



Industrial Performance and Capabilities of Cameroon

Analysis of the industrial sector



UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

Republic of Cameroon

Ministry of Industry, Mines and Technological Development

INDUSTRIAL PERFORMANCE AND CAPABILITIES OF CAMEROON

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December 2005

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Foreword

Improving industrial competitiveness, i.e. the ability to produce goods and services in order to successfully operate in international markets, is one of the major challenges facing Cameroon at the start of this century, which is marked by intense “competitive interdependence” of the world’s regions. The way in which this challenge is met will be crucial to the achievement of strong, sustainable economic growth that can significantly reduce internal poverty and enable Cameroon to fulfil its role as an engine of economic growth in Central Africa.

Regardless of the industrial policies pursued, Cameroon’s industrial competitiveness has remained lacklustre despite the shifts in attendant commercial policies (protectionism followed by trade liberalization). It should, however, be noted that output, employment, investment, etc. increased relatively more during the protectionism phase than during the liberalization period. The significant positive industrial progress which began in the era of import-substitution industries came to a standstill and there was even negative growth, commencing with the severe recession experienced by the country from 1986/87 during the export promotion phase and subsequently from 1990 during the economic liberalization phase. It was not until the CFA franc was devalued in 1994 that the industrial sector underwent an upturn, albeit precarious owing to the absence of credible and efficient institutions and to a structurally unattractive and uncompetitive investment and business climate in Cameroon.

There is now free movement of persons, capital, goods, information, ideas and knowledge. Time and distance are shrinking accordingly. Development is thus taking place in difficult circumstances, increasingly characterized by the speed of technical progress, ever greater openness of markets and fragmentation and internationalization of production processes. This constantly changing global economic and technological scene today compels Cameroon to dynamically reshape its industrial policy and strategically reconfigure its industrial base. To optimize or build sound industrial foundations that will guarantee prosperity, it is essential to envisage consistent, comprehensive long-term organizational planning in support of an energetic and ambitious industrial policy, formulated from the general perspective of capturing international markets with a view to expanding and transforming key production branches and sectors. This endeavour necessarily entails systematic and thorough analysis of industrial competitiveness by means of specific tools using extensive networks of statistical databases on the world economy.

The present report, which is one outcome of the seminar on the transfer of technical expertise in industrial competitiveness analysis, organized in Cameroon in February 2005 by the United Nations Industrial Development Organization (UNIDO) with the support of the National Investment Corporation (SNI), highlights the shortcomings that need to be addressed. The information provided explains the increasing deficit in our non-oil trade balance during recent years. In the face of new patterns of globalization, the urgently needed improvements in industrial competitiveness require a reshaping of national industrial policy, which entails the formulation and implementation of an over-

all strategy permanently updated through an intelligent and multidimensional approach. That calls for priority action choices based on the main industrial competitiveness indicators in the current context of world competition, restructuring geared to the specific features of the industrial branches and sectors concerned and appropriate selection of the tools to be employed, such as sectoral codes, standards, patents, etc. Against the backdrop of Cameroon's strategic industrial setting, the formulation and execution of major defining industrial programmes within the context of implementation of the Investment Charter are essential responses to these important concerns, whose validity ultimately lies in the ability to generate more and higher-quality jobs, a prerequisite for strong, sustainable growth capable of permanently reducing poverty.

Now more than ever before, the formulation of industrial policies, definition of industrial strategies and design of programmes, projects, etc. are undertaken following meticulous analysis of industrial competitiveness combined with economic intelligence gathering.

I accordingly express my thanks to UNIDO and its team for organizing this training on transfer of technical and strategic expertise in industrial competitiveness analysis within the framework of the Integrated Programme and to SNI both for its valuable support during the training and for the physical and numerical infrastructure made available by it to the industrial competitiveness analysis unit for the conduct of activities whose periodic results will be disseminated within the governmental system and among the private sector.

*Minister of Industry, Mines
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Acknowledgements

This study was carried out under the Integrated Programme in Support of the Industrial Development of Cameroon and specifically under component 1, Industrial Strategy Implementation. The project team was composed of Hai Nguyen Thanh, international consultant and main author of this report; Manuel Albaladejo, international consultant, facilitator and architect of the training course on industrial competitiveness indicators held in Yaoundé in February 2005; Alphonse Emadak, national consultant, project coordinator and facilitator; and Diana Hubbard, senior industrial development officer and project manager at UNIDO Headquarters in Vienna, with the assistance of Fatima Zhora Bennani-Baiti, UNIDO Representative in Cameroon. The entire project team wishes to thank His Excellency Mr. Charles Salé, Minister of Industry, Mines and Technological Development of Cameroon, and Mr. Célestin Ndonga, Director for Industrial Development, not only for their practical and sustained support of the project activities but also for their discernment in recognizing the importance of economic analyses of this kind to the challenge facing Cameroon in introducing its industrial products in regional and world markets.

Abbreviations

AERC	African Economic Research Consortium
AfDB	African Development Bank
AGOA	African Growth and Opportunities Act
ALUCAM	Compagnie Camerounaise de l'Aluminium
CAR	Central African Republic
CEMAC	Central African Economic and Monetary Community
CICAM	Cotonnière Industrielle du Cameroun
CIMENCAM	Cimenteries du Cameroun
CIP	competitive industrial performance
COMTRADE	United Nations Commodity Trade Statistics Database
EBA	Everything but Arms: initiative of the European Union
EIU	Economist Intelligence Unit
EU	European Union
FDI	foreign direct investment
GDP	gross domestic product
GNP	gross national product
INDSTAT	UNIDO statistics database
ISIC	International Standard Industrial Classification of All Economic Activities
LT	low technology
MENA	Middle East and North Africa
MHT	medium and high technology
MVA	manufacturing value-added
NIC	newly industrialized country
NIE	newly industrializing economy
OECD	Organisation for Economic Co-operation and Development
PR	primary commodities
R&D	research and development
RB	resource-based
SSA	Sub-Saharan Africa
TFP	total factor productivity
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

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Summary and conclusions

1. Long regarded as an example of success in Central Africa, **Cameroon** has since 1984 undergone a series of exogenous shocks, which have revealed serious structural weaknesses. Domestic-market orientation of industry, widespread State control over economic activity and exchange-rate overvaluation are factors that have prevented industrial enterprises from capturing export markets. A major step towards macro-economic adjustment and international competitiveness was taken with the devaluation of the CFA franc in January 1994.
2. Resumption of growth has enabled enterprises to envisage restoring production plant and winning foreign markets but the aftermath of the recession is still in evidence. Apart from the constraints affecting all sectors, Cameroon's industry is facing specific difficulties such as unchecked competition from imports, with the liberalization of the domestic market; internal weaknesses in output, technology acquisition, marketing and management; poor links between industry and the institutional sector; financing difficulties of small and medium-sized enterprises (SMEs); low levels of development of services to industry; an embryonic system of standardization and metrology; and, more recently, electricity supply difficulties, which have reduced effective capacity utilization in industry and increased production costs.
3. The manufacturing sector has survived the wave of liberalization ordered by the Government during the 1990s. However, the new post-devaluation growth phase has not been accompanied by actual creation of new industrial enterprises, a sign of operators' reluctance despite the growth-driven opportunities. Notwithstanding the reforms embarked upon, this sector is still weak, with investment at low levels, production facilities facing restructuring difficulties and foreign direct investment (FDI) stagnating at US\$ 1.3 billion. Stagnation of capital inflows from abroad is also affecting the sector's performance at a time when the country needs to attract more FDI with a view not only to accelerating capital formation but also to improving its technological capabilities and strengthening its productive base.
4. According to the competitive industrial performance (CIP) index established by UNIDO, Cameroon ranks at the bottom end of the scale, along with other low-income Sub-Saharan countries. This ranking indicates that CIP of low-income Sub-Saharan economies (**Cameroon**, Malawi, Uganda, Central African Republic, Madagascar, Zambia, Ghana, Tanzania, Zimbabwe and Senegal) declined between 1985 and 1998 as these economies failed to orient their production and export structures towards higher-value-added and more technology-intensive products.
5. A comparative analysis of **Cameroon's** industrial performance produces similar findings. The extent of manufacturing activity in **Cameroon** is relatively limited: reported per capita manufacturing value-added is about US\$ 60 only, just slightly above the required threshold (US\$ 50) for industrial take-off and there are no signs of any significant improvements in the development of industrial production, given that the share of manufacturing in gross domestic product (GDP), at between 10 and 12 per cent, has remained virtually unchanged for over two decades.
6. Analysis of the technological structure of industrial production reveals that Cameroon's manufacturing industry is still heavily biased towards traditional low-value-added, low-wage activities, given its inability to adapt over time its production structure to higher-value-added activities involving more complex technologies (medium-and high-technology products).

7. Analysis of the technological structure of exports reveals that there has been no significant progress in export diversification: the share of manufactures in merchandise exports has essentially remained small (4 per cent in 1980 and 7 per cent in 2002) and the country's top five export products – crude oil, semi-processed wood, coffee, raw cocoa beans and fresh bananas – make up more than 80 per cent of Cameroonian exports.
8. International competitiveness stems both from price factors, such as the exchange rate, wage costs or the cost of inputs, and from more structural elements, largely linked to productivity gains. The Development Centre of the Organisation for Economic Co-operation and Development (OECD) has been particularly interested in the latter factors and recently conducted a comparative study on the determinants of productivity growth in **Cameroon**, Côte d'Ivoire, Nigeria and Senegal. According to that study, **Cameroon** showed very disappointing results, with an annual average fall in productivity of about 3.1 per cent. The agro-food industry was most affected by the economic crisis but the record performance levels achieved during the boom years in the early 1980s partly offset the losses. Devaluation of the CFA franc in 1994 did allow some gains in exports and productivity but appears to have mainly benefited enterprises which were already exporting and sectors which were generally more prone to be involved in trade.
9. From an analysis of the determinants of technological and industrial capabilities, it is difficult to see how, in terms of skills and technological effort, Sub-Saharan countries can build competitive capacities in modern industry with the prevailing levels of skills and technological effort. Advanced skills are needed not just for high technologies; even simple activities, such as clothing, footwear and basic consumer goods, today require a minimum of skills to compete effectively in the international marketplace. If Sub-Saharan countries wish to add value to their natural resources, they must engage in more complex, capital-intensive processing operations where technical skills and technological effort are far more demanding.
10. The new international scene has offered new alternatives to enterprises in developing countries for gaining access to export markets and using FDI as a means of access to advanced technologies and expertise. Attracting FDI has assumed a new importance following the rapid changes in technological development, the opening up of markets and the internationalization of production.
11. According to the UNCTAD *World Investment Report 2004*, foreign investors have recently expressed renewed interest in Africa, the region's share of global FDI rising from 0.42 per cent in 2000 to 1.65 per cent in 2003. The main reason for this renewal of interest lies to a large extent in improved policies: liberalization of markets and FDI, greater macro-economic and political stability, a constantly improving business climate and confidence in market mechanisms and private initiative. If these improvements continue, it is highly likely that the renewed investment interest will be maintained.
12. This renewal of interest coincides with the effects of other incentives for foreign investors, such as the African Growth and Opportunities Act (AGOA), which provides for advantageous quotas and tariff-free access to the United States market for a wide range of primary and manufactured products from African countries. The *Everything but Arms* (EBA) initiative of the European Union offers similar privileges for access of African products to the European market.
13. These privileges should in theory stimulate FDI in export-oriented activities. Wages in Africa are now the lowest in the developing world and FDI policies are, at least on paper, similar to those of other developing regions. There is also a large number of export processing zones,

some of which are under private sector management. Although there are still infrastructure deficiencies in several countries and constraints affecting landlocked countries, which are faced with high transport costs, most coastal States, such as **Cameroon**, should be able to capitalize on these advantages in order to progress.

14. There are, however, few signs that Africa in general and **Cameroon** in particular are making use of these advantages and of the renewed interest expressed by foreign investors to mount export manufacturing operations. The reason is that Sub-Saharan countries would be unable to withstand international competition and enter global production systems with the current productivity levels of their industrial sector, which are too low for wages to offset and enable competitive export operations to be set up. According to Professor Sanjaya Lall, the challenge to African countries relates not so much to the business climate (which can certainly be improved further) or to levels of access to the markets of industrialized countries (which have improved considerably with initiatives such as the AGOA and EBA) but rather to the weakness of those countries' technological and industrial capabilities.
15. Africa in general and **Cameroon** in particular must industrialize in order to advance. Industrialization is a crucial issue in development and poverty reduction. A healthy and competitive manufacturing sector is needed to generate resources, sustain employment and export growth and contribute to the modernization and diversification of developing countries' economic base and their integration in the global economy. To catalyse growth and industrial development in Africa, it will be necessary to reconsider the strategy at present pursued while paying due attention to strengthening technological and industrial capabilities.
16. The current relative economic stability and necessity to consolidate recent economic gains by rapid integration in the world economy offer **Cameroon** a new basis for formulating an industrial policy capable of supporting growth at a time when local and foreign investors are displaying renewed interest in the region as a whole. Even though in over ten years since devaluation of the CFA franc the industrial structure has not fundamentally changed, there is nevertheless evidence of a will to move forward, with the institution of a new regulatory environment and efforts to modernize the production system with the adoption of new governance and management techniques.

Introduction

National competitiveness has long been a major concern of most Governments. This concern was originally far more a matter for industrialized countries¹ than for developing countries. With expanding globalization and liberalization, it subsequently spread to policy makers in many developing countries:² the restructuring of industries to compete internationally, the upgrading of national technological and other capabilities and the attractiveness of the host country as a production site and foreign direct investment (FDI) location have become key aspects of development policy focus.

The trend towards internationalization of production, greatly facilitated by shrinking communications and transportation costs, is exposing countries to international competition with a speed and intensity rarely seen hitherto. Countries unable to withstand the tide of rapid technological developments worldwide are inevitably doomed to being marginalized and sidelined from the dynamics of global production systems. It is therefore not surprising that Governments, particularly those of developing countries, are anxious to know how their industries are going to perform in the international scene and how they can deal with globalization to make it an engine of growth and progress rather than an engine of destruction and deindustrialization.

Industrialization is a crucial issue in development and poverty reduction. Manufacturing industry, regarded as one of the most powerful engines of economic growth is – and will remain – essential for modernizing and diversifying developing countries' economic base. It cannot, however, fulfil that role unless it is competitive in both export and domestic markets, with the gradual liberalization of the latter.

While acknowledging the strategic importance of industrial competitiveness in the national vision of development and poverty reduction, Governments of developing countries often do not have at their disposal an adequate framework of analysis – unavailable information, lack of detailed knowledge and analytical tools, etc. – to gain maximum advantage for decision-making purposes.

¹ Mention can be made, inter alia, of the European Commission's White Paper entitled GROWTH, COMPETITIVENESS AND EMPLOYMENT, published in 1993. In the United Kingdom, the fourth WHITE PAPER ON COMPETITIVENESS (DTI, 1998) is in course of publication. Ireland, Canada and Australia have all published similar reports. In the United States, a large number of competitiveness studies have been published: see, for example, Laura d'Andrea Tyson, WHO'S BASHING WHOM: TRADE CONFLICT IN HIGH TECHNOLOGY INDUSTRIES, Institute for International Economics, Washington, 1992; Lester C. Thurow, HEAD TO HEAD: THE COMING ECONOMIC BATTLE AMONG JAPAN, EUROPE AND AMERICA, Morrow, New York, 1992; Ira C. Magasiner and Mark Patinkin, THE SILENT WAR: INSIDE THE GLOBAL BUSINESS BATTLES SHAPING AMERICA'S FUTURE, Vintage Books, New York, 1990; Edward N. Luttwak, THE ENDANGERED AMERICAN DREAM: HOW TO STOP THE UNITED STATES FROM BECOMING A THIRD WORLD COUNTRY AND HOW TO WIN THE GEO-ECONOMIC STRUGGLE FOR INDUSTRIAL SUPREMACY, Simon & Schuster, New York, 1993; Kevin P. Phillips, STAYING ON TOP: THE BUSINESS CASE FOR A NATIONAL INDUSTRIAL STRATEGY, Random House, New York, 1984; Clyde V. Prestowitz Jr., TRADING PLACES: HOW WE ALLOWED JAPAN TO TAKE THE LEAD, Basic Books, New York, 1988; Jeffrey E. Garten, A COLD PEACE: AMERICA, JAPAN, GERMANY, AND THE STRUGGLE FOR SUPREMACY, Times Books, New York, 1992; and the book by Wayne Sandholtz and others, THE HIGHEST STAKES: THE ECONOMIC FOUNDATIONS OF THE NEXT SECURITY SYSTEM, Berkeley Round Table on the International Economy (BRIE), Oxford University Press, 1992. It should be noted that the rhetoric of competitiveness, i.e. the theory whereby, to quote former president Clinton, each nation is "like a big corporation competing in the global marketplace", has, according to the remarks of Paul Krugman (POP INTERNATIONALISM, 1996), become pervasive among opinion leaders throughout the world.

² With regard to developing countries, the works of Sanjaya Lall, Professor of Development Economics, Queen Elizabeth House, Oxford, should be mentioned. Since the publication of BUILDING INDUSTRIAL COMPETITIVENESS IN DEVELOPING COUNTRIES, in 1990, under the auspices of the OECD Development Centre, Lall has produced many other articles on the capability theory in international competition and the industrial development process in developing countries. He was the main adviser and architect of the industrial scoreboard in the UNIDO INDUSTRIAL DEVELOPMENT REPORT 2002/2003: COMPETING THROUGH INNOVATION AND LEARNING, June 2002. Mention should also be made of the work carried out over several years by Professor Jeffrey Sachs of Harvard on the problems of competitiveness in Africa: see the AFRICA COMPETITIVENESS REPORT 2004, the third in a series of reports to whose publication he contributed with the World Economic Forum (WEF).

This paper attempts to fill those gaps. It supplements the training session on industrial competitiveness indicators, held in Yaoundé, Cameroon, from 14 to 23 February 2005, by initiating the national contribution to the preparation of a report on the country's industrial competitiveness using the analytical tools explained in the course of the training. The present report is intended as a periodic briefing document – a kind of industrial competitiveness bulletin – aimed at policy makers and business leaders. examines the country's industrial capabilities and performance.

Chapter 1

The manufacturing sector in Cameroon

By Sub-Saharan standards, the Cameroonian manufacturing sector is relatively diversified, being the most diversified within the Central African Economic and Monetary Community (CEMAC) zone and comparable to that of Côte d'Ivoire. The UNIDO industrial statistics database (INDSTAT 2004 version, 3-digit level, Revision 2) mentions some 205 industrial enterprises, generally small to medium-sized businesses, with a workforce of almost 53,000. Most of these enterprises work exclusively for the domestic market: manufactured exports are still undeveloped, constituting less than 10 per cent of total exports. Domestic-market orientation of industry,³ widespread State control over economic activity and exchange-rate overvaluation have long been factors in preventing enterprises from capturing export markets. A major step towards macro-economic adjustment and international competitiveness was taken with the devaluation of the CFA franc in January 1994.

Structure of the manufacturing sector

Table I.1 gives an overview of the structure of the manufacturing sector from 1995 to 1999. As can be seen, five main groups form the bulk of manufacturing activity. Agro-industries have remained the sector's most representative group, with an average share of over 40 per cent of manufacturing value-added (MVA) and almost 30 per cent of manufacturing employment. As in Côte d'Ivoire, the agro-food industry in **Cameroon** transforms primarily cocoa and coffee for export (Cameroonian agro-food exports account for about 10 per cent of the country's total manufactured exports and the fall in cocoa and coffee prices in the mid-1980s led to a particularly marked downturn in this industry). **Cameroon** also has a relatively large beverage industry, which mainly serves the domestic market.

The chemicals, petroleum refineries, rubber and plastics industries group ranks second, with almost 17 per cent of MVA, 41 per cent of manufacturing employment and 9 per cent of manufactured exports. Petroleum refining still has a substantial MVA share but has considerably declined since 1995. **Cameroon** has a relatively advanced rubber industry, which employs a large workforce. By contrast, the chemicals sector as such still occupies a limited position; **Cameroon** produces mainly pharmaceuticals and cosmetics, including perfumes and soaps.

Even though its future is far from bright, the wood-processing industry is also expanding (14 per cent of MVA, 15 per cent of manufacturing employment and 19 per cent of manufactured

³ The term "industry" is used in this report to mean specifically manufacturing.

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exports), especially following the adoption of a new forestry law, which has led to the development of new industrial sawmills in the suburbs of main urban areas. There are about a hundred plants (simple sawmills or sawmills with driers, veneer-making units, industrial woodworking shops, parquet flooring factories and wood planing mills), often built using second-hand equipment purchased and reconditioned in Europe.

Table I.1: Structure of the Cameroonian manufacturing sector (1995-1999)

Group	Share of manufactured exports (per cent)	Share of manufacturing value-added (per cent)	Share of manufacturing employment (per cent)
Food, beverages and tobacco (ISIC 311/3/4)	10,3	40,7	29,0
Textiles, clothing, leather and footwear (ISIC 321/2/3/4)	0,8	12,2	6,2
Wood processing (ISIC 331/2)	47,2	14,2	15,0
Paper, printing and publishing (ISIC 341/2)	0,3	3,3	3,4
Chemicals, petroleum refineries, rubber and plastics (ISIC 351/2/3//5/6)	19,7	16,6	40,9
Construction materials, metalworking and iron and steel (ISIC 361/2/9, 371/2)	19,4	9,5	3,0
Fabricated metal products, electrical machinery and transport equipment (ISIC 381/2/3/4)	1,9	2,3	1,9
Other manufactured products (ISIC 390)	0,4	1,2	0,6
Total	100,0	100,0	100,0

Source: Column 1: International Trade Statistics, United Nations, 2001 data; columns 2 and 3: INDSTAT 2004, averages for the period 1995-1999.

The textiles, leather and footwear group (12 per cent of MVA and 6 per cent of manufacturing employment) is undergoing major restructuring. The textile industry, often referred to as a potential driving force for the manufacturing sector in Africa, plays a predominant role, accounting for over 11 per cent of MVA. This industry began to expand during the 1970s prior to the difficulties experienced in the 1980s: keen competition from smuggled imports and numerous dis-

ruptions linked to electricity supply difficulties totally altered the market's structure. **Cameroon's** main textile concern, Cotonnière Industrielle du Cameroun (CICAM), is seeking external financial partners to renew its production facilities and improve its profitability. The leather and footwear industries have declined within this group.

Construction materials, metalworking and iron and steel constitute the last main industry group in **Cameroon**, with 9 per cent of MVA, 3 per cent of manufacturing employment and over 40 per cent of manufactured exports. Cimenteries du Cameroun (CIMENCAM) produces approximately one million tons of cement per annum, 20 per cent of which is exported within the CEMAC zone. Compagnie Camerounaise de l'Aluminium (ALUCAM) produces approximately 90,000 tons of primary aluminium per annum, 65 per cent of which is exported to Europe; there are plans to increase ALUCAM's capacity to 220,000 tons. The country's only steelworks, Aciéries du Cameroun, produces 40,000 tons of concrete-reinforcing iron and steel products per annum for a market which consumes 60,000 tons. There are also some machining works and a foundry (COFREM).

The other industries are as yet undeveloped. In particular, the Cameroonian machine tools industry is still at an early stage, faced with competition, especially from Asian countries, and limited market potential from neighbouring countries. Assembly of industrial components for local and subregional markets has also not taken off.

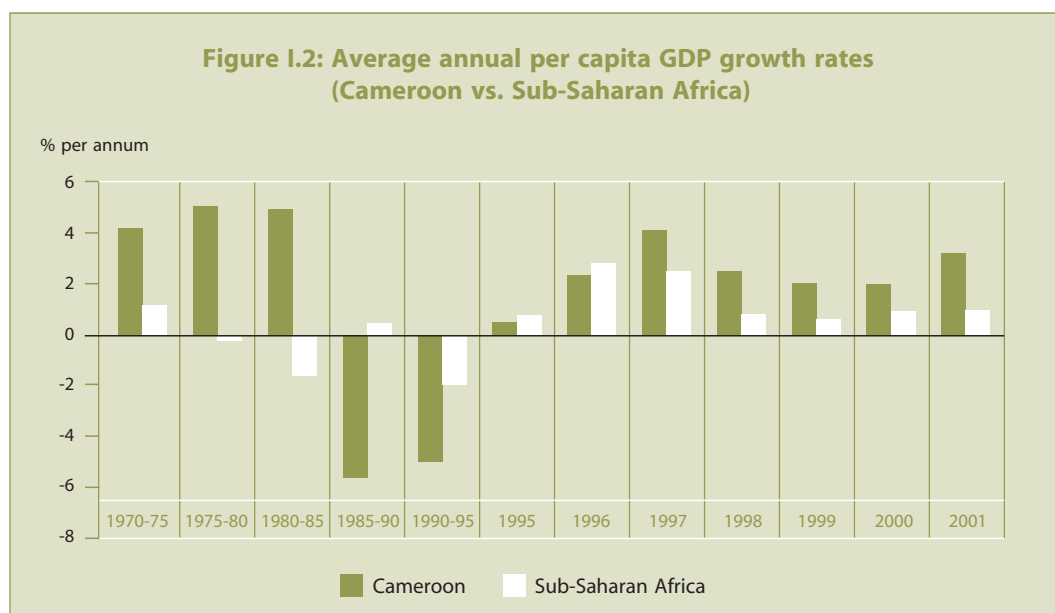
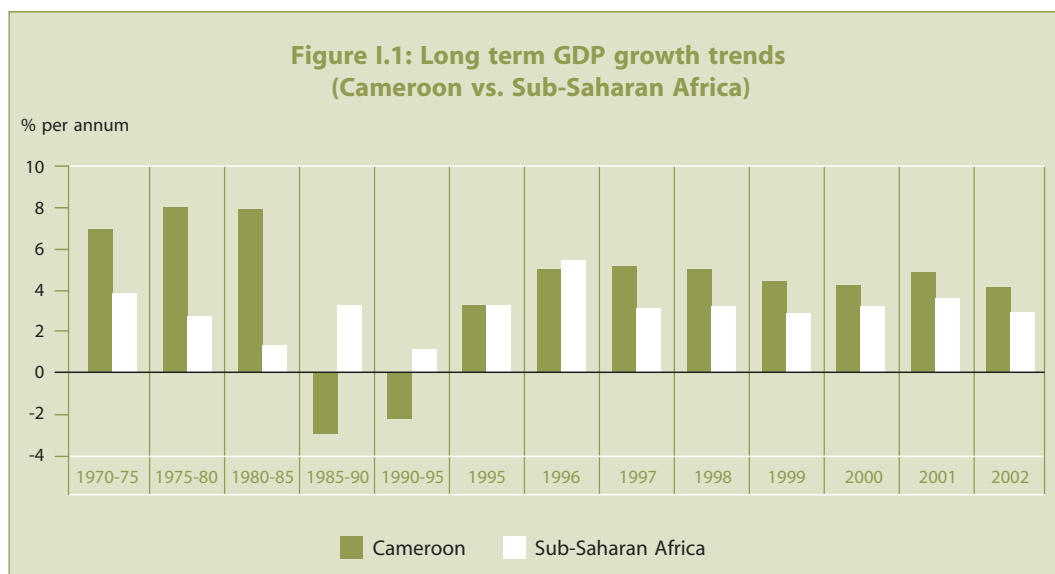
Evolution of the sector

The development of **Cameroon's** industrial base largely reflects three phases of a voluntarist industrial policy, whose implementation has to date suffered from the vicissitudes of the economic climate.

The post-colonial period was marked by protectionism: From independence in 1960 to 1976, the country underwent a process of industrialization with import substitution by local production aimed at a market protected by tariff barriers and quantity restrictions. That period saw the emergence of local entrepreneurs, often under monopoly arrangements, with no particular requirement as regards improving competitiveness. There was also the "active" industrialization phase, driven by vigorous economic growth through petroleum production, from 1977. Prey to the fall in the price of oil and primary commodities, the economy in 1984 entered a period of recession, which was to last ten years. Per capita income plummeted almost 50 per cent during that period (see figures I.1 and I.2).

The economic crisis revealed serious structural weaknesses: The industrial sector was poorly integrated and uncompetitive and there was upheaval in the industrial landscape, marked by a fall in productive investment, an increase in social disintegration and the emergence of an informal sector that threatened to engulf the formal manufacturing sector. The industries which survived the crisis were left in a weakened, vulnerable and less competitive state.

Resumption of growth has made possible a revival of Cameroon's industry although it has not really taken off: In 1994, the CFA franc was finally devalued by 50 per cent against the French franc and reforms were embarked upon with a view to liberalizing trade and amending the indirect taxation system. As a result of these measures, per capita income rose for the first time since 1986 (see figures I.1 and I.2). Large manufacturing enterprises, in particular those which were exporting, increased their output following devaluation but the output of smaller firms, such as those in the informal sector, continued to fall.



Recent developments

Resumption of growth has enabled enterprises to envisage restoring production plant and winning foreign markets but the aftermath of the recession is still in evidence. In addition to the constraints affecting all sectors, Cameroonian industry is facing specific difficulties such as unchecked competition from imports, with the liberalization of the domestic market; internal weaknesses in output, technology acquisition, marketing and management; poor links between industry and the institutional sector; financing difficulties of SMEs; low levels of development of services to industry; an embryonic system of standardization and metrology; and, more recently, electricity supply difficulties, which have reduced effective capacity utilization in industry and increased production costs (see table I.2).

Table I.2 : Capacity utilization rates in the industrial sector (as %)

	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02*
Food and beverages	52,1	70,7	79,1	69,1	70,4	72,3
Textiles and leather	73,4	68,5	71,4	46,8	52,6	42,2
Paper, publishing and printing	79,4	61,0	53,7	57,4	60,3	54,2
Chemicals	80,3	79,2	78,2	52,5	51,9	49,0
Intermediate goods	80,3	83,4	73,1	N/A	N/A	N/A
Electricity, gas and water	68,8	76,5	85,0	88,3	83,2	87,1

Source: EIU 2004.

*Estimates

The manufacturing sector has survived the wave of liberalization ordered by the Government during the 1990s. However, the new post-devaluation growth phase has not been accompanied by actual creation of new industrial enterprises, a sign of operators' reluctance despite the growth-driven opportunities. Notwithstanding the reforms embarked upon, this sector is still weak, with investment at low levels, production facilities facing restructuring difficulties and FDI stagnating at US\$ 1.3 billion. Stagnation of capital inflows from abroad is also affecting the sector's performance at a time when the country needs to attract more FDI with a view not only to accelerating capital formation but also to improving its technological capabilities and strengthening its productive base.

The current relative economic stability and necessity to consolidate recent economic gains by rapid integration in the world economy offer a new basis for formulating an industrial policy capable of supporting growth at a time when local and foreign investors are displaying renewed interest in the region as a whole (see Chapter 3, section on FDI). Even though in over ten years since devaluation of the CFA franc the industrial structure has not fundamentally changed, there is nevertheless evidence of a will to move forward, with the institution of a new regulatory environment and efforts to modernize the production system with the adoption of new governance and management techniques.

Chapter 2

Comparative analysis of industrial performance

This involves analysing factors of the country's economic and industrial performance on the basis of a number of simple and readily accessible basic output indicators: gross domestic product (GDP), manufacturing value-added (MVA), manufactured exports, technological structure of production and exports, concentration and diversification of exports and productivity. The analysis will be carried out by comparing **Cameroon's** performance not only with that of competing African countries (Côte d'Ivoire, Ghana, Kenya, Nigeria and Senegal) but also, and more informatively, with that of other African economies (Botswana, Mauritius, Tunisia and South Africa) which have undergone real economic progress and/or with that of East and South-East Asian economies (Malaysia, Thailand, Singapore et South Korea) which are regarded as successful cases of global integration.

Cameroon's standing in the international scene

The following question should first be asked: where does **Cameroon** stand according to existing human, economic and industrial development indicators? With a per capita income of US\$ 575 (2002 figure), **Cameroon** is classified by the World Bank among low-income countries. In terms of human development, it was ranked by the United Nations Development Programme (UNDP) in 2004 in 141st position out of 177 countries, in the bottom cluster of medium human development countries, behind African countries such as Swaziland, Ghana, Botswana, Morocco, Gabon, South Africa, Algeria, Tunisia and Mauritius. In the *Africa Competitiveness Report 2004*, published by the World Economic Forum, it ranks 18th out of 25 African countries, just ahead of Ethiopia, Mozambique, Madagascar, Zimbabwe, Mali, Angola and Chad. On the basis of these initial performance tests, **Cameroon** has clearly not shown itself to be an example of regional or international economic dynamism, but what of its industrial development status?

Competitive industrial performance index

In its *Industrial Development Report 2002/2003*, UNIDO established a composite index to measure competitive industrial performance (CIP). The CIP index is a barometer of countries' ability to produce and export manufactures competitively. It is constructed from four industrial competitiveness indicators: per capita MVA, manufactured exports per capita, and shares of medium- and high-technology (MHT) products in MVA and in manufactured exports. The first two indicators reveal capability while the other two reflect technological complexity and industrial upgrading.

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A ranking of 87 countries, selected in line with data availability, provides information on key aspects of industrial development and competitiveness.

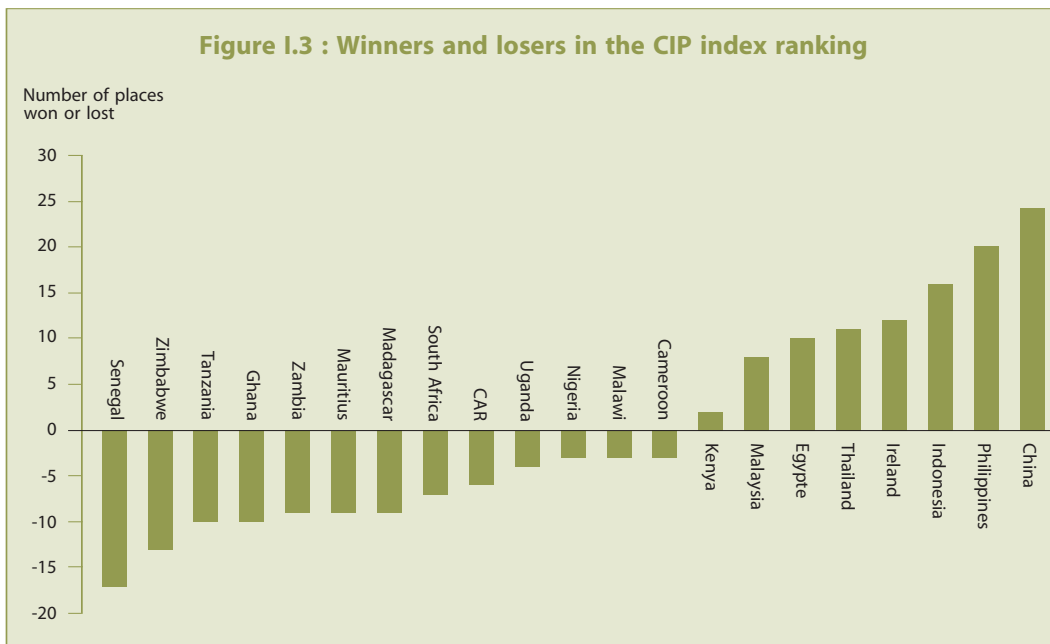
Table I.3: Ranking of African countries by the competitive industrial performance (CIP) index, 1985 and 1998

Ranking		Country	CIP index value	
1998	1985		1998	1985
39	32	South Africa	0,018	0,096
51	38	Zimbabwe	0,052	0,071
56	47	Mauritius	0,041	0,037
62	64	Kenya	0,025	0,013
72	..	Mozambique	0,013	...
75	72	Cameroon	0,008	0,008
76	59	Senegal	0,008	0,023
77	68	Zambia	0,007	0,010
78	75	Nigeria	0,006	0,006
80	70	Tanzania	0,005	0,009
81	78	Malawi	0,003	0,003
82	73	Madagascar	0,003	0,008
83	77	CAR	0,003	0,003
84	80	Uganda	0,003	0,001
86	76	Ghana	0,001	0,006
87	..	Ethiopia	0	...

Source: Industrial Development Report 2002/2003, UNIDO, Vienna, 2002.

According to the CIP index, the low-income countries of Sub-Saharan Africa are all at the bottom of the ranking scale. **Cameroon** ranks 75th (1998), three places down in relation to 1985 (see table I.3). Another even more disturbing fact is that none of those countries (except Kenya) has improved its ranking since 1985. Senegal holds the regression record, which can largely be explained by the decline in the technological structure of its exports. Evidence suggests that 42 developing countries had in 1998 a technology structure similar to that in 1985. Only sixteen out of the 58 in the sample have shown dynamic production and export structures oriented towards technology-intensive products.

Countries showing major improvements (see figure I.3) are generally middle-income countries (China, Philippines, Indonesia, Thailand and Malaysia), mainly as a result of their insertion into global value chains through transnational corporations.



Among the developing economies, industrial output and manufactured exports are highly concentrated, the five countries in the top cluster sharing almost one third of the developing world's production and exports while the 30 lowest-ranked countries' share is only 2 per cent and 1 per cent respectively.

According to the UNIDO ranking, CIP of low-income Sub-Saharan economies (**Cameroon**, Malawi, Nigeria, Uganda, Central African Republic, Madagascar, Zambia, Ghana, Tanzania, Zimbabwe, and Senegal) declined between 1985 and 1998 as these economies failed to orient their production and export structures towards higher-value-added and more technology-intensive products. A detailed analysis of this phenomenon will be attempted below.

A. Growth and industrial performance

Growth performance

Let us begin with an examination of economic performance of the countries in the selected sample. Table I.4 gives rise to a number of observations. Firstly, Singapore's economy, which, at the start of the industrialization process in 1965, was roughly equivalent to those of **Cameroon**, Côte d'Ivoire, Kenya and Senegal, had by 2002 become an economy that bore no comparison with those countries. Even the economies of Botswana and Mauritius, which were the smallest in the sample in 1965 and had in fact begun their industrialization processes later (not until the early 1980s in the case of Mauritius), have now become economies comparable in size to those of Senegal and Ghana, although further ahead at the start of industrialization. Therefore, if the experience of the OECD countries and of Mauritius and Botswana can serve as an illustration, an economy's absolute size is thus not a constraint to development of national economic and industrial capacity.

Secondly, GDP growth rates mark a clear distinction between high performers (Singapore and South Korea, at over 8 per cent per annum), moderate performers (Malaysia, Thailand and

Industrial Performance and Capabilities of Cameroon

Mauritius, at between 5 and 7 per cent) and lower-performing Sub-Saharan countries (less than 4 per cent in general). The cases of Botswana and South Africa require some comment. Botswana is a success story in Africa. Classed as one of the world's poorest countries at the time of independence, it has, after 30 years, succeeded in rising to 4th position among African countries by its per capita GDP. Its diversified and judiciously managed mining industry explains the exceptional growth rates (of the order of two digits) over more than three decades. South Africa has long been a diversified industrial economy but the years of embargo on South African products during the period of apartheid have deeply affected its economic performance.

Thirdly, insofar as capability accumulation stems largely from a learning process based on investment and production, strong and sustained economic growth should allow greater industrial capacity-building. While growth rates of the economy do not indisputably reflect the development of industrial capabilities, these two aspects are often closely linked: sustained GDP growth generally leads to greater scope for involvement in infrastructure, institutions, education, communications, etc., in short all that is essential for developing and maintaining industrial learning.

Table I.4 : Comparison of economies at different stages of development

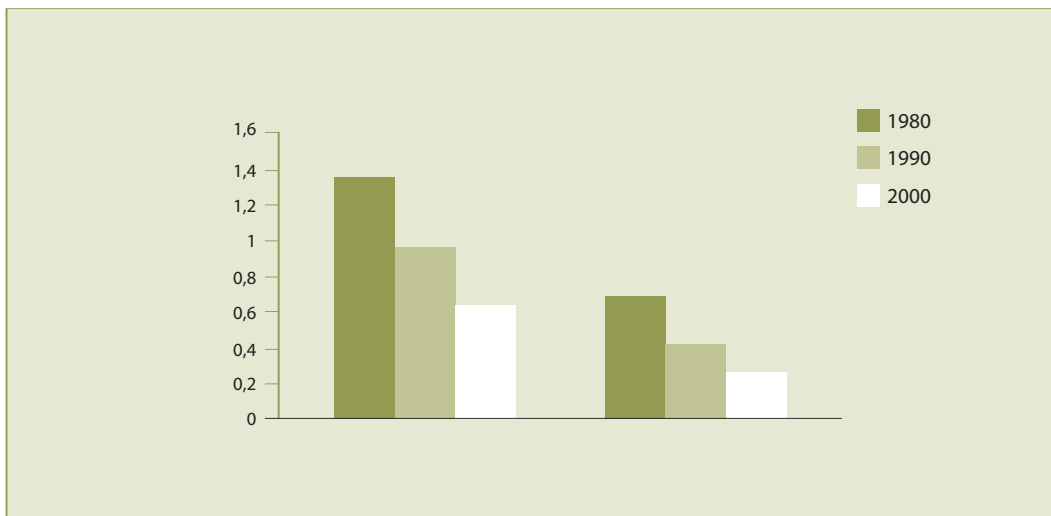
Country	GDP			Per capita GDP	
	(Millions of current US\$)		Real growth (per cent per annum)	(Current US\$)	Real growth (per cent per annum)
	1965	2002	1965-2002	2002	1975-2002
Cameroon	810	9,100	3,9	575	-0,6
Côte d'Ivoire	760	11,700	3,8	707	-2,0
Ghana	2,050	6,160	2,9	393	0,3
Kenya	920	12,300	4,3	304	0,3
Nigeria	5,850	43,500	3,6	328	-0,6
Senegal	810	5,000	2,9	503	-0,1
Botswana	50	5,273	10,7	3,080	5,1
Mauritius	190	4,500	5,0	3,740	4,6
South Africa	10,540	104,242	2,3	2,299	-0,7
Malaysia	3,130	94,900	6,6	3,905	4,0
Thailand	4,390	126,900	6,9	2,060	5,2
Singapore	970	87,000	8,2	20,886	5,0
South Korea	3,000	476,700	8,0	10,006	6,1

Source: World Bank data (*World Development Indicators 2004*; *World Development Report 1994*) and UNDP data (*Human Development Report 2004*).

Per capita GDP figures to some extent confirm GDP growth trends: Singapore and South Korea are now in the league of industrialized nations, with an industrial skill base in the forefront of progress and very high adaptation and learning potential. Malaysia, Thailand, South Africa, Botswana and Mauritius are among the middle-income countries while the other Sub-Saharan countries (**Cameroon**, Côte d'Ivoire, Ghana, Kenya, Nigeria and Senegal) are still regarded as low-income economies.

Industrial performance

With regard to industry, an idea can be gained of industrial performance by reference primarily to the size of the manufacturing sector, measured in this instance by MVA. By this measure, manufacturing activity in Africa appears relatively limited, with the exception of South Africa and some North African countries. The Sub-Saharan countries – with the exception of South Africa – lag far behind other developing regions in manufacturing activity and this has dramatically become ever more marginal over time, as evidenced by the continual erosion of Sub-Saharan Africa's share of world MVA: 1.36 per cent in 1980, 0.96 per cent in 1990 and 0.64 per cent in 2000. Without South Africa, this share becomes virtually insignificant: 0.69 per cent in 1980, 0.42 per cent in 1990 and 0.27 per cent in 2000 (see figure I.4).



Even though performance levels by country remain uneven, the causes of such weak manufacturing activity are, according to the African Development Report 2004 by the African Development Bank, identical for all Sub-Saharan countries: the weakness of local demand, in particular for durables, depressed by the high level of interest rates, is the reason for the decline in manufacturing output. In our opinion, this explanation is insufficient and we feel that, in addition to the cause put forward, the problem lies primarily and essentially with domestic industrial capabilities. Building such capabilities is a complex question, the answer to which is not always within reach of low-income developing countries.

Table I.5 : Manufacturing value-added and industrial growth

Country	MVA (1980)		MVA (2000)		Real growth (1980-2000)
	USD Millions	%	USD Millions	% of GDP	% per annum
Cameroon	593	1,8	940	2,5	3,8
Côte d'Ivoire	1,304	4,0	1,591	4,2	3,2
Ghana	347	1,1	449	1,2	1,2
Kenya	796	2,4	1,163	3,1	3,3
Nigeria	5,195	15,7	1,635	4,4	0,9
Senegal	316	1,0	566	1,5	4,6
Botswana	60	0,2	253	0,7	7,6
Mauritius	147	0,4	918	2,4	7,8
South Africa	16,381	49,6	21,643	57,7	1,3
Sub-Saharan Africa (SSA)	33,005	100,0	37,493	100,0	1,8
Malaysia	5,054		29,447		9,0
Thailand	6,960		41,212		7,8
Singapore	3,415		24,407		6,7
South Korea	17,416		144,376		9,8

Source: World Development Indicators 2002/2004, World Bank

The problem of industrial capability is more striking when a comparison is made between countries at different stages of development. As shown in table I.5, South Korea, whose MVA was half that of Sub-Saharan Africa (SSA) in 1980, became in 2000 an industrial economy that bore no comparison with SSA. Similarly, MVA of the three South-East Asian countries together (Malaysia plus Thailand plus Singapore) was in 1980 less than half that of SSA; by 2000, MVA of Thailand alone exceeded that of SSA. This reflects the extraordinary development of the Asian countries' industrial capacity in the space of 20 years, as confirmed by average MVA growth rates of about 7 to almost 10 per cent. Similarly but on a more limited scale, Botswana and Mauritius, with MVA growth rates of around 7 to 8 per cent per annum, had succeeded within 20 years in increasing their share of Sub-Saharan MVA four and six times respectively. Botswana is admittedly not an industrial economy (the weight of the manufacturing sector is only about 4 to 5 per cent of GDP and diversification is today one of the Government's priority objectives); however, its success largely stems from long-standing sound economic management, which has enabled the country to build the necessary capacities for diversifying its economy. Mauritius has since 1981 undergone extraordinary progress in regard to diversification. Such progress can to a large extent be attributed to the establishment of the special export zone, which has enabled it to successfully develop export-oriented industries.

Of all the African economies, South Africa alone has a relatively high level of diversification. The South African economy began to diversify very early and, by the start of the 1960s, the country had reached a level comparable to that of semi-industrialized economies. Between 1960 and 1985, diversification continued at a relatively slow pace but one that enabled the country to achieve in 1985 a level of export diversification comparable to South Korea's current level. Subsequently, the embargo on South African products radically affected the country's export performance, which partly explains its low MVA growth rate during the period from 1980 to 2000.

As regards the other Sub-Saharan countries, Nigeria is losing its industrial predominance in the region, with a declining manufacturing sector (its share of Sub-Saharan MVA fell from 16 per cent in 1980 to 4 per cent in 2000), virtually no manufactured exports and total dependence on petroleum exports.⁴ **Cameroon**, Côte d'Ivoire, Kenya and Senegal have largely maintained their shares in the region's MVA but the manufacturing sector in those countries clearly cannot be regarded as a dynamic growth sector.

Table I.6: Industrial performance indicators

Country	Share of MVA in GDP (per cent)		MVA per capita (US\$)	Value-added per employee (US\$)	Wages per employee (US\$)
	1980	2002	2000	1995-2001*	1995-2001*
Cameroon	10	11	62	11,650	3,394
Côte d'Ivoire	13	13	107	15,357	5,831
Ghana	8	9	22	-	-
Kenya	13	13	39	4,649	1,884
Nigeria	8	4	15	14,284	1,243
Senegal	11	14	60	9,530	3,176
Botswana	5	4	158	8,463	2,703
Mauritius	15	23	765	7,719	3,321
South Africa	22	19	536	16,573	8,690
Malaysia	21	31	1,326	18,748	4,840
Thailand	22	29	671	10,828	3,044
Singapore	29	28	3,083	84,084	23,560
South Korea	28	34	6,780	70,354	15,561

Source: The first two left-hand columns relate to the World Bank database (*World Development Indicators 2002/2004*) and the figures in the last two columns are taken from the UNIDO industrial statistics database (INDSTAT 2004).

(*) The INDSTAT 2004 data are up to 1996 for Nigeria, 1997 for Côte d'Ivoire, Senegal and Mauritius, 1999 for South Africa, Cameroon and Kenya, 2000 for Botswana, Malaysia and Thailand and 2001 for Singapore and South Korea.

⁴ See also Manuel Albaladejo, *INDUSTRIAL REALITIES IN NIGERIA: FROM BAD TO WORSE*, Queen Elizabeth House Working Paper Series, WEHWPS101, February 2003.

Table I.6 offers a set of indicators derived from MVA, which can be used circumstantially to evaluate industrial performance. This table shows that the industrial performance scenario differs according to whether the degree of industrialization is measured in terms of MVA share of GDP or in terms of per capita MVA. According to the first type of measurement, South Korea appears as the most industrialized nation both among the countries within its group and also worldwide. By contrast, with the second type of measurement, Singapore emerges as the most developed industrial economy, with a ratio of MVA per capita twice as high as that of South Korea. Also, South Africa and Mauritius and the two second-generation newly industrialized countries of Asia (Malaysia and Thailand) have a substantial share of MVA in GDP (between 23 and 31 per cent). This ratio also shows that South Africa (at 22 per cent), Malaysia (at 21 per cent) and Thailand (at 22 per cent) were already at an advanced stage of industrial development in 1980, while Mauritius (at 15 per cent) had only just begun its industrialization process. The other Sub-Saharan countries still lag far behind, their MVA shares in GDP having remained virtually unchanged between 1980 and 2000, whereas the Asian countries and Mauritius significantly improved theirs.

The ratio of value-added per employee gives an idea of manufacturing productivity. This ratio shows the effects of a combination of factors: structure of the branch of activity, technology involved, efficiency of production, frequency of excess capacity, pressure to retain surplus labour, etc. This indicator can, however, be used to gain an approximate appreciation of industrial complexity, capital intensity and productivity. According to this measure, the most advanced and capitalistic industrial economies are naturally Singapore and South Korea. There are reasons for expecting this, particularly since these countries have succeeded in developing a competitive advantage, especially in high-technology enterprises. Most other countries are in an intermediate position, which seems to suggest that they have lighter and more labour-intensive types of manufacturing activity. Kenya's very low figure appears rather to indicate that it has a large number of light activities or possibly huge surplus capacities and a dual industrial structure, with the presence of a large informal sector.

The ratio of wages per employee measures the degree of sophistication of industrial labour. It supplements the previous ratio by providing an indication of the technological structure of production. Once again, according to this measure, South Korea and Singapore emerge as the most advanced industrial economies, with industrial structures marked by a preponderance of high-technology activities, meaning high wage scales. Conversely, there is every reason to believe that the activities pursued in Kenya and Nigeria are largely low-wage, low-technology activities. The intermediate figure for the other countries seems to suggest that they have largely capitalistic industries.

Finally, returning to the group of low-income Sub-Saharan countries, it should be noted that the country reputed to be the most industrialized of the group, Côte d'Ivoire, had in 2000 an MVA share in GDP of about 13 per cent (barely comparable to the level of Mauritius when it began its industrialization process in the early 1980s) and a per capita MVA of US\$ 107 (the highest in its group). **Cameroon** and Senegal rank second within the group, with MVA shares in GDP of about 11 and 14 per cent respectively and the same per capita MVA of almost US\$ 60. Ghana, Kenya and Nigeria have still not reached the per capita MVA threshold of US\$ 50 regarded as generally required for industrial take-off.

B. Changing patterns of industry

The different sectors of manufacturing industry are not all suited to enhancing international competitiveness and do not all contribute in the same way to economic growth. Medium- and high-technology (MHT) sectors are in particular rapid-growth sectors which offer good industrial learning prospects and often generate externalities for the rest of the economy; they provide higher

value-added but impose major entry barriers for potential newcomers. By contrast, more traditional sectors, such as resource-based (RB) and/or low-technology (LT) sectors, produce smaller profit margins because there are far more competitors; these sectors, most often labour-intensive, do not have a strong need for high-level human capital stock and are often targeted by developing countries with lower industrial capability levels as possible entry points for diversifying their economies. It is of interest to see how the technological structure of industrial production is evolving.

Technological structure of industrial production

Table I.7 shows the distribution of MVA across a selection of sectors of activity over a fairly long period of time to illustrate both current level of development and ability to amend the structure of production over time by increasingly moving away from low-value-added, low-wage activities.

Pays	Distribution of MVA (as %) by end-use				Distribution of MVA (as %) by technology category			
	Consumer goods ¹		Capital goods ²		Resource-based (RB) industries ³		Medium- and high-technology (MHT) ⁴	
	1970	2000*	1970	2000*	1970	2000*	1970	2000*
Cameroon	66	63	24	08	53	70	23	13
Côte d'Ivoire	43	52	14	08	59	67	15	17
Ghana	50	41	20	15	55	61	25	25
Kenya	42	56	25	15	51	61	30	23
Nigeria	62	41	08	17	55	32	12	38
Senegal	70	49	04	07	69	57	09	34
Mauritius	81	78	06	06	80	35	10	14
South Africa	28	18	14	43	28	28	44	52
Malaysia	29	12	15	49	64	30	27	59
Thailand	37	23	16	30	41	23	35	62
Singapore	17	4	36	67	45	9	40	85
South Korea	43	16	18	57	47	18	3	64

Source: INDSTAT 2004, UNIDO

*The INDSTAT 2004 data are up to 1996 for Nigeria, 1997 for Côte d'Ivoire, Senegal and Mauritius, 1999 for Cameroon, Kenya and South Africa, 2000 for Malaysia and Thailand and 2001 for Singapore and South Korea.

¹Consumer goods comprise food (ISIC 311), beverages (ISIC 313), tobacco (ISIC 314), textiles (ISIC 321), wearing apparel (ISIC 322), leather products (ISIC 323) and footwear (ISIC 324).

²Capital goods include iron and steel (ISIC 371), non-ferrous metals (ISIC 372), metal products (ISIC 381), machinery except electrical (ISIC 382), electrical machinery (ISIC 383), transport equipment (ISIC 384) and professional and scientific equipment (ISIC 385).

³RB industries are food (ISIC 311), beverages (ISIC 313), tobacco (ISIC 314), wood processing (ISIC 331), paper and paper products (ISIC 341), products of petroleum and coal (ISIC 354) and rubber products (ISIC 355).

⁴MHT industries are printing and publishing (ISIC 342), industrial chemicals (ISIC 351), other chemical products (ISIC 352), petroleum refineries (ISIC 353), iron and steel (ISIC 371), non-ferrous metals (ISIC 372), metal products (ISIC 381), machinery except electrical (ISIC 382), electrical machinery (ISIC 383), transport equipment (ISIC 384) and professional and scientific equipment (ISIC 385).

Most developing countries began their industrialization with simple activities producing consumer goods such as foods, beverages, cigarettes, textiles, clothing and footwear (these traditional activities appear in the first two left-hand columns of table I.7 for the years 1970 and 2000). Not surprisingly, the African countries (with the exception of South Africa) have the largest share of such activities (2000). Singapore has long been diversifying outside those activities. The other countries have more or less moved in the same direction (with the exception of Côte d'Ivoire and Kenya, which appear rather to be seeking to strengthen these industries). The very high share of such industries in the manufacturing activity of Mauritius is explained by the fact that the country is a major and leading African exporter of wearing apparel and the third world producer of woollens. However, with mounting wage costs, its clothing exports appear to have peaked and there does not at present seem to be any diversification into other manufactured exports.

The share of capital goods industries in MVA (see the two columns left of centre in table I.7) normally increases with the level of industrial development: this is the outcome of greater technological capability in mechanical, electrical and electronic engineering. Of all the countries in the sample, Singapore emerges in top position as the most advanced country in the manufacture of capital goods, with over two thirds of its MVA (2000) in this sector. That may appear somewhat surprising, given that Singapore is not a capital goods producer in the normal sense but is known rather as an electronic component manufacturer. However, the manufacturing processes involved are in themselves engineering- and skill-intensive, and this country's foreign technology and design dependence does not conflict with its own contribution in terms of very high-level skills and expertise.

By contrast, South Korea and South Africa are both actual manufacturers of capital goods, including motor vehicles. South Korea made a significant breakthrough in the late 1970s into the heavy engineering, shipbuilding, electronics and transport equipment sectors, spearheaded by industrial conglomerates (*chaebols*), behind protection barriers but with requirements on enterprises regarding rapid export expansion. South Africa has long had a diversified manufacturing sector and by the mid-1980s had achieved a level of export diversification comparable to South Korea's current level. The programme for developing the motor industry, introduced in 1995, is aimed at promoting selective production of certain vehicle models. The price competitiveness of the South African motor industry is, however, threatened by the recent appreciation of the rand, rising wage costs and growing competition from South-East Asia.

Malaysia and Thailand are still at the assembly stage in capital goods manufacture, although Malaysia is attempting to reproduce the success of South Korea with export car production. Most of their industry is made up of offshore electronic component assembly. The situation in the Sub-Saharan countries is still at a more rudimentary stage, with an as yet underdeveloped mechanical, electrical and electronic engineering base, which inhibits industrial diversification. In a number of countries (Côte d'Ivoire, **Cameroon**, Ghana and Kenya), the share of capital-goods industries in MVA has diminished considerably over the last three decades.

The subdivision into resource-based (RB) and medium- and high-technology (MHT) industries is taken from a technology classification adopted by UNIDO in its *Industrial Development Report 2002/2003* (there is also a low-technology (LT) industry category, which is not shown in table I.7). This classification stems from an OECD proposal⁵ that product clusters that are of particular export interest for developing countries be taken into consideration (see section D below).

⁵ OECD (1994), *Globalisation and Competitiveness: Relevant Indicators*, Paris, OECD Directorate for Science, Technology and Industry, DSTI/EAS/IND/WP9(94)19.

Not surprisingly, MVA of low-income Sub-Saharan countries is heavily biased towards RB activities; the share of MHT activities is still very limited and rapidly showing signs of tailing off in some countries such as **Cameroon**, Côte d'Ivoire, Ghana and Kenya. At the other extreme, most of the other countries significantly raised their shares of MHT activities in 2000. In particular, the Asian countries and South Africa have a predominance of MHT activities. Curiously, Singapore has the smallest share of RB activities while **Cameroon** has the largest (2000). Conversely, Singapore has the largest share in MHT activities while **Cameroon** has the smallest. Available data also indicate the type and extent of the structural changes that have occurred over time. They show that the Asian countries and South Africa fairly rapidly succeeded in extensively transforming their production structure, while Singapore achieved that goal sooner and has remained stable ever since. Mauritius, Senegal and Nigeria are currently making progress (although data on Nigeria seem to contradict the other indicators and thus call for more thorough investigation) but are still in the early stages, while the remaining countries (**Cameroon**, Côte d'Ivoire, Ghana and Kenya) still lag far behind and are showing signs of stagnation.

C. Export performance of industry

With regard to exports, we may look at the degree to which each country has succeeded in transforming its export structure over time by moving as far as possible away from primary commodity exports.

Export diversification

As shown in table I.8, most economies within the sample (with the exception of Singapore and South Korea) were still characterized in the early 1980s by a fairly small industrial base, quite abundant natural resources and exports concentrated on a limited number of products, chiefly primary commodities. Since then, the situation has not changed at all in the case of Nigeria, which is still wholly reliant on petroleum exports. Nor has the situation hardly evolved in **Cameroon**: the share of manufactures in merchandise exports has essentially remained small (4 per cent in 1980 and 7 per cent in 2002), the country's top five export products – crude oil, semi-processed wood, coffee, raw cocoa beans and fresh bananas – still make up more than 80 per cent of Cameroonian exports, and there has been virtually no progress in export diversification. With regard to Côte d'Ivoire, Ghana, Kenya and Senegal, the situation is slightly better since these countries have managed to reduce the primary commodities share of their exports; however, that share is still high owing to low levels of export diversification into manufactures (only Senegal has made headway, having raised by 3.4 times the share of manufactures in its exports between 1980 and 2002). The other countries in the sample have succeeded, to differing degrees, in diversifying their export structure by considerably increasing the share of manufactures in their exports.⁶

⁶ Trade flows between OECD countries and low- and middle-income economies reflect the changing pattern of their exports. Shares of food products and primary commodities in OECD countries' imports have continued to decline in relation to manufactured products, imports of which from developing countries have increased in significant proportions, rising from 42 per cent in 1991 to 64 per cent in 2001 (according to COMTRADE sources).

Table I.8 : Export performance indicators

Country	Exports of goods and services (% of GDP)		Exports of primary commodities (% of merchandise exports)		Manufactured exports (% of merchandise exports)		High-technology exports (% of merchandise exports)	
	1980	2002	1980	2002	1980	2002	1980	2002
Cameroon	28	27	96	93	4	7	3	1
Côte d'Ivoire	35	48	95	85	5	21	..	3
Ghana	8	43	99	85	1	16	..	3
Kenya	28	27	88	76	12	24	4	10
Nigeria	29	38	100	100	0	0	..	0
Senegal	27	31	85	49	15	51	..	4
Botswana	50	51	..	9	..	91	..	0
Mauritius	51	61	73	27	27	73	1	2
South Africa	35	34	82	37	18	63	..	5
(SSA)	22	34	88	..	12	35	..	4
Malaysia	30	114	81	19	19	79	38	58
Thailand	24	65	75	22	25	74	21	31
Singapore	53	11	47	85	40	60
South Korea	33	40	10	8	90	92	18	32

Source: *World Development Indicators 2004*, World Bank.

According to the World Bank classification, manufactures comprise commodities in sections 5 (chemicals), 6 (basic manufactures), 7 (machinery and transport equipment) and 8 (miscellaneous manufactured goods).

Changes over time in the share of exports of goods and services in GDP provide a measure of each country's dynamism in export markets. According to this measure, **Cameroon**, Kenya and South Africa show poor export performance, the share of their exports in GDP having remained virtually unchanged between 1980 and 2002. The other countries all improved their shares, the most noteworthy improvement coming from Malaysia, whose export share rose from 30 to 114 per cent of GDP between 1980 and 2002.

Exports of high-technology products are a powerful indicator of industrial performance and competitiveness. High-technology products involve research and development (R&D)-intensive industries such as aerospace, computers, pharmaceuticals, scientific instruments and electrical equipment. Given the Sub-Saharan countries' current low levels of industrial capability, such products cannot be expected to appear on their lists of exports. By contrast, they represent almost two thirds of manufactured exports of Singapore and Malaysia and one third of manufactured exports of Thailand and South Korea.

Export structure

A convenient way of studying the features of manufactured exports is to categorize export products by technology content. OECD suggests the following classification, which takes into consideration product clusters of particular export interest for developing countries (see table I.9).

Table I.9 : Technology classification of exports

Classification	Examples
PRIMARY COMMODITIES (PR)	Fresh fruit, meat, rice, cocoa, coffee, tea, wood, coal, crude petroleum, gas
MANUFACTURED PRODUCTS	
RESOURCE-BASED (RB) MANUFACTURES	
Agro/forest-based products	Prepared meats/fruits, wood products, vegetable oils
Other resource-based products	Petroleum products, cement, cut gems, glass
LOW-TECHNOLOGY (LT) MANUFACTURES	
Textile and clothing cluster	Textile fabrics, clothing, footwear, leather manufactures, travel goods
Other low-technology products	Pottery, metal structures, furniture, toys, dishware
MEDIUM-TECHNOLOGY (MT) MANUFACTURES	
Automotive products	Motor vehicles and parts, motorcycles
Medium-technology process industries	Synthetic fibres, chemicals, fertilisers, plastics
Medium-technology engineering industries	Engines, industrial machinery, ships, watches
HIGH-TECHNOLOGY (HT) MANUFACTURES	
Electronics and electrical products	Telecom., TVs, transistors, turbines, data processing systems
Other high-technology products	Pharmaceuticals, aerospace, optical/measuring instruments

Resource-based (RB) products are often simple, labour-intensive products, for example simple food processing or leather working, but there are also industries which are capital-intensive and require economies of scale and sophisticated technologies, for example petroleum refining or modern food processes. Insofar as the competitive advantage of such products will generally – but not always – depend on local availability of natural resources, they should not give rise to insurmountable competitiveness problems.

Low-technology (LT) products form a further category. They are undifferentiated traded goods which compete almost exclusively on the basis of price. Such products constitute a special class since labour costs tend to be the major element in competitiveness; economies of scale and entry barriers are not high; the final market grows slowly and income elasticity is below unity.

However, there are low-technology products in market segments where brand names, design and technological sophistication are of particular importance, even if technological intensity does not reach the levels of other technology categories. Within this group, textiles and clothing products have undergone massive relocation from rich to poor countries, with assembly operations moving to low-wage sites and more complex design and marketing functions remaining in advanced countries. Such relocation has been the engine of export growth within this industry and the exact location of export sites has been largely influenced by the quota system, both under the Multi-Fibre Agreement and by regional commercial agreements such as the North American Free Trade Agreement (NAFTA). Other exports in this group which have benefited from active relocation are toys, sports and travel articles and footwear.

Medium-technology (MT) products, which comprise the bulk of industrial skill- and scale-intensive technologies in the manufacture of many intermediate products and capital goods, are at the centre of manufacturing activity in industrially mature economies. The technologies involved are complex and call for relatively high levels of R&D, advanced skills and long learning periods, with promotional efforts focusing primarily on product design and development. The automotive and engineering groups are linkage-intensive and require substantial inter-firm interaction to achieve "best practice" technical efficiency levels. Entry barriers tend to become increasingly high. Relocation of labour-intensive industrial activities to low-wage regions has been carried out on a limited scale, given that products are not suited to long-distance transport and need advanced skills to attain international standards.

High-technology (HT) products are characterized by rapidly changing leading-edge technologies with high R&D investments and a major focus on product design. The most advanced technologies require sophisticated technology infrastructures, high levels of specialization in technical skills and close interaction between firms and between firms and universities/research institutions. However, some products, such as electronics, have labour-intensive final assembly phases and their high value-to-weight ratio makes it financially advantageous to locate assembly activities in low-wage areas. Such products are at the forefront in new global integrated production systems, where the different processes are separated and located by transnational companies according to differences in manufacturing costs. Apart from electronics, other high-technology products (electricity generators, aircraft, pharmaceuticals and precision instruments) remain firmly established in economies possessing highly developed technology, specialized skills and industrial service supply networks. Their competitive advantage continues to be ruled by technological capability factors.

At the risk of simplification, we will group RB and LT products together as involving simple and readily accessible technologies, their main competitiveness strength being natural resource endowments in the case of the former and low wages in the case of the latter. Similarly, for purposes of analysis in this section, we propose to group MT and HT products together as entailing more sophisticated technologies with high industrial skill levels, complex technical learning needs and substantial technology investment requirements.

Table I.10 shows general trends in the technological structure of manufactured exports between 1990 and 2003 in eight selected developing countries, comprising four in Sub-Saharan Africa, one in North Africa, one in Latin America and two in South-East Asia.

As with value-added in industry, a general trend can be observed towards technological improvement in developing countries' manufactured exports. MHT products now account for around 65 per cent of exports from Malaysia and almost 50 per cent of exports from Costa Rica. Progress in competitiveness with regard to MHT exports was also made by Indonesia, Morocco,

Mauritius and Côte d'Ivoire between 1990 and 2003. Only **Cameroon** and Nigeria appear to have production and export structures that are much less technology-intensive than in other developing countries and their efforts at improvement will undoubtedly take far longer.

Table I.10: Distribution of exports by technology category (as %)

Country	1990			2003		
	PR	RB+LT	MT+HT	PR	RB+LT	MT+HT
Cameroon	80,5	15,6	3,9	72,4	25,5	2,1
Côte d'Ivoire	68,3	29,0	2,7	58,9	26,2	14,9
Nigeria	99,8	0,1	0,1	98,0	0,2	1,8
Mauritius	1,9	92,0	6,1	3,6	87,6	8,8
Morocco	31,4	51,6	17,0	21,0	58,0	21,0
Costa Rica	64,0	25,8	10,2	25,5	25,2	49,3
Indonesia	53,4	40,4	6,2	33,2	44,4	22,4
Malaysia	25,7	34,7	39,6	11,2	23,3	65,5
World	15,6	33,7	50,7	12,0	31,2	55,8

Source: Comtrade.

Improvements in the technological structure of manufactured exports can also be indicated by a graph (see figure I.5) in which the horizontal axis shows the country's manufactured export performance (measured by the percentage share of manufactured exports in total exports from the country) and the vertical axis shows the country's technological upgrading (measured by the share of MHT products in manufactured exports).



D. Export concentration vs. export diversification

Table I.11: Percentage share of main products in total exports

SITC group	Value (millions of US\$)	Percentage		
		country	developing countries	world
	(1)	(2)	(3)	(4)
Cameroon	1 791	100,00	0,10	0,03
top 5	1 401	78,22		
top 10	1 695	94,66		
Côte d'Ivoire	3 644	100,00	0,02	0,06
top 5	2 387	65,52		
top 10	2 870	78,78		
Ghana	1 929	100,00	0,11	0,03
top 5	1 400	72,59		
top 10	1 651	85,59		
Kenya	1 757	100,00	0,10	0,03
top 5	1 075	61,24		
top 10	1 276	72,64		
Nigeria	21 308	100,00	1,18	0,36
top 5	21 230	99,64		
top 10	21 283	99,88		
Senegal	739	100,00	0,04	0,01
top 5	469	63,47		
top 10	558	75,48		
Madagascar	248	100,00	0,01	0,00
top 5	122	49,07		
top 10	166	66,99		
Mauritius	1 506	100,00	0,08	0,03
top 5	1 030	68,42		
top 10	1 306	86,75		
Malaysia	93 117	100,00	5,15	1,57
top 5	45 369	48,73		
top 10	58 569	62,91		
Thailand	66 950	100,00	3,70	1,13
top 5	17 563	26,24		
top 10	26 011	38,86		
Chile	18 480	100,00	1,02	0,31
top 5	10 930	59,15		
top 10	13 172	71,27		
Colombia	12 708	100,00	0,70	0,21
top 5	6 532	51,40		
top 10	8 033	63,20		
Costa Rica	5 101	100,00	0,28	0,09
top 5	2 572	50,43		
top 10	3 235	63,42		

Source: Comtrade.

Table I.11 shows the shares of the top five and ten products in total exports of each of the selected countries. With the world as principal destination, Madagascar can be seen to have the most diversified export structure within the group of African countries, its ten main exports making up some 67 per cent of its total exports. At the other extreme are Cameroon and Nigeria, whose ten main exports account for more than 95 per cent of their total exports. Furthermore, petroleum represents close on 50 per cent of Cameroon's total exports and is virtually Nigeria's only export product. The other Sub-Saharan countries (Côte d'Ivoire, Ghana, Kenya, Senegal and Mauritius) have fairly diversified export structures, comparable to those of the Latin American countries (Chile, Colombia and Costa Rica). Only the two Asian countries in the sample seem to show a greater degree of export diversification and are now in the group of the top ten world exporters among developing countries. Thailand's entry into this group took place recently (1998) and appears to confirm its strong export capabilities, with domestic firms taking over simpler export activities and transnational companies carrying on more complex ones.

Export diversification potential

The issue of export diversification in Sub-Saharan economies reliant on primary commodities calls for further examination. The OECD Development Centre has been interested in this issue and, in a recent study,⁷ examined the development efforts of six East African countries (Ethiopia, Kenya, Madagascar, Mozambique, Uganda and Tanzania) over the last 20 years compared with the experience of several other countries that had successfully diversified their exports (Chile, Colombia, Costa Rica and Mexico in Latin America; Indonesia, Malaysia, Philippines and Thailand in South-East Asia; and Mauritius for the African region). Such inter-country comparisons can help explain how initial conditions and government policies may have influenced the diversification process.

Firstly, primary commodities dominated the export profiles of these three regions over the course of the 1960s. In the 1970s, the export structure of the South-East Asian countries (except Indonesia) showed a marked transition to manufactured products, while a similar trend in Mexico was temporarily reversed during the first half of the 1980s.

Secondly, during the second half of the 1980s and throughout the following decade, the South-East Asian countries made intensive efforts to promote manufactured exports. Over the course of the 1960s and 1970s, they were all exporters of primary commodities and followed similar patterns of industrialization, initially through an import-substitution strategy and subsequently through an export-oriented approach starting in the mid-1980s. Foreign-exchange earnings from commodity exports enabled them to pursue their import-substitution strategy for a far longer period than the first generation of newly industrialized countries (NICs), such as South Korea or Taiwan, had done. Also, the export-oriented strategy, which was centred on low-skill manufactures (such as textiles, clothing and simple electronic components), was often implemented in conjunction with import substitution in skill-intensive sectors. The efforts deployed by Malaysia to make the automotive and steel sectors "national champions" are typical examples of such a policy.

It should be noted in this connection that, in pursuing their export-orientation strategy, the South-East Asian countries sought to maintain a stable macro-economic environment through a realistic exchange-rate policy, improved public finances and a monetary policy consistent with low inflation. At the same time, various measures were introduced to counteract the anti-export

⁷ OECD 2002, *Trading Competitively: Trade Capacity Building in Sub-Saharan Africa*, by Federico Bonaglia and Kiichiro Fukasaku, Development Centre Studies.

bias from protectionism inherent in the import-substitution strategy: duty rebates or exemptions for imported goods, export processing zones, subsidized credit and fiscal incentives for private investment. These countries also took steps to promote primary and secondary education and foster the development and modernization of infrastructure in industrial districts. They continued to liberalize their trade and investment regimes and simplify their customs procedures with the aim of reducing transaction costs linked to the internationalization of business activities.

Thirdly, the experience of Latin America is somewhat different. Mexico and, to a lesser extent, Costa Rica followed similar patterns of industrialization, while Chilean and Colombian exports to OECD countries continued to be mainly composed of primary commodities. However, in Chile the export structure within the broad category of primary commodities underwent a marked shift away from mineral products and towards agricultural products (processed and unprocessed). Colombia experienced a comparable change but in the reverse direction. These examples indicate that there are considerable opportunities for export diversification based on the processing of primary commodities and the production of resource-based goods.

Finally, the low level of diversification of exports to OECD countries by Chile, Colombia and Costa Rica should be interpreted with caution. It does not mean that these countries were not as successful in diversifying their exports as other resource-rich economies. They simply followed a different strategy, rapidly increasing their exports of resource-based and manufactured products within the Latin American market. The regional integration agreements concluded between developing countries that are gradually liberalizing their economies and are thus subject to stronger international competition can significantly encourage trade diversification by allowing dynamic new exporters access to larger regional markets.

In conclusion, the experience of several resource-rich countries in Asia and Latin America indicates that export diversification is generally a slow process for, inter alia, the reason that exports of primary commodities enable countries to amass hard currencies and hence to pursue a growth strategy based on import substitution for a much longer period than resource-poor countries. It was not until the mid-1980s, following the collapse of the prices for oil and other commodities, that the definitive switch to export orientation occurred in the South-East Asian economies. The strong performance of manufactured exports in those countries in subsequent years was made possible by the transformation of their economies into new export platforms within East Asian business networks. The experiences of Chile and Costa Rica also indicate that there are considerable opportunities for export diversification if the right incentives are offered for processing primary commodities and producing resource-based goods.

E. Industrial efficiency

International competitiveness stems both from price factors, such as the exchange rate, wage costs or the cost of inputs, and from more structural elements, largely linked to productivity gains. The OECD Development Centre has been especially interested in the latter factors and recently carried out a comparative study on the determinants of productivity growth in **Cameroon**, Côte d'Ivoire, Nigeria and Senegal.⁸

The four countries included in the study show several similarities. With the exception of Senegal, they have suffered severe terms-of-trade shocks and had clear responses to those problems. Originally, a significant improvement in the terms of trade caused a surge in investment but its

⁸ This is a comparative study conducted by Adenikinju, Söderling, Soludo and Varoudakis as part of the Emerging Africa project of the OECD Development Centre. See OECD 2001, Policies to Promote Competitiveness in Manufacturing in Sub-Saharan Africa, Development Centre Seminars with IMF and the AERC (Johannesburg, 6 and 7 November 1998), chapter 4, pages 57-70.

poor quality gave rise to a decline in productivity. The revenues obtained in the boom years were of little help when the wind changed and commodity prices fell. The situation deteriorated further because each of the four countries concerned had a highly protected and inward-looking manufacturing sector. Also, labour markets were rigid and regulated, and attempts at reform for the most part ended in failure. Devaluation of the CFA franc might have meant a decisive turning point for **Cameroon**, Côte d'Ivoire and Senegal. The change of policy introduced by Nigeria in the early 1990s is worrying.

Determinants of total factor productivity

To analyse variations in total factor productivity (TFP),⁹ the study estimated separate production functions for each country (see table I.12). The poor TFP results of the four countries concerned are striking: they all experienced negative growth in aggregate productivity, with the textile, leather-working and agro-food industries showing the most marked decline. Senegal displays positive productivity growth only in construction materials, chemicals, oilseeds and fats and "other food products". **Cameroon** and Côte d'Ivoire show the most disappointing results, with an average annual fall in productivity of 3.1 and 4 per cent respectively. In **Cameroon**, the agro-food industry was most affected by the economic crisis but record performances achieved during the boom years in the early 1980s partly offset the losses. In Nigeria, only two industries, rubber and transport equipment, showed positive TFP growth. Consumer goods (agro-foods, textiles, leather working, wood processing and paper manufacture) performed significantly worse than capital goods (transport equipment and electrical machinery). The latter are far less protected than import-substituting consumer-goods industries, which highlights the importance of trade liberalization.

⁹ Total factor productivity (TFP) is that part of productivity which cannot normally be explained by an increase in inputs (capital and labour). It is actually a productivity bonus stemming exclusively from increased economic efficiency (owing to efficient use of inputs). A major advance in modern economic science has been to identify and measure the combined effect of capital and labour in increased output levels. To take an example, Cameroon's total output in the early 1990s grew at a rate of 4% per annum; its capital stock also grew at an annual average of 4%, while labour (measured by the number of hours worked) grew at 2% per annum only. In the capital-labour mix, capital represents 1/3 against 2/3 for labour. Thus, inputs increased 2.7% per annum ($1/3 \times 4\% + 2/3 \times 2\%$). The residual, or "total factor productivity", accounts for 1.3% in output growth: 4% (output growth rate) less 2.7% (input growth rate).

This productivity bonus gave rise to the "catch-up" phenomenon observed in the high-performing economies of East Asia. Conventional logic states that, in order to attain high growth rates in the economy, a high level of investment has to be maintained over a fairly long period of time. The newly industrialized countries of East Asia certainly achieved that with exceptionally high levels of saving and investment. But high levels of investment do not necessarily mean high rates of growth: the major driving force of these economies lies essentially in their ability to use direct capital investment to bring about a lever effect on productivity bonus potential (the TFP residual generated by accumulation of human and social infrastructure capital).

Table I.12: Total factor productivity
(Average annual change in percentage for the periods covered)

Sector	Subsector	Cameroon 1980-95	Côte d'Ivoire 1975-94	Nigeria 1962-92	Senegal 1974-94	
Food		-2,8	-4,6	-4,4	-1,6	
	Fish canning				-3,0	
	Oilseeds and fats				5,9	
	Other food products				0,2	
Chemicals			-1,0	-3,2	1,1	
	Rubber					0,5
	Other chemicals					-4,0
Textile and leather products			-6,4	-2,2	-10,0	
	Textile products					-2,0
	Leather working					-3,7
Wood and paper			-1,6	-2,4	-2,2	
	Wood	-5,0				-2,3
	Paper and printing	-5,5				-2,4
Mechanical (mostly metalworking)			-2,4	-3,3	-1,4	
Other		-5,2	-4,5	0,0	6,9	
	Electrical machinery				-1,1	
	Transport equipment				-5,0	
	Construction materials					6,9
	Miscellaneous				-4,2	
Total		-3,1	-4,0	-2,3	-1,1	

Source: Note 7 (calculations by the authors Adenikinju, Söderling, Soludo and Varoudakis)

Low productivity has put considerable strain on competitiveness in the four countries examined. Attention should be paid to the determinants of TFP, which can be grouped as follows:

- Human capital development or skilled labour availability;
- External trade and openness of the economy and
- Infrastructure.

For these four countries, the results of the study underline the importance of commercial openness for the development of a competitive manufacturing sector. They show that trade restrictions hamper TFP growth but that exports improve productivity. The figures also reveal the reverse, that productivity improves exports. It is thus essential not only to liberalize trade but also to implement complementary measures with a view to enhancing liberalization incentives (sound exchange-rate management, market deregulation to remove price distortions between tradable and non-tradable goods) and to avoiding unrealistic increases in real wages. Nigeria and Senegal risk losing out by continuing to pursue inward-looking and import-substitution policies for their manufacturing.

Investing in infrastructure and human capital seems crucial to enhancing competitiveness. Building trade capacity through adequate infrastructure and a more highly skilled workforce enables the economy to respond better to reforms, such as trade liberalization and improved exchange-rate management. While the analysis presented here shows the importance of the availability of skilled labour for productivity growth in all four countries examined, the impact of infrastructure is significant in Senegal and Nigeria only.

Devaluation of the CFA franc in 1994 did allow some gains in exports and productivity but appears to have mainly benefited enterprises which were already exporting and sectors which were generally more prone to be involved in trade. More should therefore be done to convince economic actors of the viability of trade.

Chapter 3

Technological and industrial capabilities

This chapter analyses competitiveness from another and far more dynamic perspective, that of technological and industrial capability. Increasing globalization and interdependence of economies have changed the dynamics of competitive advantage. It is now evident that the importance of competitiveness founded on low wages has declined in relation to competitiveness concepts based on quality, technical expertise, R&D and innovation capability. This means that, in an era of rapid change in technological development, building technological and industrial capabilities must ultimately determine the pattern of output, growth and trade in developing countries as a whole. The analysis below looks in particular at input indicators, which effectively measure these determinants of a country's technological and industrial capabilities, i.e. skills, technological effort and FDI.

Skills

Every form of education is conducive to economic and industrial progress. However, while basic education and formal vocational training may suit initial stages of industrialization, greater focus on learning for the scientific and engineering professions and on highly specialized technical training is required to meet the needs of more sophisticated technologies. In-service training is equally necessary when the technologies involved are more demanding for technology skills acquisition.

In an unpublished article on analysis of the competitiveness of African industry,¹⁰ Sanjaya Lall showed that, with regard to skills, Africa lags far behind other developing regions in education and vocational training. Enrolment rates for all three educational levels are lower, particularly in the higher levels of technical and managerial skills required for the efficient use of modern technologies. This is illustrated by data on tertiary enrolments and enrolments in scientific, engineering and technical subjects (see table I.13).

Data on enrolment rates are admittedly not an ideal measure of skills since they ignore on-the-job or other forms of learning and differences in the quality of existing education systems. Nevertheless, they are the only data available for international comparison purposes. According

¹⁰ Sanjaya Lall, *Is African Industry Competing?*, Working Paper Number 121, January 2005, Queen Elizabeth House, University of Oxford, QEH Working Paper Series – QEHWPS122.

Table I. 13: Tertiary enrolments and enrolments in higher-level scientific and technical subjects

Countries/regions	Level-3 enrolments		Enrolments in higher-level scientific, mathematical and technical subjects (1995)											
	Number of students	% of population	Natural sciences		Mathematics; computing		Engineering		Other technical subjects					
			Number	%	Number	%	Number	%	Number	%				
Developing countries	35 345 800	0,82	2 046 566	0,05	780 930	0,02	4 194 433	0,10	7 021 929	0,16				
Sub-Saharan Africa	1 542 700	0,28	111 500	0,02	39 330	0,01	69 830	0,01	220 660	0,04				
MENA	4 571 900	1,26	209 065	0,06	114 200	0,03	489 302	0,14	812 567	0,22				
Latin America	7 677 800	1,64	212 901	0,05	188 800	0,04	1 002 701	0,21	1 404 402	0,30				
Asia	21 553 400	0,72	1 513 100	0,05	438 600	0,01	2 632 600	0,09	4 584 300	0,15				
• 4 NICs (1st tier)	3 031 400	4,00	195 200	0,26	34 200	0,05	786 100	1,04	1 015 500	1,34				
• 4 NICs (2nd tier)	5 547 900	1,61	83 600	0,02	280 700	0,08	591 000	0,17	955 300	0,28				
• South Asia	6 545 800	0,54	996 200	0,08	7 800	0,00	272 600	0,02	1 276 600	0,10				
• China	5 826 600	0,60	167 700	0,02	99 400	0,01	971 000	0,10	1 238 100	0,13				
• Others	601 700	0,46	70 400	0,05	16 500	0,01	11 900	0,01	98 800	0,08				
Transition economies	2 025 800	1,95	55 500	0,05	30 600	0,03	354 700	0,34	440 800	0,42				
Industrialized countries	33 774 800	4,06	1 509 334	0,18	1 053 913	0,13	3 191 172	0,38	5 754 419	0,69				
Europe	12 297 400	3,17	876 734	0,23	448 113	0,12	1 363 772	0,35	2 688 619	0,69				
North America	16 430 800	5,54	543 600	0,18	577 900	0,19	904 600	0,31	2 026 100	0,68				
Japan	3 917 700	0,49	ND	ND	ND	ND	805 800	0,10	805 800	0,10				
Australia/New Zealand	1 128 900	5,27	89 000	0,42	27 900	0,13	117 000	0,55	233 900	1,09				

Source: Sanjaya Lall, *Is African Industry Competing?*, January 2005, Working Paper Number 121, QEH Working Paper Series – QEHWPS122 (data calculated by the author from UNESCO statistics).

to these data, the first-generation newly industrialized countries of Asia show a percentage enrolment in technical subjects 33 times greater than the Sub-Saharan countries. The top three countries in terms of total numbers of students enrolled in technical subjects – China (18 per cent), India (16 per cent) and Korea (11 per cent) – represent 44 per cent of total technical enrolments in the developing countries.

As regards *intensity* in the creation of technical skills (measured by enrolments in technical subjects as a percentage of the population), Lall also showed that the situation in Africa was no better (see table I.14). The world leader in this respect is South Korea (1.65 per cent). The Republic of China (Taiwan), the next developing country, is in 4th place behind Finland and Australia. Most Sub-Saharan countries are in the bottom group, the best of them being South Africa (ranked 52nd). **Cameroon** is in 64th position out of the 73 countries in the ranking.

It is difficult to see how Sub-Saharan countries can build competitive capacities in modern industry with such low levels of skills. Advanced skills are needed not just for high technologies; even simple activities, such as clothing, footwear and basic consumer goods, today require a minimum of skills to compete effectively in international markets. If Sub-Saharan countries wish to add value to their natural resources, they must engage in more complex, capital-intensive processing operations where technical skills are far more demanding.

Technological effort

With regard to technological effort, the only available data for comparative analysis purposes relate to R&D and officially registered patents. These indicators are only partial since a large part – the predominant part in developing countries – of technological effort occurs on production premises in operations to improve quality, engineering, procurement and distribution. These indicators nevertheless provide some insight into technological activity, bearing in mind that R&D agreed to in developing countries is simply aimed at the efficient use of imported technologies.

Table I.15, taken from Sanjaya Lall, shows R&D spending propensities and manpower in major country groups. According to Lall, *R&D financed by productive enterprises and expressed as a percentage of GNP* best indicates technological effort expended by developing countries. By this measure, the figure for the mature NICs of Asia is almost 400 times higher than in the Sub-Saharan countries. Asia as a whole has 6/7ths of the developing world's stock of scientists and engineers working in R&D, as against 0.3 per cent for Sub-Saharan Africa and 10 per cent for Latin America. The proportion of enterprise-financed R&D in total R&D spending is highest in the mature NICs of Asia, immediately followed by the second-generation Asian NICs, the smallest proportion being in the Sub-Saharan countries

**Table I.14: Technical tertiary enrolments
(% of population), 1995**

1	South Korea	1,65	38	Bolivia	0,34
2	Finland	1,33	39	Costa Rica	0,34
3	Australia	1,17	40	Turkey	0,33
4	Taiwan (RC)	1,06	41	Ecuador	0,29
5	Spain	0,97	42	Uruguay	0,29
6	Ireland	0,90	43	Venezuela	0,29
7	Austria	0,78	44	El Salvador	0,26
8	Germany	0,77	45	Morocco	0,25
9	United Kingdom	0,75	46	Tunisia	0,24
10	Chile	0,73	47	Indonesia	0,23
11	Portugal	0,73	48	Nicaragua	0,22
12	Sweden	0,73	49	Honduras	0,20
13	Greece	0,72	50	Thailand	0,19
14	Canada	0,69	51	Brazil	0,18
15	Israel	0,68	52	South Africa	0,17
16	New Zealand	0,68	53	Hungary	0,16
17	USA	0,68	54	Malaysia	0,13
18	Norway	0,67	55	Egypt	0,12
19	Italy	0,64	56	India	0,12
20	Japan	0,64	57	Jamaica	0,11
21	France	0,61	58	Paraguay	0,11
22	Denmark	0,60	59	China	0,10
23	Panama	0,59	60	Zimbabwe	0,09
24	Netherlands	0,56	61	Bangladesh	0,08
25	Philippines	0,55	62	Nepal	0,08
26	Colombia	0,51	63	Sri Lanka	0,08
27	Switzerland	0,51	64	Cameroon	0,06
28	Hong Kong	0,49	65	Madagascar	0,06
29	Romania	0,49	66	Pakistan	0,05
30	Argentina	0,47	67	Senegal	0,05
31	Singapore	0,47	68	Mauritius	0,04
32	Peru	0,46	69	Congo	0,03
33	Mexico	0,44	70	Kenya	0,02
34	Belgium	0,43	71	CAR	0,01
35	Jordan	0,42	72	Ethiopia	0,01
36	Algeria	0,41	73	Malawi	0,01
37	Poland	0,39			

Source: Same as table I.13

Table I.15 : R&D propensities and manpower in major country groups (most recent data available)

Countries/regions [1]	Scientists/engineers working in R&D		Total R&D (% of GNP)	Sector performing R&D (%)		Source of financing (% distribution)		R&D by financing (% of GNP)	
	Per million population	Numbers		Productive sector	Higher education	Productive enterprise	Govt.	Productive enterprise	Productive sector
Industrialized countries [2]	1 102	2 704 205	1,94	53,7	22,9	53,5	38,0	1,037	1,043
Developing countries [3]	514	1 034 333	0,39	13,7	22,2	10,5	55,0	0,041	0,054
- SSA (excluding South Africa)	83	3 193	0,28	0,0	38,7	0,6	60,9	0,002	0,000
- North Africa	423	29 675	0,40	N/A	N/A	N/A	N/A	N/A	N/A
- Latin America and the Caribbean	339	107 508	0,45	18,2	23,4	9,0	78,0	0,041	0,082
- Asia (excluding Japan)	783	893 957	0,72	32,1	25,8	33,9	57,9	0,244	0,231
Mature NICs [4]	2 121	189 212	1,50	50,1	36,6	51,2	45,8	0,768	0,751
New NICs [5]	121	18 492	0,20	27,7	15,0	38,7	46,5	0,077	0,055
South Asia [6]	125	145 919	0,85	13,3	10,5	7,7	91,8	0,065	0,113
Middle East	296	50 528	0,47	9,7	45,9	11,0	51,0	0,051	0,045
China	350	422 700	0,50	31,9	13,7	N/A	N/A	N/A	0,160
European transition countries [7]	1 857	946 162	0,77	35,7	21,4	37,3	47,8	0,288	0,275
World (79-84 countries)	1 304	4 684 700	0,92	36,6	24,7	34,5	53,2	0,318	0,337

Source: Sanjaya Lall, *Is African Industry Competing?*, January 2005, Working Paper Number 121, QEH Working Paper Series – QEHWPS122 (data taken from the UNESCO Statistical Yearbook 1997; propensities for R&D spending are averages).

Notes: [1] Includes only countries having data and with over one million inhabitants in 1995.

[2] USA, Canada, Western Europe, Japan, Australia and New Zealand.

[3] Includes the Middle East States, Turkey, Israel, South Africa and the former socialist economies of Asia.

[4] Hong Kong, South Korea, Singapore and Taiwan.

[5] Indonesia, Malaysia, Thailand and Philippines.

[6] India, Pakistan, Bangladesh and Nepal.

[7] Includes the Russian Federation.

Foreign direct investment

The new international scene has offered new alternatives to enterprises in developing countries for gaining access to export markets and using FDI as a means of access to advanced technologies and expertise. Attracting FDI has assumed a new importance following the rapid changes in technological development, the opening up of markets and the internationalization of production.

Foreign investors have recently expressed renewed interest in Africa. According to the UNCTAD *World Investment Report 2004: Transnational Corporations and Export Competitiveness*, the share of Sub-Saharan Africa in global FDI rose from 0.42 per cent in 2000 to 1.65 per cent in 2003 (see table I.16). As regards FDI in Africa, there are three countries which dominate owing to their size and resources, namely South Africa, Nigeria and Angola, but there has been a decline in their share of FDI capital inflows to the region, which fell from 58 per cent in 1999 to 37 per cent in 2003. Trends in FDI capital inflows to other Sub-Saharan countries are encouraging.

It is possible to see a recovery in FDI in East Asia since the financial crisis of 1997 and also the rise of China as a host country, which contributed to a sharp increase in the region's share of global FDI in 2003. There are fears within the region that China will draw FDI away from other recipient countries, although there is little evidence for this. The Latin American and Caribbean region has continued to suffer from a downturn in FDI since 1999, primarily as a result of anaemic growth and maturing privatization. South Asia shows modest but steady growth, which is largely explained by market liberalization and more vigorous growth in India.

Table I.16 : Distribution of FDI capital in the developing world

Region	1992-97 average	1999	2000	2001	2002	2003
FDI capital inflows (in millions of US\$)						
SSA	4 010	8 558	5 810	14 126	8 149	9,250
South Africa	1 045	1 502	888	6 789	757	762
SSA 2 (excluding South Africa)	2 965	7 056	4 922	7 337	7 392	8,488
Nigeria	1 402	1 005	930	1 104	1 281	1,200
Angola	304	2 471	879	2 146	1 643	1,415
SSA 2 (excluding Nigeria/Angola)	1 259	3 580	3 113	4 087	4 468	5,873
East Asia	67 120	106 020	139 591	98 246	81 791	90,849
South Asia	2 489	3 095	3 092	3 982	4 535	6,066
MENA	4 855	3 993	4 412	11 589	7 185	9,916
Latin America and the Caribbean	38 167	107 406	97 537	88 139	51 358	49,722
Developing world	118 596	231 880	252 459	219 721	157 612	172,033
FDI capital inflows (% of global FDI)						
SSA	1,29	0,79	0,42	1,73	1,20	1,65
SSA 2	0,95	0,65	0,35	0,90	1,09	1,52
SSA 2 (excluding Nigeria/Angola)	0,40	0,33	0,22	0,50	0,66	1,05
East Asia	21,59	9,76	10,06	12,02	12,05	16,24
South Asia	0,80	0,28	0,22	0,49	0,67	1,08
MENA	1,56	0,37	0,32	1,42	1,06	1,77
Latin America and the Caribbean	12,28	9,88	7,03	10,78	7,57	8,89
Developing world	38,15	21,34	18,19	26,87	23,22	30,74

Source: Sanjaya Lall, *Is African Industry Competing?*, January 2005, Working Paper Number 121, QEH Working Paper Series – QEHWPS122; UNCTAD data (2004).

The main reason for the renewal of investment interest in Africa lies in improved policies: liberalization of markets and FDI, greater macro-economic and political stability, a constantly improving business climate and confidence in market mechanisms and private initiative. If these improvements continue, it is highly likely that this renewed investment interest will be maintained. According to the UNCTAD report, two further important reasons for increased FDI in Africa are the growing pressures for primary resources and the privatization of utilities in several countries: it is highly likely that the first of these factors (pressures for primary resources) will continue in the future while the second is expected to gradually diminish. Finally, mention should be made of certain incentives for foreign investors, such as the African Growth and Opportunities Act (AGOA), which was approved by the United States Congress in support of African countries. The AGOA, which came into force in 2000, provides for advantageous quotas and tariff-free access to the United States market for a wide range of primary and manufactured products from African countries. The *Everything but Arms* (EBA) initiative of the European Union, which offers similar privileges, reinforces the privileged access of African products to the European market.

These privileges should in theory stimulate FDI in export-oriented manufacturing. Wages in Africa are now the lowest in the developing world and FDI policies are, at least on paper, similar to those in other developing regions. There is also a large number of export processing zones, some of which are under private enterprise management. Although there are still infrastructure deficiencies in several countries and constraints affecting landlocked countries, which are faced with high transport costs, most coastal States (such as **Cameroon**) should be able to capitalize on these advantages.

There are, however, few signs that Africa is making use of these advantages and of the renewed interest expressed by foreign investors to mount sustained operations that will boost manufactured exports. With the exclusion of South Africa, there is still very little FDI in export-oriented industries in Africa, and even in South Africa the range of products of export interest is narrow, being limited to motor vehicles and agro-food products, with virtually no FDI in labour-intensive activities that could assist in easing the acute problem of unemployment. In the rest of Africa, despite relatively low wages, no FDI appears to be forthcoming in labour-intensive, export-oriented activities - with the possible exception of Madagascar - of the type that led to the growth of the economies of Mauritius and the Asian dragons. The region is still, so to speak, marginal to the operations of global value chains, particularly in the high-technology activities which made the success of the East and South-East Asian countries.

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