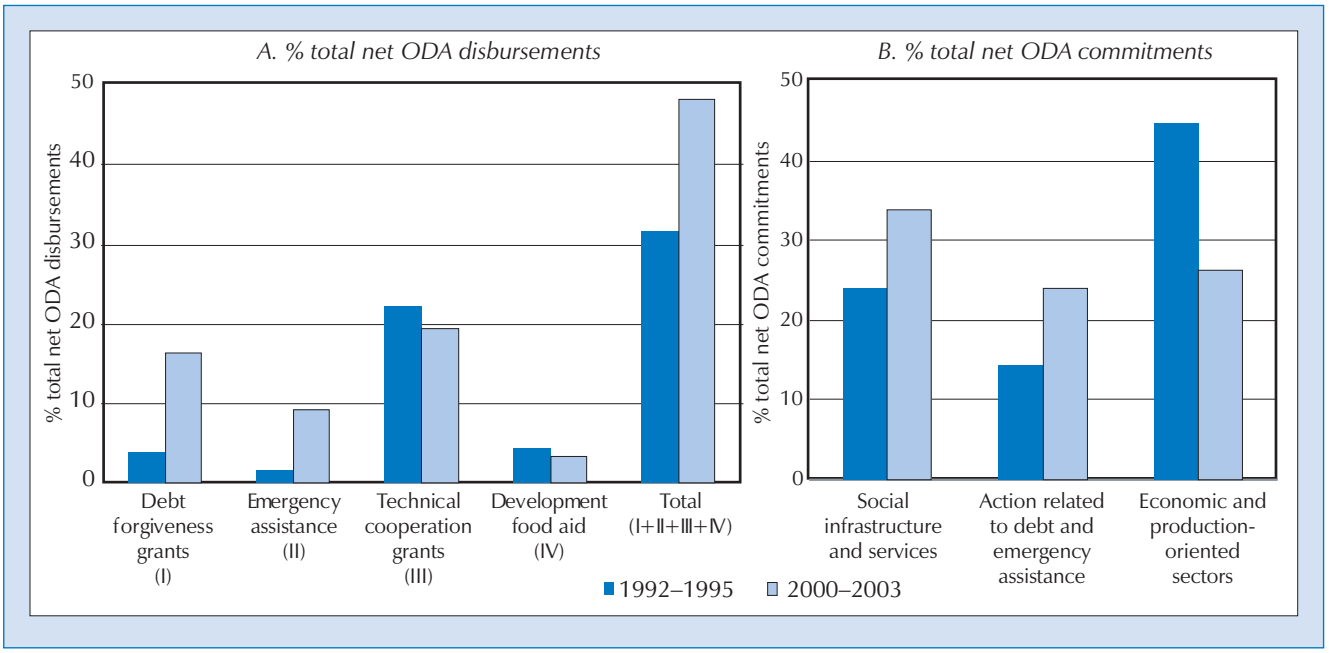
Firstly, since the early 1990s an increasing proportion of the aid flows to the LDCs has been provided in ways which mean that they are not directly available to finance capital formation. In 2000–2003, almost half of the total ODA disbursements to the LDCs were directed to debt relief, emergency assistance, technical cooperation and development food aid. This was up from one third of total ODA to the LDCs in 1992–1995 (chart 17A).[15]

Secondly, a sectoral breakdown shows that the share of ODA committed to LDCs which is directed towards economic infrastructure and production-oriented sectors has declined significantly. Between 1992–1995 and 2000–2003, ODA commitments to economic infrastructure and production-oriented sectors, as defined in chart 17B, declined from 45 per cent to 26 per cent of the total commitments of all donors to LDCs. If one focuses solely on aid commitments to production sectors (agriculture, industry, mining, construction, trade and tourism) it is apparent that this constituted only 6.8 per cent of total aid commitments in the period 2000–2003. ODA commitments to banking and financial services accounted for only 1 per cent of total aid commitments in 2000–2003.

ODA commitments to economic infrastructure and production-oriented sectors declined from 45 per cent to 26 per cent of the total commitments of all donors to LDCs.

CHART 17. THE COMPOSITION OF ODA COMMITMENTS TO LDCS BY ALL DONORS, 1992–1995 AND 2000–2003



Source: Source: Calculations based on OECD/DAC *International Aid Statistics*, online data.

Notes: All donors comprise bilateral donors (DAC and non-DAC donor countries) and multilateral donors.
"Social infrastructure and services" comprises: education, health, population programmes, water supply and sanitation, government and civil society, other social infrastructure and services.
"Economic and production-oriented sectors" comprises: production sectors (agriculture, industry, mining, construction, trade, tourism and multisector),economic infrastructure, transport and storage, communication, energy, banking and financial services.

Thirdly, the extent to which aid inflows have expanded the fiscal space of Governments has been reduced by a number of features of the way in which aid is provided.[16] These are discussed in detail in LDC Report 2000 (chapter 5). They include the following:

- *The unpredictability and volatility of aid*. Long-term analysis of aid inflows to LDCs over the period 1970–1998 shows that foreign aid has been more volatile than extremely volatile export revenues; there is little correlation between variations in aid and variations in government revenue and export revenue; and variations in foreign aid have not acted to counteract other shocks. As a consequence, "the volatility of aid inflows has contributed to macro-economic instability" (UNCTAD, 2000: 181).
- *Lack of coordination of the aid system and the low degree of integration of the aid system into the local economic and administrative structures*. This has severely eroded State capacities. This is particularly evident in the high transaction costs associated with multiple donors and also the internal brain drain from the public sector to donor projects.[17] This has been exacerbated by the reduction of the public sector wage bill, which has eroded the real value of public salaries, together with the creation of parallel management structures for donor projects. These have interacted in a vicious cycle in which the more that State administrative capacities have eroded, the more donors have needed parallel structures to get things done.
- *The fiscal squeeze on current expenditures*. This occurred through conditionality on the level of current government expenditure, together with increased capital expenditures associated with aid projects which create future spending needs which have to be met from current expenditures. The increase in debt service payments from aid loans is one aspect of this problem.

The PRSP process tends to pay greater attention to direct poverty reduction than to indirect poverty reduction through the development of productive capacities.

The PRSP approach has sought to overcome these problems by seeking to link aid to national development strategies. The tendency to provide more aid in the form of budgetary support, together with debt relief in HIPC-LDCs, has also reduced the fiscal squeeze. However, the progress which has been made in terms of change in the behaviour of donors at the country level has been less than expected (see, for example, Driscoll and Evans, 2004; World Bank Operations Evaluation Department, 2004; World Bank/IMF 2005: 37–41). Moreover, whilst the changes may have improved aid delivery somewhat, they have imparted a particular bias to the way in which ODA supports capital formation.

This is the fourth key issue in terms of the relationship between aid and domestic accumulation and budgetary processes. The PRSP process tends to pay greater attention to direct poverty reduction than to indirect poverty reduction through the development of productive capacities. There has been a shift towards a greater focus on economic growth in the PRSPs since 2002 (UNCTAD, 2004: chapter 7). Nevertheless, there remain deep problems concerning how social sectors and productive sectors are integrated in PRSPs. As Driscoll and Evans (2004) observe:

- "Most PRSs have yet to deliver a fully integrated strategy in which the quality of social sector plans are matched by those for the productive sectors."
- "Underlying policy processes in the productive sectors are often particularly weak…The PRS emphasis on centralized national or sectoral expenditure targets tends to limit the focus to support for the local

enabling environment or the provision of 'soft' services such as extension and technology to rural or informal sector producers."

- "Under pressure to demonstrate results, many donors have opted for quick wins of targeted social sector spending instead of seeking to address the paucity of analytical work on pro-poor growth, and support longer-term government action to bring it about." (pp. 7–8).

More emphasis is now being placed on the need to tie the PRSs with the long-term development vision of each country and also to link goals and targets to clear public actions designed to achieve them (World Bank/IMF, 2005). However, the orientation towards social targets and away from production and employment has possibly been exacerbated by the dominance of social sector targets and the marginal position of employment in the Millennium Development Goals.

The orientation towards social targets and away from production and employment has possibly been exacerbated by the dominance of social sector targets and the marginal position of employment in the Millennium Development Goals.

A further important aspect of the development model underlying the poverty reduction strategies is the way in which economic growth is supposed to be promoted. Essentially, it is expected that this will occur through the deepening of economic reforms. Second-generation reforms pay more attention to governance issues and the investment climate, and they also seek to achieve more effective and more pro-poor public expenditure. But it remains to be seen how effective these second-generation reforms will be in addressing the interlocking structural constraints which most LDCs face and supporting the development of productive capacities, which is essential for achieving both high and sustainable rates of economic growth.

The failure of the first-generation reforms to increase domestic savings and investment sufficiently has been recognized as one of their critical weaknesses (World Bank, 2005; Griffin, 2005). It is for this reason that improving the investment climate is now being stressed. But currently, there is a tendency to shrink the notion of the investment climate in two ways: firstly, to equate it with government policies and regulations directly shaping opportunities and incentives of firms (rather than enterprises in general); and secondly, to associate less government with a better investment climate. Narrowing the idea of the investment climate in this way seriously diminishes the analytical and policy value of the concept. It is clear that improving the investment climate has been central in successful developing countries. But the good investment climate which they managed to promote was not associated with less government; rather, it entailed public action which recognized the heterogeneity of enterprise-level capabilities and sought pro-actively to upgrade them, and it also sought to manage a progressive transformation of production structures. Also, it was associated with a macroeconomic framework which was not geared simply to stabilization but also to promoting rapid capital accumulation by providing investment incentives.

The failure of the first-generation reforms to increase domestic savings and investment sufficiently has been recognized as one of their critical weaknesses. It is for this reason that improving the investment climate is now being stressed.

The final issue which is also becoming increasingly relevant is the way in which conditions regarding good governance are being attached to aid inflows (Hoppenbrouwer, 2005). Government effectiveness is certainly vital for developing productive capacities. But it is possible that governance-related conditions for access to aid will undermine the effectiveness of aid. This can occur if the notion of good governance is defined in a way that prescribes a certain role for government in managing an economy rather than in a way that specifies standards of bureaucratic competence and administrative capability per se. The problem with the former approach is that it may assume a role for government which is not appropriate in particular countries and at particular times within the development process. Good governance will ultimately be possible only if government finances are sufficiently strong to enable adequate

expenditure on administration, law and order, and the provision of the services of a modern State. This ultimately requires the development of productive capacities to build up the revenue base of the domestic economy.

2. FDI AND DOMESTIC PRIVATE CAPITAL ACCUMULATION

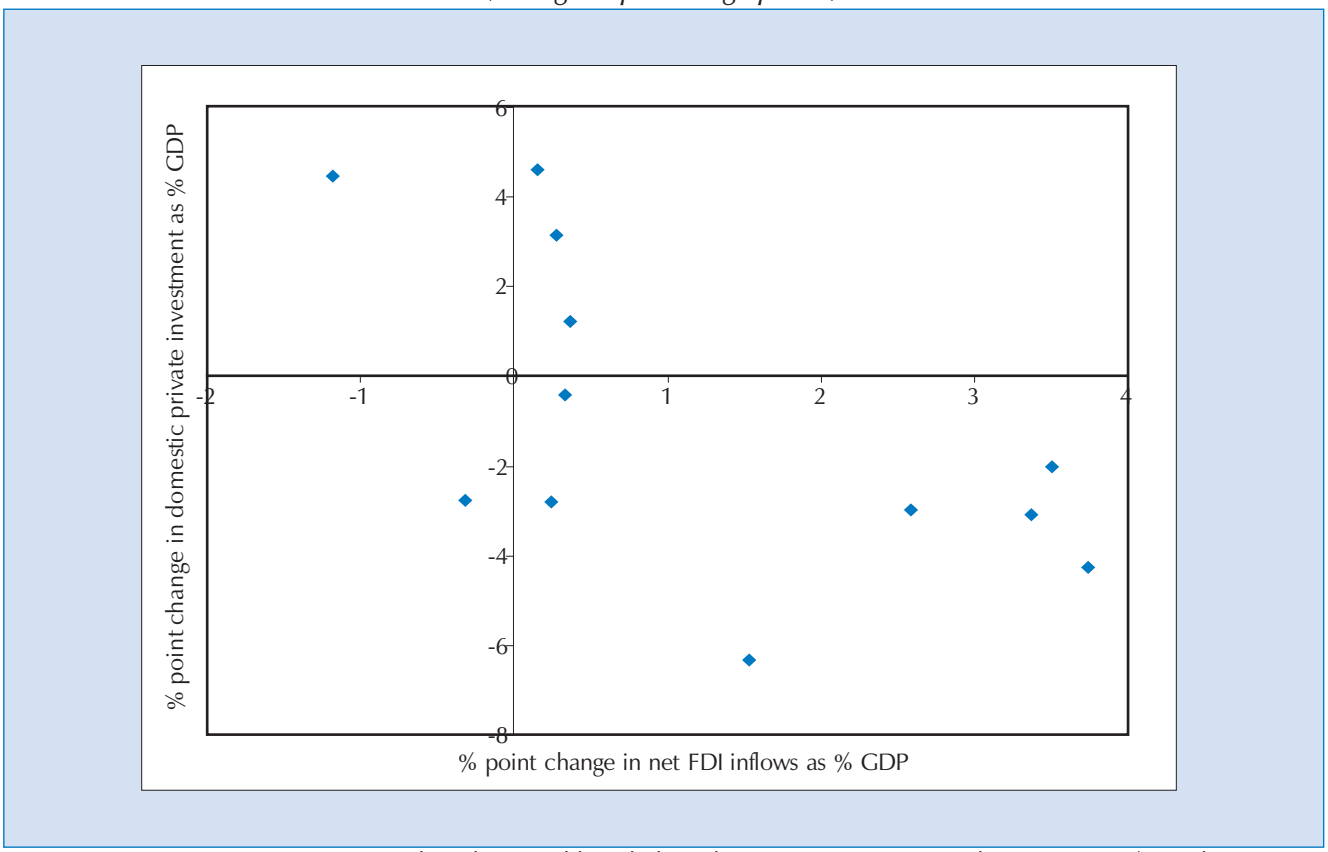
Good governance ultimately requires the development of productive capacities to build up the revenue base of the domestic economy.

The other major form of external finance which is important to the LDCs is FDI inflows. The way in which FDI affects domestic capital formation is, like the links between aid and domestic capital formation, a complex issue. It needs to take account of the fact that export-oriented FDI might work differently from FDI which is seeking to serve domestic markets, and that FDI seeking to exploit natural resources might have different effects from FDI in manufactures and services. As with aid, its effectiveness will also depend on domestic policies which integrate FDI into domestic development processes. Finally, it must be recognized that the definition of FDI includes both greenfield investment and acquisition of existing assets through takeovers. This makes it difficult to analyse precisely the relationship between FDI and domestic capital formation.

Empirical studies show that there is often a significant relationship between FDI and domestic investment, but that the relationship may be one in which FDI crowds out domestic investment as frequently as it crowds in domestic investment (Agosin and Mayer, 2000; Kumar and Pradhan, 2002; Ghose, 2004). Chart 18 presents evidence on changes in levels of FDI and domestic fixed private capital formation between the first half of the 1990s and the second half of the 1990s in 12 LDCs for which it was possible to obtain data. This shows, as noted earlier in the chapter, that FDI as a share of GDP has increased in 10 out of the 12 countries. But in all five countries where the FDI/GDP ratio increased

CHART 18. CHANGES IN NET FDI INFLOWS AND DOMESTIC PRIVATE INVESTMENT AS A PER CENT OF GDP IN SELECTED LDCS BETWEEN 1990–1995 AND 1995–2000

(Change in percentage points)



Source: UNCTAD secretariat estimates based on World Bank data (direct communication) and UNCTAD FDI/TNC data.

by over one percentage point between the first half and the second half of the 1990s, the ratio of domestic private investment to GDP fell by two percentage points or more. There are only three countries in which an increasing FDI/GDP ratio is associated with an increasing private domestic investment/GDP ratio.

It is difficult to identify what precisely is behind these tendencies, and the sample size is small. However, the data suggest that foreign investment has not had strong positive linkages effects that have generated higher levels of private domestic investment. As analysed in the last LDC Report, growth based on exports of oil, minerals, or manufactures produced in EPZs, which in all cases has been highly dependent on FDI, has often been an isolated enclave within the LDC national economies. Elaborating policies which can foster positive linkages between FDI and domestic private sector is a major challenge.

Elaborating policies which can foster positive linkages between FDI and domestic private sector is a major challenge.

F. Conclusions

In addressing the issue of developing productive capacities in the least developed countries, it is necessary to maintain a balance between the constraints and the opportunities that characterize the present situation. Focusing on the multiple and interlocking constraints can lead to a paralysing sense of pessimism and an overwhelming sense of dependence on external aid. But there are in practice major opportunities for rapid economic growth and substantial poverty reduction if these constraints can be relaxed in a systematic way. Moreover, there are important hidden and underutilized productive resources and entrepreneurial capabilities that can support the development of productive capacities from within.

This chapter has shown how fast LDCs could grow if their labour force were to be fully employed and various potential sources of labour productivity growth, which are available to all very poor countries, were exploited. The analysis indicates that the growth rate target of more than 7 per cent, which is part of the Brussels Programme of Action for the LDCs, is achievable. But this requires a fast catch-up growth scenario in which there is development, as well as full and efficient utilization, of productive capacities. In particular, it requires full employment of the labour force, faster human capital accumulation, faster acquisition and absorption of technologies already in use in other countries, and structural change to enable increasing returns to scale.

The analysis indicates that the growth rate target of more than 7 per cent, which is part of the Brussels Programme of Action for the LDCs, is achievable, if constraints on the productive capacities can be relaxed in a systematic way.

Increased investment is essential for achieving the potential GDP growth rates which are possible in the LDCs. It is through such increased investment that technological progress and structural change will be possible and productive capacities will develop. But despite improvements in the 1990s, capital formation was still only 22 per cent of GDP in the LDCs as a group in 1999–2003 and domestic private investment was particularly weak. Capital formation in the LDCs is far below the rate which is estimated to be required for the fast catch-up scenario (35 per cent of GDP) and also below that required for a slow catch-up scenario in which technological acquisition occurs more slowly than in the fast catch-up scenario. A further concern is that actual rates of human capital formation in the LDCs in the 1990s were slower than in other developing countries. The average years of schooling of the adult population in the LDCs was three years in 2000, which was the same as the level in other developing countries in 1960. Enrolment rates in secondary technical and vocational education and also tertiary enrolment rates in engineering are much lower on average in LDCs than in other developing countries. The brain drain is also increasing in many LDCs. In 2000, one in five of the stock of "high-skill workers"

in the LDCs, defined as those with tertiary education (13 years of schooling or above), were working in OECD countries.

The inadequate rates of physical and human capital formation reflect weaknesses in domestic resource mobilization to finance capital formation, as well as weaknesses in the way in which external capital inflows are supporting domestic processes of capital accumulation. Gross domestic savings rose to 13.6 per cent of GDP in 1999–2003. But with this savings rate it is not only impossible to achieve the investment rates required by the catch-up scenarios without external capital inflows, but also impossible even to achieve positive rates of GDP per capita growth. Estimates of genuine savings, which take account of capital depreciation and natural resource depletion, also indicate that, without ODA grants, there were negative savings for all years between 1991 and 2003, and that the genuine savings rate, without ODA grants, was also declining. Government revenue and expenditure are also low, particularly in countries which do not have access to mineral resource rents. During 2000–2003, government final consumption expenditure in the LDCs was equivalent to $26 per capita compared with $186 per capita in other developing countries.

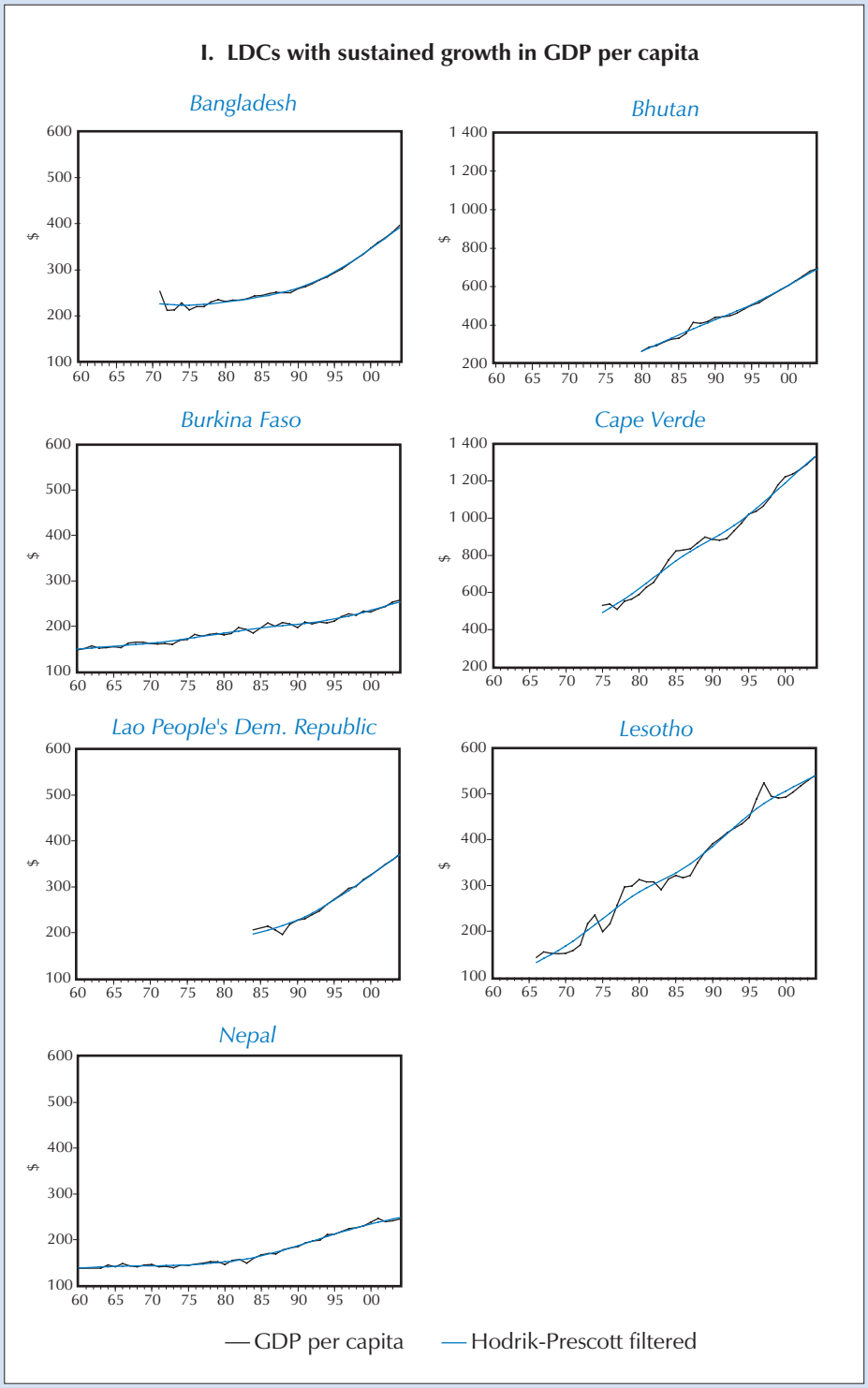
Recent growth accelerations in the LDCs will not be sustainable unless ODA inflows enhance increased domestic savings and investment and thus reduce aid dependence. The recent surge in aid to LDCs should be linked to policies which promote economic growth by explicitly developing their productive capacities.

Mass poverty means that there are considerable limits to the current capacity to save and raise government revenue within the LDCs. However, this does not mean that there is a low potential for domestic resource mobilization. In practice, the contrary is true as the underdevelopment of the LDC economies has the corollary that there are hidden and underutilized resources. If investment increases there are significant possibilities for increased domestic resource mobilization based on increased monetization of the economy, the mobilization of surplus labour, a shift away from household to corporate financing of investment, the mobilization of latent entrepreneurship and turning unproductive into productive entrepreneurship, and the increased deployment of the resources of the small stratum of the rich for productive investment within the LDCs. Comparison of the contrasting investment and savings performance of LDCs classified according to their growth experience indicates that some LDCs have significantly increased both domestic savings and investment in a virtuous circle.

External capital inflows can play an important catalytic role in kick-starting and supporting such a virtuous cycle of domestic resource mobilization in which expanding profitable investment opportunities generate increased savings and increased savings in turn finance increased investment. There is a major opportunity here because since 2000 the sharp decline in ODA to LDCs which occurred during the 1990s has been reversed, and FDI inflows into LDCs, though geographically concentrated, are also increasing. But the limited evidence suggests that FDI inflows are not crowding in domestic private investment. Moreover, there are various features of the current aid regime which imply that ODA is not playing a catalytic role in boosting domestic resource mobilization and expanded domestic capital accumulation. These are related to: the composition of aid which is oriented away from physical capital formation and productive sectors; bias towards social sectors away from production and employment within PRSPs; and conditionality which prescribes a certain role for government in managing an economy which is not adapted necessarily well to the structural weaknesses and enterprise heterogeneity within the LDCs. Recent growth accelerations in the LDCs will not be sustainable unless ODA inflows enhance increased domestic savings and investment and thus reduce aid dependence. The recent surge in aid to LDCs should be linked to policies which promote economic growth by explicitly developing their productive capacities.

ANNEX CHART 1. LONG-TERM TRENDS IN GDP PER CAPITA IN LDCS

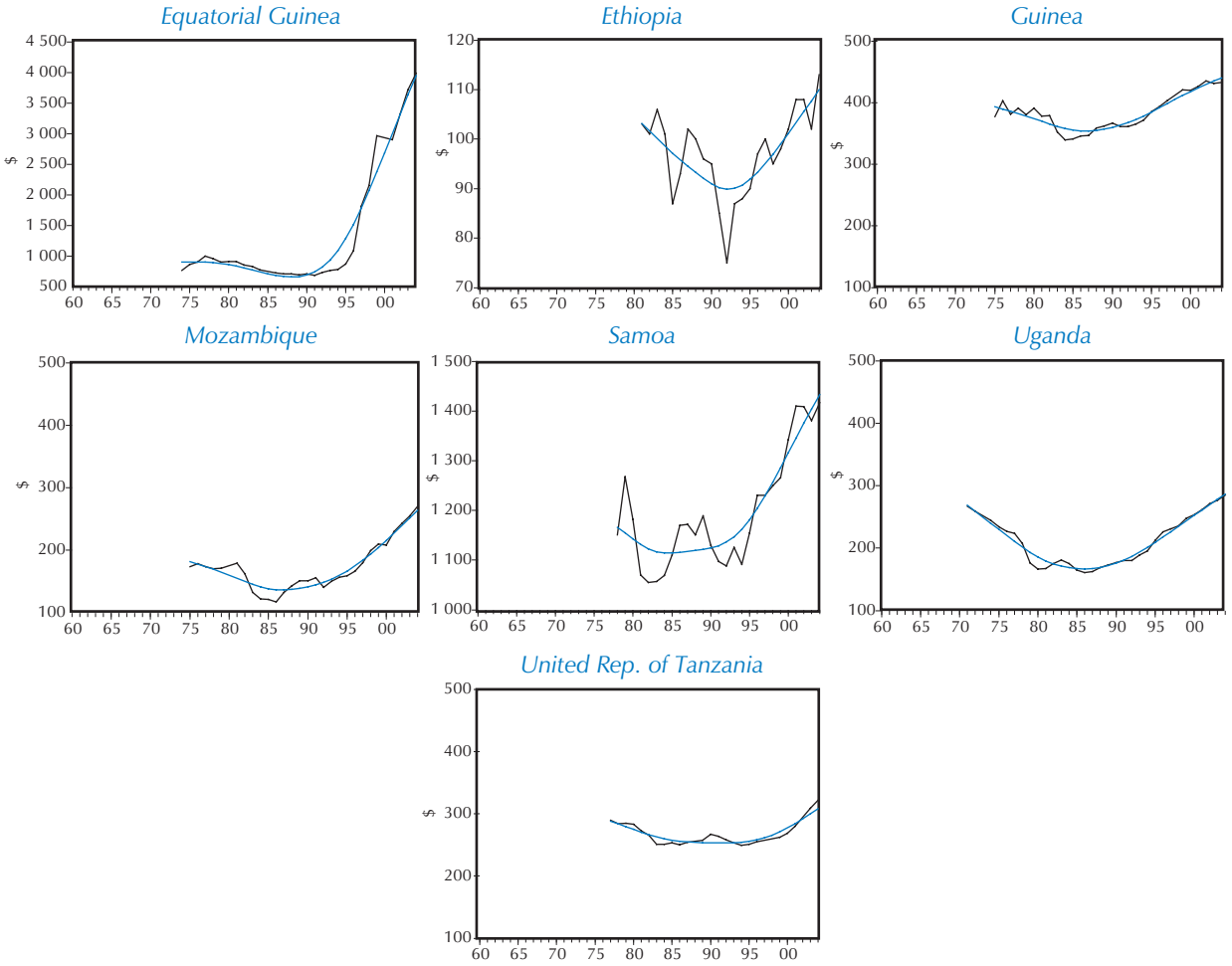
(Constant 2000 $)



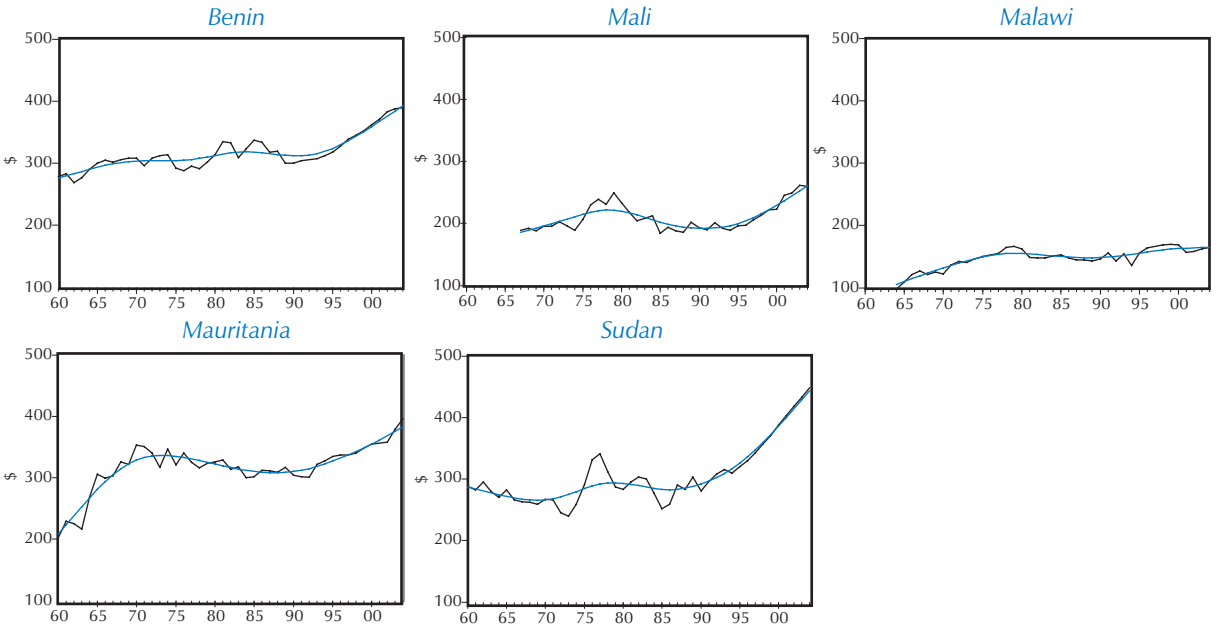
Annex chart 1 (contd.)

II. LDCs that have fully recovered and achieved higher GDP per capita than before negative shocks

A. U-Trend

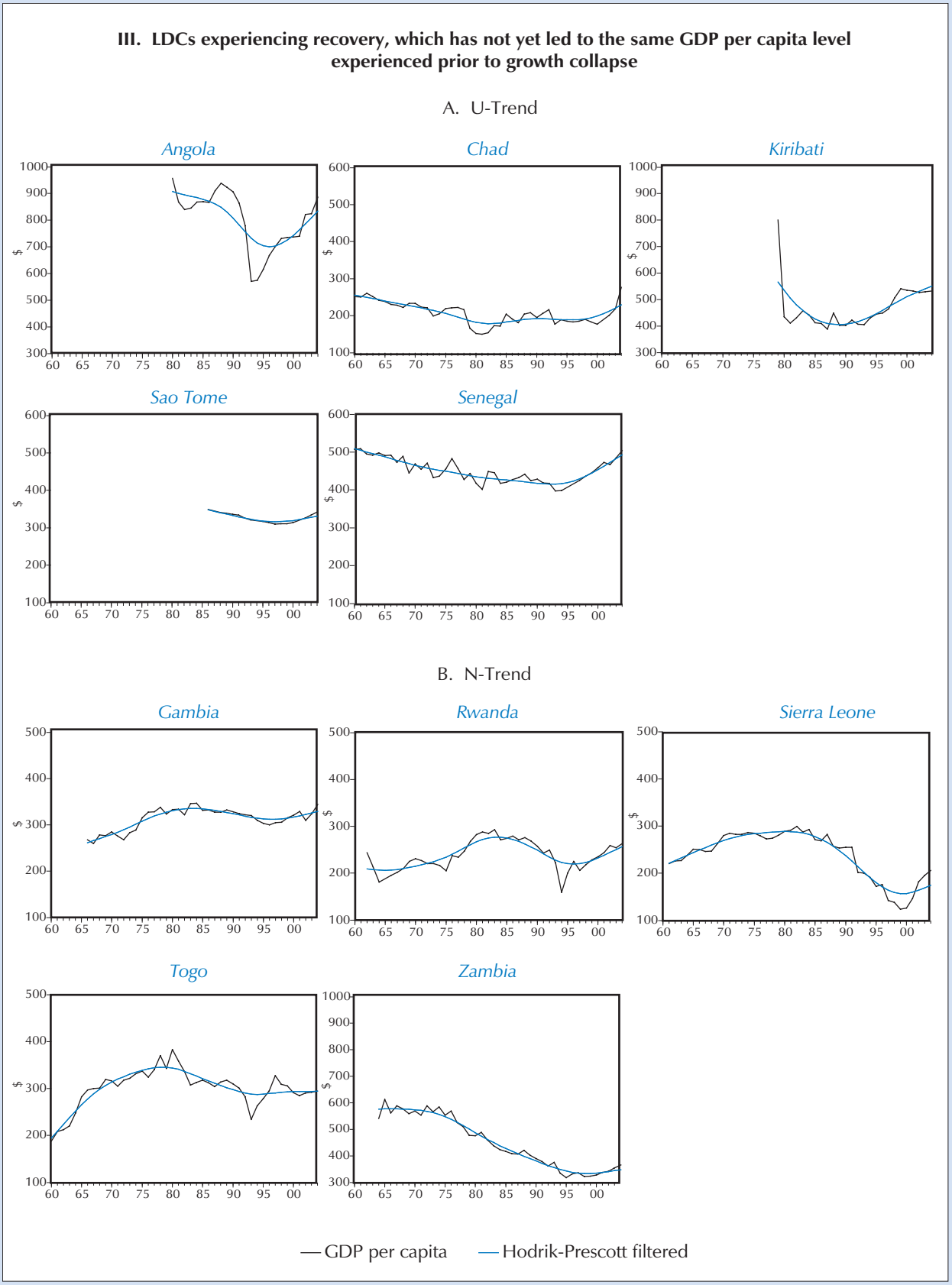


B. N-Trend

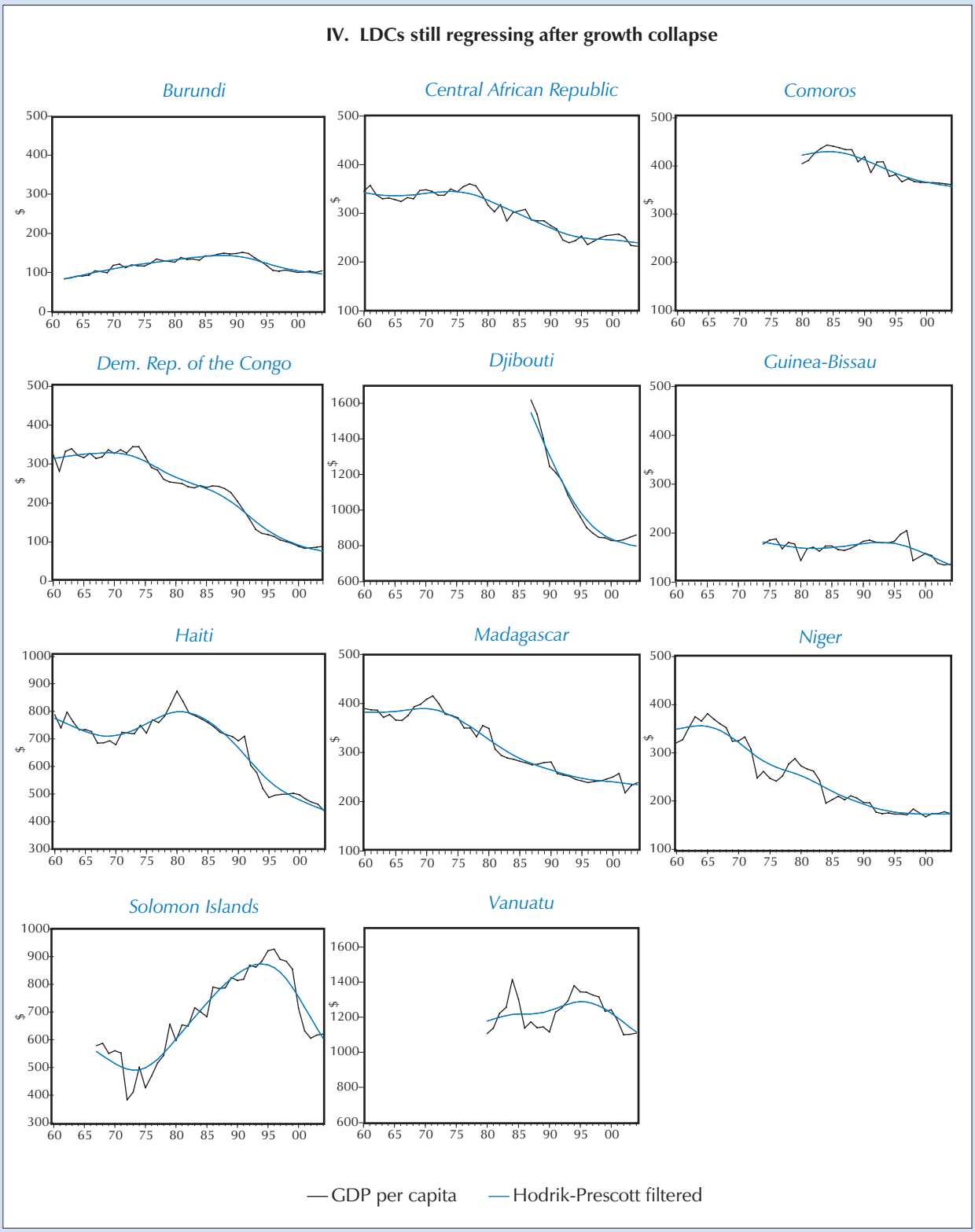


— GDP per capita — Hodrik-Prescott filtered

Annex chart 1 (contd.)



Annex chart 1 (contd.)



Source: UNCTAD secretariat estimates based on World Bank, *World Development Indicators 2005*, CD-ROM.

Notes: Aiming at highlighting the domestic trend in real GDP per capita, while accounting for the sample diversity, different scales were used.

Real GDP per capita was reconstructed by applying the growth rates of real GDP per capita obtained from the United Nations Statistical Division for the following countries: (1975-1980) for Cape Verde, (1974-1984) for Equatorial Guinea, (1975-1985) for Guinea, (1975-1979) for Mozambique, (1977-1987) for the United Republic of Tanzania and (1971-1981) for Uganda.

a Data refers to GDP per capita. Starting date coincides with political independence or the earliest year for which data are available.

Notes

1. Ideally, the analysis should include discussion of trends in natural capital. Some estimates of genuine savings (i.e. savings which take account of natural resource depletion) are given, and they show that this is a serious issue. But natural capital is not treated here for lack of space. Atkinson (2005) provides a first overview of the environmental assets of the LDCs.
2. In the Programme of Action, the target is a GDP growth rate of "at least 7 per cent per annum" (United Nations, 2001: para. 6)
3. It should be recalled that the term "Verdoorn elasticity" is being used here to refer to the assumed relationships between economic growth rate and the labour productivity growth rate which is estimated on historical experience. Verdoorn's Law itself would not predict that there would be any such elasticity except in the manufactures-exporting LDCs.
4. Many analysts are now rejecting the idea that one can undertake growth analysis by identifying a single average growth rate over a long span of time and then relate it to a set of country characteristics and policies. They show that growth is not a steady process. See, for example, Rodrik (1999), Pritchett (2000), Hausmann, Pritchett and Rodrik (2004), Ros (2005b), Cerra and Saxena (2005) and Jerzmanowski (2006).
5. This is the same definition of a severe growth collapse as Ros (2005b).
6. For theoretical explanations of these different responses of output to negative shocks, see Cerra and Saxena (2005).
7. These statistics are based on Cohen and Soto (2001). An alternative (and actually more widely used) database (Barro and Lee, 2000) shows that in 1999, the level of formal schooling in LDCs was actually lower than these data indicate (2 years and 4 months).
8. For an overview of the different effects of international migration, see Ozden and Schiff (2006).
9. The term "domestic resource mobilization" is used here to refer to mobilization of financial resources through increases in domestic savings and government revenue.
10. In this calculation, the capital/output ratio is assumed to be 3 and the rate of depreciation 2.8 per cent per annum. The population growth rate in the LDCs during the period is estimated at 2.5 per cent per annum.
11. For a discussion of the macroeconomic and development impact of generalized poverty, in which a majority of the population lives at a bare subsistence level, see Steger (2000).
12. As Griffin (1996) puts it, "In many instances investment requires little more than the direct application of labour: digging an irrigation or drainage ditch; planting a tea garden, coffee bushes or fruit trees; clearing, leveling or terracing a field; constructing a wall, animal shelter or home out of earth bricks. Whether a household will expend the labour on such tasks depends on whether it is worthwhile or profitable. If there is plenty of slack in the labour market, e.g. in the form of seasonal rural unemployment, potentially profitable investments can be 'financed' not by consuming less (i.e. saving) but by working longer. That is, surplus labour at the level of the household can be used to finance household level investment projects. The problem is not how to save more but how to create investment opportunities. If there is an abundance of investment opportunities, the problem of savings will take care of itself" (p. 22).
13. In his discussion of the structural features of LDCs, Ignacy Sachs writes that "although the present rate of savings in LDCs is very low, the rate of extracted surplus is quite substantial; but this surplus partly flows abroad through adverse terms of trade and debt servicing; besides it finances the conspicuous consumption of urban elites, often supports the plethoric public administration and the patriarchal state; in other words, the extracted surplus is misallocated" (Sachs, 2004: 1803).
14. Private capital flows to LDCs are increasing. But the only type of such flows that is significant for the LDCs is FDI and these flows are concentrated in oil- and mineral-exporting LDCs. The LDCs are effectively excluded from raising loans on international capital markets because of their perceived risk, weak (or non-existent) credit ratings and the requirements of official debt relief processes. The contribution of private debt flows to total resources flows in LDCs never exceeded 2 per cent throughout 1990–2003.
15. For an important discussion of the relationship between the composition of aid and its impact, see Clemens, Radelet and Bhavnani (2004).
16. The fiscal impact of aid is the subject of a growing literature. Major issues, as well as empirical results for some LDCs, are usefully summarized in ODI (2004), and Heller (2005) provides an overview of issues related to expanding "fiscal space".
17. Ghani, Lockhart and Carnahan (2005) cite the case of the internal brain drain from government offices to bilateral and multilateral agencies in Afghanistan. Approximately 280,000 civil servants work in the government bureaucracy, earning $50 per month, while approximately 50,000 Afghan nationals work for NGOs, the UN and bilateral and

multilateral agencies, where support staff can earn up to $1,000 per month. Not surprisingly, the national civil servants seek work in the international sector, thus undermining the capacity of the Government to carry out its functions.

References

Agosin, M. and Mayer, J. (2000). Foreign investment in developing countries: Does it crowd in domestic investment? UNCTAD Discussion Papers, no. 146, Geneva.

Akyuz, Y. and Gore, C.G. (1996). The investment profits nexus in East Asian industrialization, *World Development*, 24(3), 461–470.

Atchoarena, D. and Delluc, A. (2001). Revisiting technical and vocational education in sub-Saharan Africa: An update on trends, innovations, and challenges. IIEP/Prg. DA/01.320. International Institute for Educational Planning, Paris.

Atkinson, A. (2005). Current state and recent trends in natural resource endowment in the least developed countries. Background paper prepared for the *Least Developed Countries Report 2006*, UNCTAD, Geneva.

Barro, R.J. and Lee, J.W. (2000). International data on educational attainment: Updates and implications. CID Working Paper No. 42, Center for International Development at Harvard University, Mass.

Baumol, W.J. (1990). Entrepreneurship: Productive, unproductive and destructive. *Journal of Political Economy,* vol. XXVIII: 1708–1715.

Baunsgaard, T. and Keen, M. (2004). Tax revenue and trade liberalization. (Draft). Fiscal Affairs Department, International Monetary Fund, Washington DC.

Cerra, V. and Saxena, S. (2005). Growth dynamics: The myth of economic recovery. IMF Working Paper WP/05/147, International Monetary Fund, Washington, DC.

Clemens, M., Radelet, S. and Bhavnani, R. (2004). Counting chickens when they hatch: The short term effect of aid on growth. Working Paper No. 44, Center for Global Development, Washington DC.

Cohen, D. and Soto, M. (2001). Growth and human capital: good data, good results. Discussion Paper No. 3025, Centre for Economic Policy Research, London.

David, M. (2005). The LDC domestic financial sector. Background paper prepared for *The Least Developed Countries Report 2006*, UNCTAD, Geneva.

Docquier, F. and Marfouk, A. (2004). Measuring the international mobility of skilled workers (1990–2000): Release 1.0. World Bank Policy Research, Washington DC.

Driscoll, R. and Evans, A. (2004). Second generation poverty reduction strategies. Paper prepared for the PRSP Monitoring and Synthesis Project, Overseas Development Institute, London.

Easterly, W. (2005). Reliving the '50s: The big push, poverty traps, and takeoffs in economic development. Working Paper No. 65, Center for Global Development, New York University.

Fei, J.C. and Ranis, G. (1997). *Growth and Development from an Evolutionary Perspective*, Blackwell Publishers, UK.

Gerschenkron, A. (1962). *Economic Backwardness in Historical Perspective*. Cambridge, Mass., Harvard University Press.

Ghani, A., Lockhart C. and Carnahan, M. (2005). Closing the sovereignty gap: An approach to state-building. Overseas Development Institute, Working Paper 253, London.

Ghose, A.K. (2004). Capital inflows and investment in developing countries. Employment Strategy Papers, International Labour Office, Geneva.

Griffin, K. (1996). Macroeconomic reform and employment: An investment-led strategy of structural adjustment in sub-Saharan Africa. Issues in Development Discussion, Paper No. 16, International Labour Office, Geneva.

Griffin, K. and Brenner, M.D. (2000). Domestic resource mobilization and enterprise development in sub-Saharan Africa. In Griffin, K. (2000). *Studies in Development Strategy and Systemic Transformation*. London, Macmillan.

Hausmann, R., Pritchett, L. and Rodrik, D. (2004). Growth accelerations. NBER Working Paper no. 10566, Washington, DC.

Heller, P.S. (2005). Understanding fiscal space. IMF Policy Discussion Paper, PDP/05/4, International Monetary Fund, Washington, DC.

Hirschman, A.O. (1958). *The Strategy of Economic Development*. New Haven, Yale University Press.

Hoppenbrouwer, I.S. (2005). Governance in LDCs and selectivity in aid allocation. Background paper prepared for *The Least Developed Countries Report 2006*, UNCTAD, Geneva.

Jerzmanowski, M. (2006). Empirics of hills, plateaus, mountains and plains: A Markov-switching approach to growth. *Journal of Development Economics*. (forthcoming).

King, K. and Palmer, R. (2005). Capacities, skills and knowledge in the least developed countries: New challenges for development cooperation. Background paper prepared for the *Least Developed Countries Report 2006*.

Knell, M. (2006). Uneven technological accumulation and growth in the least developed countries. Background paper prepared for *The Least Developed Countries Report 2006,* UNCTAD, Geneva.
Kraay, A. and Raddatz, C. (2005). Poverty traps, aid and growth. World Bank Policy Research Working Paper 3631, Washington, DC.
Kumar, N. and Pradhan, J. (2002). Foreign direct investment, externalities and economic growth in developing countries: Some empirical explorations and implications for WTO negotiations on investment. RIS Discussion Paper No. 27, New Delhi, Research and Information System for the Non-Aligned and other Developing Countries.
Lewis, W.A. (1955). *The Theory of Economic Growth.* Allen and Unwin, London.
Maddison, A. (1995). *Monitoring the World Economy, 1820–1992.* Organisation for Economic Cooperation and Development, Paris.
Mankiw, G., Romer, D. and Weil, D. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107: 407–437.
McCombie, J., Pugno. M. and Soro, B. (eds.) (2003). *Productivity growth and economic performance: Essays in Verdoorn's Law*. Palgrave Macmillan, London.
McKinley, T. (2005). Economic alternatives for Sub-Saharan Africa: "Poverty traps", MDG-based strategies and accelerated capital accumulation. UNDP draft paper for the G-24 Meeting, 15–16 September 2005, New York.
Overseas Development Institute (2004). What can the fiscal impact of aid tell us about aid effectiveness? ESAU Briefing Paper, No. 4, London.
Ozden, C. and Schiff, M. (2006). *International Migration, Remittances and the Brain Drain*, World Bank and Macmillan, Basingstoke, UK.
Pritchett, L. (2000). Understanding patterns of economic growth: Searching for hills among plateaus, mountains and plains. *World Bank Economic Review*, 14(2): 221–250.
Ranis, G. (1997). The micro-economics of "surplus labor". Center Discussion Paper No. 772, Economic Growth Center, Yale University, New Haven, Conn.
Rodrik, D. (1999). Where did all the growth go? External shocks, social conflict, and growth collapses, *Journal of Economic Growth*, 4 (4): 385–412.
Ros. J. (2000). *Development Theory and the Economics of Growth*, Ann Arbor, MI, University of Michigan Press.
Ros, J. (2005a). Growth prospects and constraints in LDCs. Background paper for *The Least Developed Countries Report 2006*, UNCTAD, Geneva.
Ros, J. (2005b). Growth collapses. In: Ocampo, J.A. (ed.) Beyond Reforms, Structural Dynamics and Macroeconomic Vulnerability. Latin American Development Forum Series, United Nations Economic Commission for Latin America and the Caribbean Washington, DC.
Ros, J. (2006). Changing growth constraints in Northern Latin America. In Solimano, A. (ed.), *Vanishing growth in Latin America. The late 20th century experience*, Edward Elgar, London.
Sachs, I. (2004). From poverty trap to inclusive development in LDCs. *Economic and Political Weekly*, 39 (18): 1802–1811.
Sachs, J. et al. (2004). Ending Africa's poverty trap, *Brookings Papers on Economic Activity*, 1: 117–240.
Solow, R. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70, 65–94.
Steger, T.M. (2000). Economic growth with subsistence consumption. *Journal of Development Economics*, 62: 343–361.
Taylor, L. and Rada, C. (2005). Can the poor countries catch up? Sources of growth accounting gives weak convergence for the early 21st century, New School of Social Research, New York, mimeo.
United Nations (2001). Programme of Action for the Least Developed Countries for the Decade 2001–2010. A/CONF.191.11.
UN Millennium Project (2005). *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals.* New York.
UNCTAD (2000). *The Least Developed Countries Report 2000: Aid, Private Capital Flows and External Debt – The Challenge of Financing Development in the LDCs*. United Nations publication, sales no. E.00.II.D.21, Geneva and New York.
UNCTAD (2004). *The Least Developed Countries Report 2004, Linking International Trade with Poverty Reduction*, United Nations publication, sales no. E.04.II.D.27, Geneva and New York.
World Bank (2004). Competing in the global economy: An investment climate assessment for Uganda. Washington, DC.
World Bank Operations Evaluation Department (2004). The Poverty Reduction Strategy Initiative: An independent evaluation of the World Bank's support through 2003. World Bank, Washington, DC.
World Bank (2005). *Economic Growth in the 1990s: Learning from a Decade of Reform.* World Bank, Washington, DC.
World Bank/IMF (2005). 2005 Review of the PRS approach: Balancing accountabilities and scaling up results. Washington, DC.