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WORKING PAPER 05/2012



Industrial Development in Least Developed Countries



UNITED NATIONS
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DEVELOPMENT POLICY, STATISTICS AND RESEARCH BRANCH
WORKING PAPER 5/2012

Industrial Development in Least Developed Countries

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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
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Acronyms

CIS	Commonwealth Independent States
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
HDR	Human Development Report
ICs	Industrialized Countries
ISIC	International Standard Industrial Classification
LDCs	Least Developed Countries
LLDCs	Land Locked Developing Countries
LT	Low-Technology
MHT	Medium- and High-Technology
MVA	Manufacturing Value Added
NICs	Newly Industrialized Countries
ODA	Official Development Assistance
ODCs	Other Developing Countries
PPP	Purchasing Power Parity
RB	Resource-Based
SIDS	Small Islands Developing States
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
WDI	World Development Indicators

List of least developed countries

SN	Country	Region	Geo-status
1	Afghanistan	South Asia	LLDC
2	Bangladesh	South Asia	Coastal
3	Bhutan	South Asia	LLDC
4	Nepal	South Asia	LLDC
5	Cambodia	South-East Asia	Coastal
6	Lao People's Democratic Republic	South-East Asia	LLDC
7	Myanmar	South-East Asia	Coastal
8	Yemen	South-West Asia	Coastal
9	Kiribati	South Pacific	SIDS
10	Samoa	South Pacific	SIDS
11	Solomon Islands	South Pacific	SIDS
12	Timor-Leste	South Pacific	SIDS
13	Tuvalu	South Pacific	SIDS
14	Vanuatu	South Pacific	SIDS
15	Angola	Sub-Saharan Africa	Coastal
16	Benin	Sub-Saharan Africa	Coastal
17	Burkina Faso	Sub-Saharan Africa	LLDC
18	Burundi	Sub-Saharan Africa	LLDC
19	Central African Republic	Sub-Saharan Africa	LLDC
20	Chad	Sub-Saharan Africa	LLDC
21	Comoros	Sub-Saharan Africa	SIDS
22	Democratic Republic of the Congo	Sub-Saharan Africa	Coastal
23	Djibouti	Sub-Saharan Africa	Coastal
24	Eritrea	Sub-Saharan Africa	Coastal
25	Ethiopia	Sub-Saharan Africa	LLDC
26	Gambia	Sub-Saharan Africa	Coastal
27	Guinea	Sub-Saharan Africa	Coastal
28	Guinea-Bissau	Sub-Saharan Africa	SIDS
29	Lesotho	Sub-Saharan Africa	LLDC
30	Liberia	Sub-Saharan Africa	Coastal
31	Madagascar	Sub-Saharan Africa	Coastal
32	Malawi	Sub-Saharan Africa	LLDC
33	Mali	Sub-Saharan Africa	LLDC
34	Mauritania	Sub-Saharan Africa	Coastal
35	Mozambique	Sub-Saharan Africa	Coastal
36	Niger	Sub-Saharan Africa	LLDC
37	Rwanda	Sub-Saharan Africa	LLDC
38	São Tomé and Príncipe	Sub-Saharan Africa	SIDS
39	Senegal	Sub-Saharan Africa	Coastal
40	Sierra Leone	Sub-Saharan Africa	Coastal
41	Somalia	Sub-Saharan Africa	Coastal
42	Sudan	Sub-Saharan Africa	Coastal
43	Togo	Sub-Saharan Africa	Coastal
44	Uganda	Sub-Saharan Africa	LLDC
45	United Republic of Tanzania	Sub-Saharan Africa	Coastal
46	Zambia	Sub-Saharan Africa	LLDC
47	Haiti	Americas	SIDS

1. Introduction

The list of Least Developed Countries (LDCs) was approved by the UN General Assembly in 1971, in recognition of the existence of a category of countries whose distinction lies not only in the extent of their overall poverty, but also in their low economic, institutional and human resources, often compounded by geophysical challenges.¹

In 2003, the revised criteria to classify LDCs, proposed by the Committee for Development Policy (CDP) to the Economic and Social Council of the United Nations, included:

- A low income criterion based on a three-year average estimate of the country's gross national income (GNI) per capita (under US\$ 905 for inclusion, above US\$ 1086 for graduation);
- A human resource weakness criterion including a composite Human Assets Index (HAI) based on the indicators: (a) nutrition; (b) health; (c) education; and (d) adult literacy; and
- An economic vulnerability criterion entailing a composite Economic Vulnerability Index (EVI) based on the indicators: (a) population size; (b) remoteness; (c) merchandise export concentration; (d) share of agriculture, forestry and fisheries in gross domestic product; (e) homelessness owing to natural disasters; (f) instability of agricultural production; and (g) instability of exports of goods and services.

Most LDCs (32 out of 47) are located in sub-Saharan Africa, while 14 LDCs are located in Asia and 1 (Haiti) in Latin America and the Caribbean. Among the LDCs, two groups of countries face specific development challenges. The lack of sea access, remoteness from major world markets and increased transport costs impose additional constraints on the economic development of the first group, namely landlocked LDCs; 12 countries belong to this group. The second group, the Small Islands Developing States (SIDS), is characterized by the small size of the countries' economy, which prevents the exploitation of scale economies; these countries are typically also remote from major markets and more vulnerable to environmental disasters. There are 10 SIDS among the LDCs. In 2010, the sub-Saharan countries represented 61 percent of the LDCs' population. The largest LDC is Bangladesh which accounts for 19 percent of the LDCs' total population, followed by Ethiopia (10 percent) and the Democratic Republic of the Congo (8 percent).

¹ There are currently 47 LDCs. Botswana, and recently Cape Verde and Maldives (2011), graduated from the LDC category, while Timor-Leste entered this category in 2003. This paper excludes Equatorial Guinea, as the country was recommended for graduation from the list of LDCs based on a resolution of the UN Economic and Social Council (2009/35).

The present statistical profile provides an overview of the state of LDCs' industrial sector, as well as of their performance in manufactured exports. We use a variety of data sources, namely UNIDO MVA data and INDSTAT 2 and UNCTADstat from UNCTAD, Comtrade from UNSD, HDI data from UNDP and World Bank World Development Indicators (WDI) data. Our analyses suggest that several LDCs, particularly in Asia, are on a sustained path towards industrialization, while LDCs—mainly in Africa—are facing deindustrialization. With regard to international trade, LDCs continue to play a minor role in world trade despite their remarkable export performance in recent years. Their exports are dominated by resource-based and low-technology products and concentrate on a limited number of markets and products, thereby increasing their vulnerability to external shocks.

2. Overall socio-economic status of LDCs

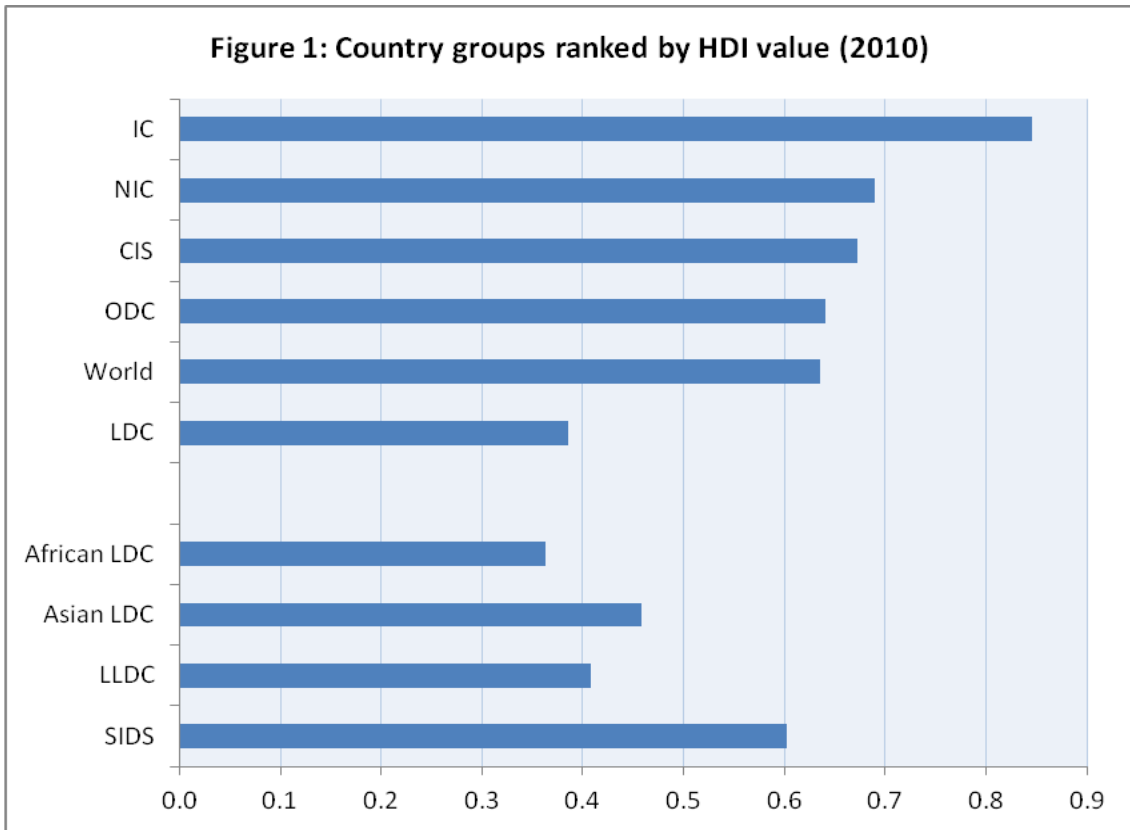
This section analyses the HDI ranking of LDCs. The Human Development Index (HDI) represents a comparative summary measure of countries' achievements in three basic dimensions of human development: a long and healthy life (life expectancy at birth), access to knowledge (mean years of schooling and expected years of schooling) and a decent standard of living (GNI per capita). In the second part, we look at LDCs' economic performance in terms of GDP structure and growth.

2.1 LDCs in HDI ranking

LDCs are typically ranked low in all three dimensions of human development. The value of the human development index (maximum 1), according to HDR 2010, was 0.386 for LDCs, compared to 0.845 for industrialized countries and 0.635 for the world on average (Figure 1). Out of 40 LDCs ranked by HDI in 2010, only 5 countries were ranked in the medium HDI category; the remaining 35 countries were ranked in the low HDI category.²

African LDCs had an average HDI value of 0.364. Only São Tomé and Príncipe had a medium value HDI in the region at 0.488, with all other 29 countries ranking low in the human development index. In comparison, Asia seems to have achieved higher HDI values with a regional HDI average value of 0.458. Out of 9 Asian countries in the sample, 5 countries are in the low HDI category, including Bangladesh. Haiti had an HDI value of 0.40, thus also falling in the low HDI category.

² In 2010, the HDI country classifications were based on quartiles and denoted very high, high, medium and low HDI. In total, there were 169 countries. In the low HDI group, Kenya had the highest HDI with a value of 0.470.



Source: UNDP (2011).

2.2 Economic growth of LDCs

GDP per capita, which measures the level of total economic output in a year per unit of population, has remained relatively low in most LDCs. In 2009, GDP per capita in LDCs was 4 and 9 times lower, respectively, than that of ODCs and the world average. GDP per capita in sub-Saharan African LDCs³ was slightly higher (1173 US\$ 2005 PPP) than that of Asian LDCs at 1062 (US\$ 2005 PPP).

GDP in LDCs grew 6.0 percent per annum, on average, in 2005-2009, a rate higher than that of all other development groups; and 5.8 percent in 2000-2004, only second to CIS countries (7.3 percent). At the same time, due to a slight deceleration of population growth over the periods 2000-2004 and 2005-2009 from 2.4 to 2.3 percent, LDCs achieved an annual GDP per capita growth rate of 3.7 percent per annum in 2005-2009 compared to 3.3 percent in 2000-2004, as depicted in Table 1.

³ The country grouping in this paper corresponds to UNIDO statistical practice. For details on CIS, NICs, ICs and ODCs, see Annex 1. For additional country groupings, see the *International Yearbook of Industrial Statistics* published by UNIDO.

Significant differences in GDP per capita are evident among LDCs. For instance, the ratio of the highest GDP per capita, Angola (5500 US\$ 2005 PPP), was 18 times that of the lowest, Democratic Republic of Congo (290 US\$ 2005 PPP), in 2009.

Table 1: Level and growth of GDP per capita by country groups, US\$ PPP 2005							
Country group	2005	2006	2007	2008	2009	Average annual growth rate (in %)	
						2000-2004	2005-2009
CIS	8442	9189	10009	10521	9795	7.5	4.4
ICs	31138	31898	32554	32483	31191	1.9	0.5
LDCs	989	1042	1099	1147	1126	3.3	3.7
NICs	4522	4753	5008	5152	5187	2.5	3.7
ODCs	4473	4647	4841	4853	4772	2.6	2.1
World	10020	10311	10597	10630	10265	1.8	1.0

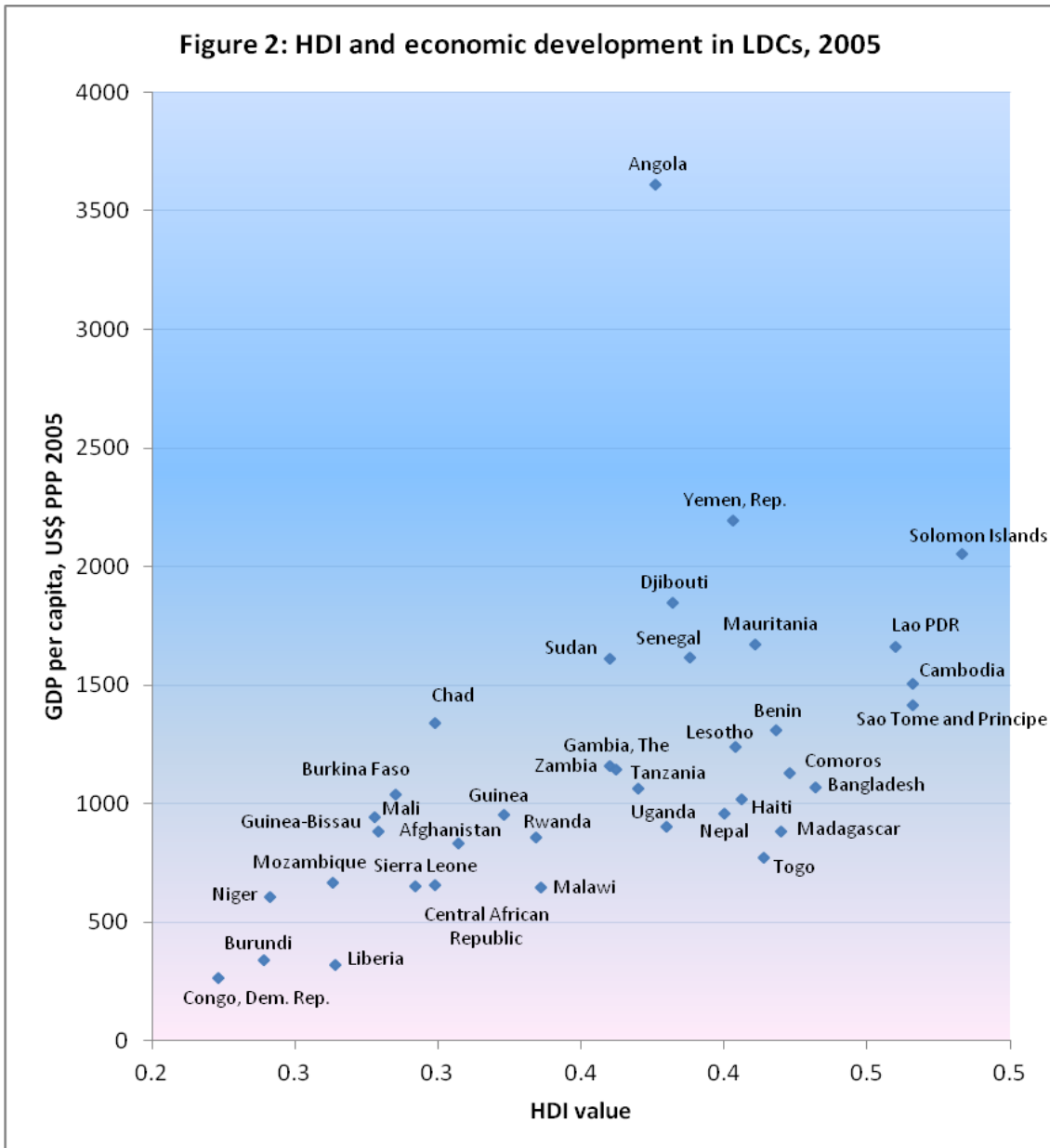
Source: UNIDO Database (2011).

There is a positive correlation between economic progress and human development.⁴ However, among LDCs, some countries with a higher GDP per capita had comparatively low levels of human development. For example, countries that are relatively rich due to their mineral resources and that have a higher GDP per capita, such as Angola, Mauritania or Yemen, had lower HDI values compared to countries like Lao PDR or Togo, which have relatively limited mineral resources (see Figure 2). This suggests that higher economic growth has not always been sustained and translated into overall human development and highlights the need to make growth pro-poor.

2.3 GDP structure

A visible structural difference between LDCs and other groups of countries relates to the contribution of the primary sector—namely agriculture, forestry, fishing and mining—to economic output.

⁴ For example, $r=0.8$ for a sample of 159 countries in 2005.



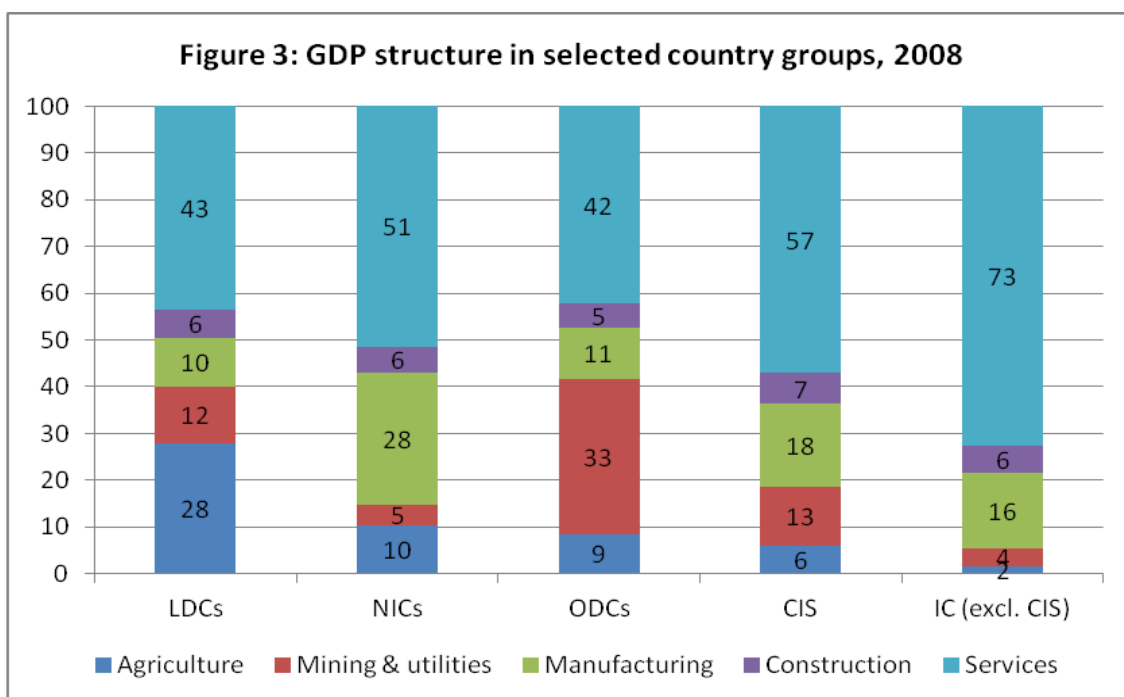
Source: UNDP (2010), WDI (2011).

Note: Several LDCs were *not ranked* due to lack of data.

In 2008, the agricultural-forestry-fishing sector accounted for 28 percent of GDP in LDCs, compared to 9 percent for NICs and 2 percent for ICs (Figure 3). The mining sector contributed 12 percent of GDP, resulting in a 40 percent total contribution of the primary sector.⁵ The agricultural-forestry-fishing sector contributed more than 50 percent of GDP in countries such as Liberia (65 percent), Central African Republic (54 percent) or Sierra Leone (51 percent),

⁵ Note that the mining sector contributes 33 percent of GDP in the ODC group which includes most major oil producing countries such as Algeria, Libya or Saudi Arabia.

while countries such as Angola (64 percent) or Chad (46 percent) relied primarily on mining resources, in particular oil production. For SIDS, the share of the manufacturing sector is generally low as the countries in this category rely on the service sector (e.g., tourism) for growth.



Source: UNCTAD (2011).

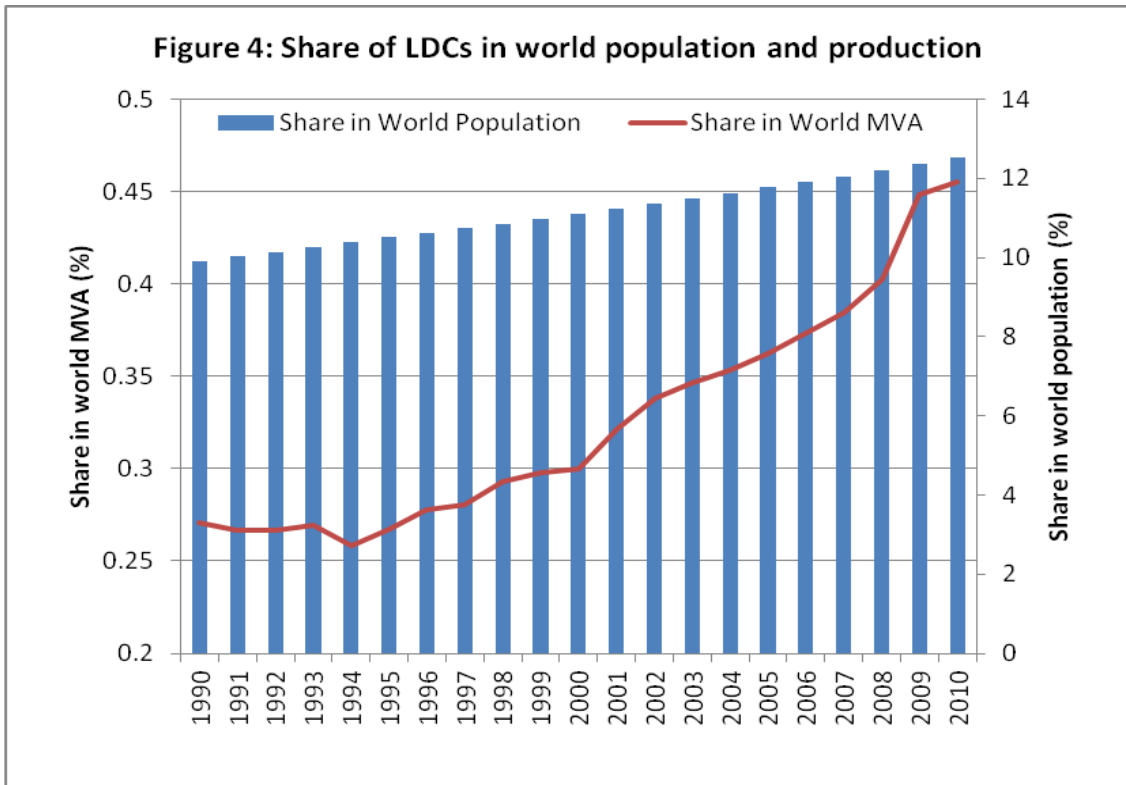
3. State of manufacturing production in LDCs

This section examines the industrial production growth and structure of LDCs in comparison to other country groups. It then compares the relative industrial performance of countries within the LDC group.

3.1 Industrial production

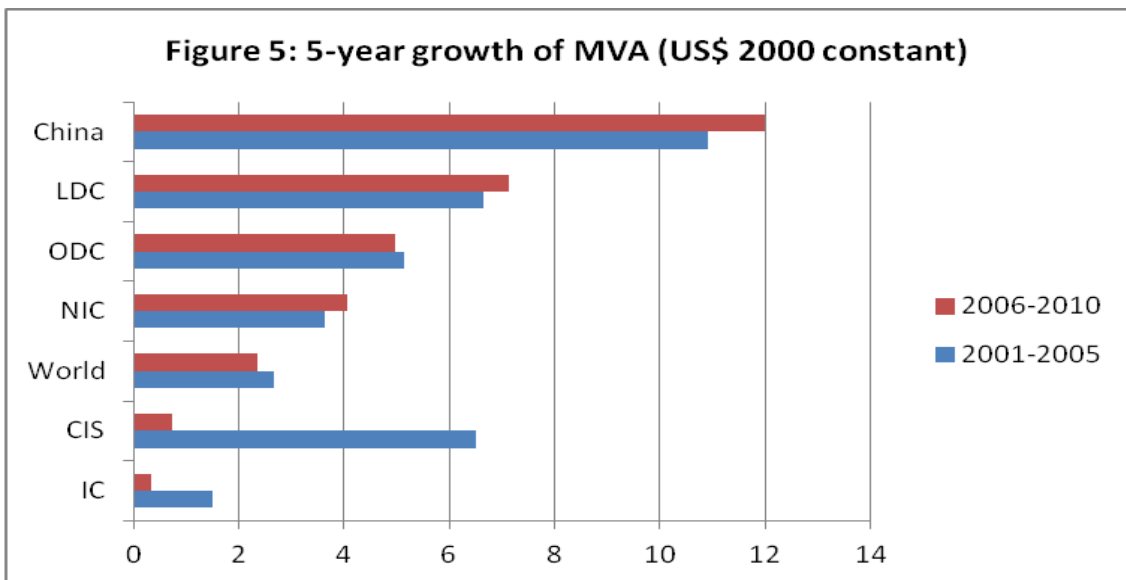
From 2000 to 2010, the share of LDCs in world population grew from 11.1 to 12.5 percent, while their share in world MVA remained below 0.5 percent, advancing from 0.3 per cent to 0.5 percent (Figure 4).

Low MVA levels combined with fast growing populations may explain the low level of MVA per capita in LDCs, at US \$37 in 2009 (constant 2000 dollars). This is almost 28 times less than world average MVA and 212 times less than that of Japan's, the country with the highest MVA per capita in the world. Industrialized countries with a combined population of about 17 percent held nearly 70 percent of global industrial production in 2009.



Data: UNIDO (2010a), WDI (2010).

LDCs have recorded a significant MVA growth rate over the last decade. In the periods 2001-2005 and 2006-2010, LDCs' MVA grew at a rate above 6 percent, being second only to China (Figure 5). While such growth rates are encouraging, they should be put into perspective, given the small industrial base of LDCs. For example, in 2006-2007, 5.2 percent growth in MVA per capita in LDCs translated into an increase of US\$ 2 (constant 2000 dollars), while per capita world MVA grew 2.7 percent, but increased by US\$ 42 (constant 2000 dollars).



Source: UNIDO (2010a).

Despite sustained MVA growth rates, LDCs still lie far behind other country groups and their current industrial growth rates are not fast enough to quickly catch up with other countries. Based on present growth rates, it could take at least 50 years for LDCs to reach the MVA per capita levels already achieved by China or NICs. However, if LDCs succeed in increasing their MVA per capita growth rate to 10 percent per annum, they can reach the same MVA per capita level as China or the NICs within 25 years, and the current level of MVA per capita of industrialized countries within 50 years. The number of years required for LDCs to achieve the different targets at actual and hypothetical growth rates is presented below in Table 2.

Table 2: Number of years required for LDCs to achieve the 2010 level of MVA per capita (in brackets, 2000 constant dollars) of selected country or country groups

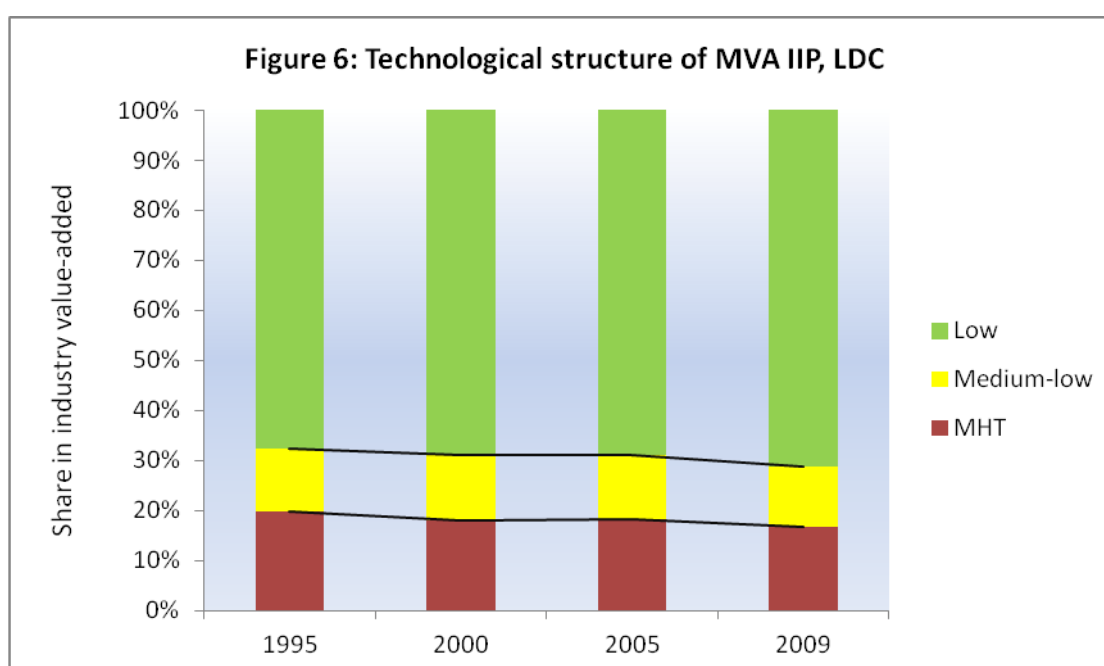
Current level of country or country groups	LDCs (US\$ 39)	
	At actual 5-year average annual growth rate of 4.6% per annum	At hypothetical average growth rate of 10% per annum
Other developing countries (US\$ 337)	42	20
Newly industrialized countries (US\$ 410)	52	25
China (US\$ 842)	68	32
Industrialized countries (US\$ 4398)	105	50

Source: Estimated by author based on UNIDO data (2010a).

The aggregate growth rates also mask differences between regions and countries. Asian LDCs outperformed their African counterparts; their MVA grew 8.6 percent, on average, between 2006 and 2010 compared to 5.0 percent for African LDCs. The fastest growing countries at country level and for the same period were Angola (19.4 percent), Afghanistan (12.1 percent), Cambodia (10.8 percent) and Myanmar (9.6 percent). In contrast, the highest decline in MVA was recorded for Samoa (-6.1 percent), Rwanda (-5.5 percent) and Mali (-3.2 percent).

The intra-industry structure of LDCs' manufactured production is illustrated in Figure 6. It reveals that the share of both medium-low and MHT manufactured products declined in LDCs. MHT activities, in particular, fell from 20 percent in 1995 to 17 percent in 2009. This could be problematic to the extent that the manufacture of more technologically advanced products (not necessarily high-technology products) may be more conducive to long-term growth, may entail less vulnerability with regard to easy entry by competitors, as well as an increased ability to adapt to technological and market trends (Lall, 1998). However, two caveats must be mentioned.

First, there is a high level of aggregation when classifying activities based on technological complexity, which results in products from the same industrial category, yet with differing technological content being grouped together. For example, classifying semiconductors as high-technology can make the Philippines' export structure appear more technology-intensive than that of the US, although semiconductors are only assembled in the former (Lall, 2000). Second, given their low industrial base, a first step may be to address any significant market distortions in the LDCs, which might prevent the country from fully exploiting its comparative advantage (Lall, 2003), and translate it into a competitive advantage. It may not yet be relevant whether this competitive advantage is in the low-, medium-low- or medium- and high-technology sector.



Source: UNIDO (2010b).

3.2 Relative industrial performance

This section examines the relative industrial performance of LDCs. Figure 7 charts the MVA per capita level of LDCs with their MVA per capita growth. Using the median MVA growth (1.1 percent) and level (US\$ 25), the graph can be divided into four zones to illustrate the relative performance of LDCs.

In the Northeast quadrant, we find countries such as Angola, Bangladesh or Cambodia with a high MVA level and growth (relative to the LDC group). In fact, Bangladesh accounted for 50 percent of recorded growth in LDCs in 2006-2010, followed by Cambodia (8 percent), Afghanistan (7 percent), Angola (7 percent) and Myanmar (7 percent). Together, these five countries accounted for roughly 80 percent of LDCs' aggregate growth. Countries in this group

typically have a higher level of industrialization, with the share of MVA in GDP at 11 percent, and are firmly embedded in the path of sustained industrialization. Bangladesh, for example, is undergoing a structural transformation of its economy, which entails a combination of factors such as a shift to private sector-led industrialization, openness to trade, preferential market access and fiscal incentives (Ahmed, Bakht and Yunus, 2011). However, Bangladesh's manufacturing sector is still relatively concentrated, with the top-10 industries accounting for about 60 percent of total production in 2005-2006; ready-made garments represent the largest sector (Ahmed, Bakht and Yunus, 2011).

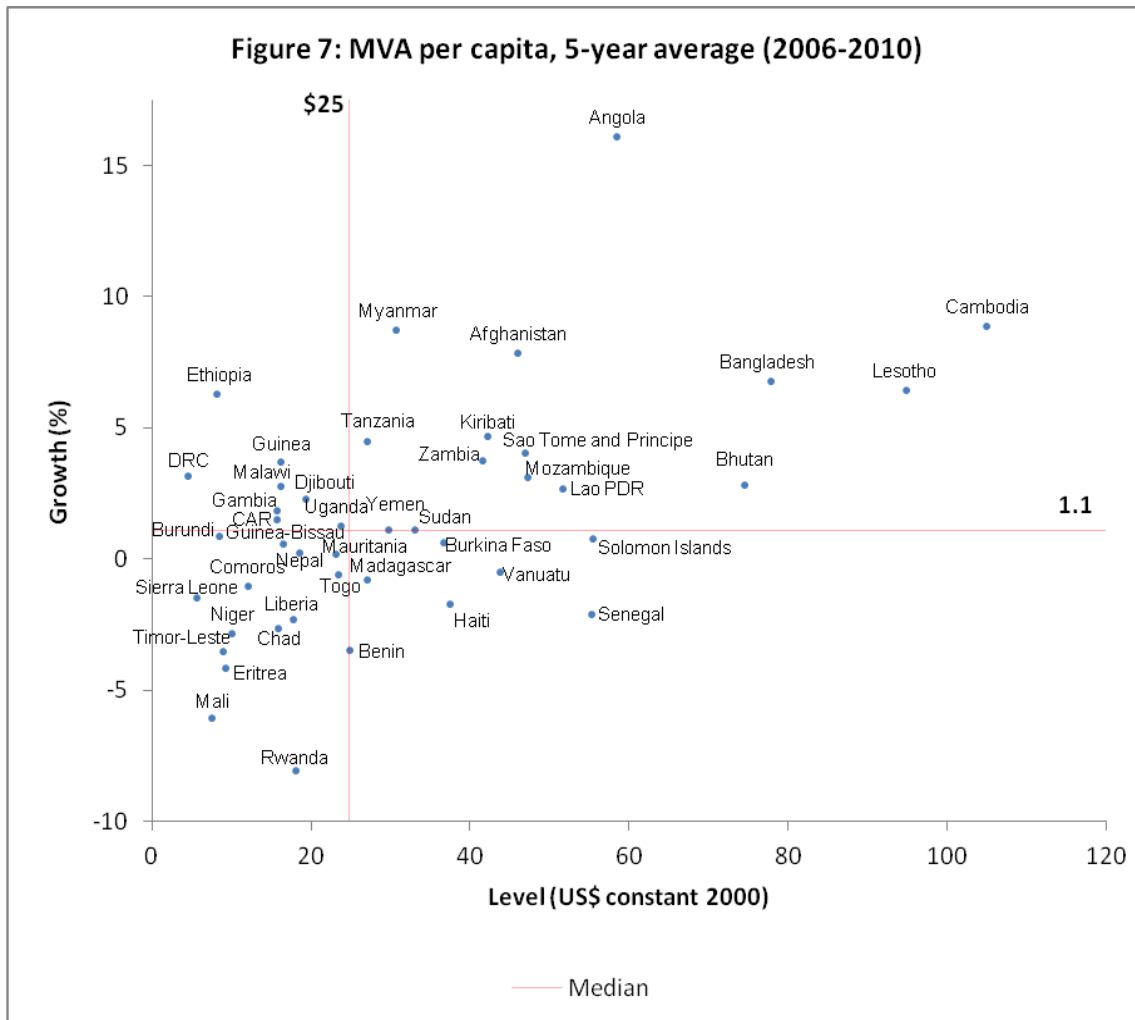
The Southeast quadrant includes countries that have also achieved relatively high levels of MVA per capita, but are experiencing difficulties in sustaining their growth. The share of MVA in GDP is similar to that of the countries in the Northeast quadrant at 10 percent. In this group, Senegal has the third highest 5-year average MVA per capita at US\$ 55 (constant 2000 dollars). Despite some high-performing sectors such as fish processing, chemicals and building industries (Mbaye, 2002), Senegal's overall industrial performance has been poor, as illustrated by the negative average growth of MVA per capita over 2006-2010—notwithstanding the adoption of the Accelerated Growth Strategy in 2006, which aims to boost growth to at least 7 percent by targeting five sectors.⁶

The Northwest quadrant regroups several countries with a low industrial base, but a significant level of growth; among these, Ethiopia is the fastest growing country with an MVA growth rate of 9.0 percent over 2006-2010, and an MVA per capita growth rate of 8.1 percent due to lower and in fact declining population growth. This remarkable growth rate is attributable to the Ethiopian government's leadership in addressing market failures and promoting growth in, e.g., the leather industry, drawing on industrial policy inspired by East Asian countries such as Republic of Korea and Taiwan (Province of China) (Altenburg, 2010).

Finally, we find countries with declining MVA per capita in the Southwest quadrant from already relatively low levels, such as Liberia, Mali or Niger. The average level of MVA per capita and growth in this group was US\$ 14 (constant 2000 dollars) and -2.3 percent. Manufacturing also hardly contributes to economic output with a share of MVA in GDP at 5.5 percent in 2010. Among LDCs, these countries face the most serious challenges in terms of stimulating industrial development; and deliberate government interventions may be crucial to

⁶ These sectors are: (i) agro-industries and food processing; (ii) fisheries; (iii) tourism, crafts and cultural industries; (iv) cotton, textiles and clothing; and (v) information and communication technologies, and teleservices (Ndiaye, 2008).

place the countries on the path of sustained industrialization.⁷ Several steps, e.g., in Mali, have been taken in this direction through planned investments in strategic sectors such as oil seeds and crop products, fruits and vegetables, animal products, dry cereals and construction materials (Ministère de l'Industrie, des Investissements et du Commerce, 2010, Mali).



Source: UNIDO (2010a).

Note: Samoa is not in this graph; its MVA per capita is US\$ 187 and its growth rate -6.9 percent.

The manufacturing sector in LDCs, albeit at an early stage of development, grew faster than the GDP in 2001-2010, which has resulted in a higher level of industrialization, measured by the growing share of MVA in GDP (Table 3). This is in line with classical structural change theory which, given LDCs' level of development, predicts a shift from agriculture to industry (see, e.g., Chenery, 1979, Chenery, Robinson and Syrquin, 1986). However, while several countries have embarked on the path towards industrialization, others, in contrast, are facing deindustrialization.

⁷ See also UNCTAD/UNIDO (2011).

In total, 50 percent of LDCs exhibited a decreased MVA between 1990 and 2000; this percentage rose to 60 percent between 2000 and 2010.

The LDCs' higher share of MVA in GDP is in fact driven by Asian LDCs whose share of MVA increased from 10.6 percent in 1990 to 13.9 percent in 2010. In contrast, the share of MVA in GDP of African LDCs declined from 8.1 percent in 1990 to 6.9 percent in 2010.

More vulnerable countries, namely landlocked and SIDS LDCs, experienced deindustrialization. Furthermore, it must also be noted that landlocked LDCs in both Africa and Asia recorded a decline in MVA share in GDP, emphasizing the debilitating effect of the lack of sea access.

Table 3: Share of MVA in GDP of LDCs, 1990, 2000, 2010

Year	LDCs			Landlocked LDCs			SIDS
	All	African & Haiti	Asia	All	African & Haiti	Asia	
1990	9.1	8.1	10.6	10.4	9.7	12.3	12.5
2000	9.8	7.7	12.5	9.4	8.5	12.1	8.5
2010	10.2	6.9	13.9	8.0	6.8	10.9	8.2

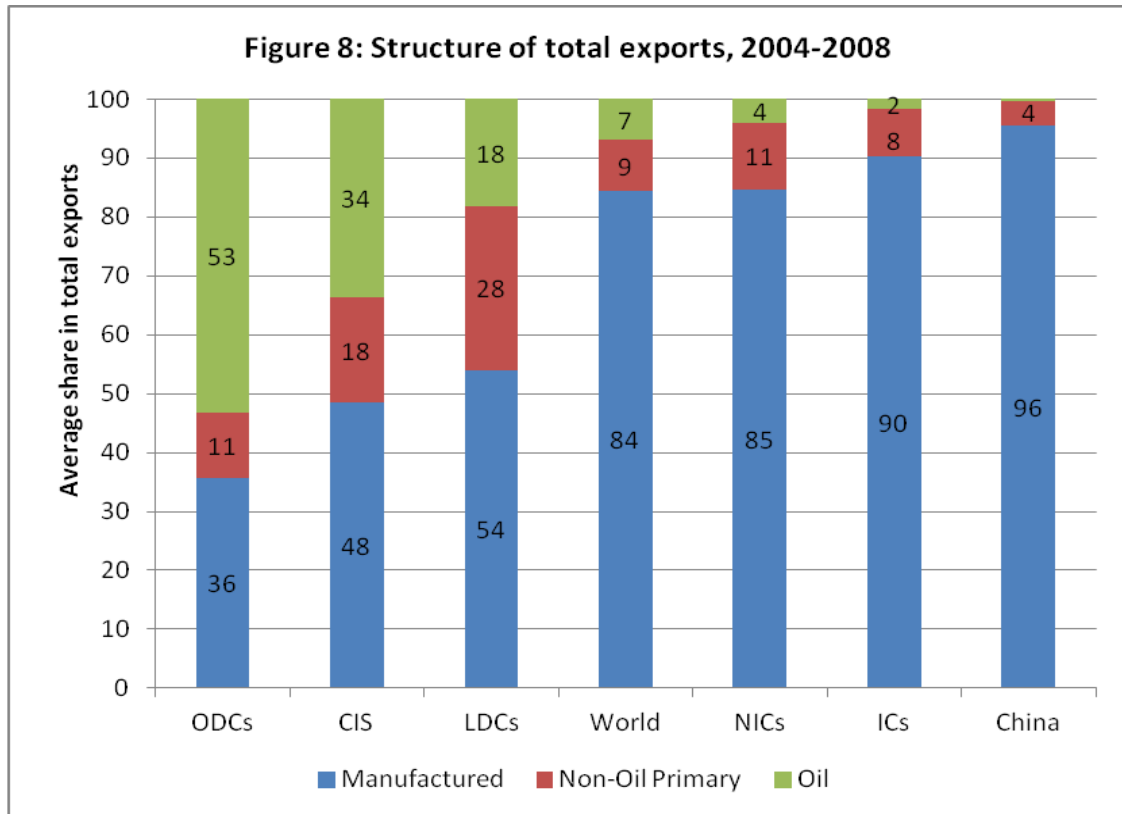
Source: UNIDO (2010a).

4. State of manufactured exports in LDCs

In this section, we present the exports structure of LDCs according to product type, level of technology, and market and product diversification. We also analyse the export performance of LDCs in the new global environment.

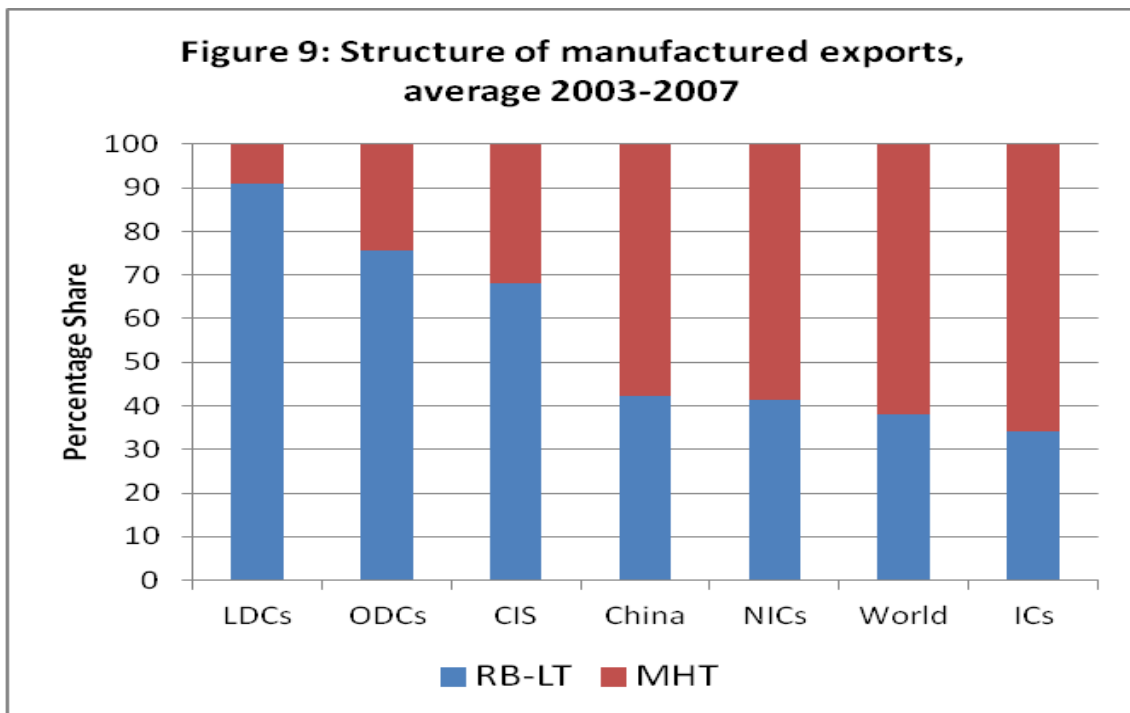
4.1 Exports structure

Although trade can play a powerful role in LDCs' development, its potential may not be fully realized as long as LDCs rely on commodities as their primary export products. The share of primary non-oil products in LDCs' total exports is highest among the country groups, at 28 percent compared to 11 percent for ODCs and 2 percent for ICs (Figure 8). Although the share of manufactured products in LDCs (54 percent) is higher than that in ODCs (36 percent) and CIS (48 percent), countries in these latter groups can rely on higher shares of oil products as a source of revenue.



Source: UN (2011).

Compared to other development groups, LDCs had the highest share of resource-based and low-technology exports at over 90 percent, on average, between 2003 and 2007 (Figure 9).



Source: UN (2011).

Although the manufacture of more technologically advanced products may be more desirable, LDCs can capture higher benefits from trade by specializing in dynamic exports sectors, which may be defined as those with the highest growth rates or potential for growth in world merchandise exports. By concentrating its exports on “dynamic” activities, a country can arguably limit the risk of export market saturation from an increased number of competitors, and exploit the potential for long-term productivity growth associated with an export-oriented industrialization strategy (Mayer, Butkevicius and Kadri, 2003). However, according to these authors, it is worth noting that developing country exports largely focus on labour-intensive production stages. Consequently, competition by a greater number of developing countries in exporting dynamic products may decrease export prices, hence eroding the benefits from increased exports.

In the period 2004-2008, 13 out of 20 of the most dynamic products were RB or LT products (IDR, 2011). High-tech sectors, which are very difficult for LDCs to enter, are therefore not necessarily dynamic sectors. Table 4 shows that LDCs are benefiting from high demand in several sectors such as iron, copper, ferrous waste and scrap, with growth rates higher than world growth rates. The dynamism of RB products, particularly metallic products, can be explained by the huge demand from countries like China and India, which require considerable volumes to supply metal-intensive industries such as the construction and automotive industries. This trend opens up new opportunities for low and middle income resource-rich countries that may be able to take advantage of upward pressure on the price of these commodities. For other resource-based sectors such as petroleum products, non-ferrous waste and scrap or fixed vegetable oil, the benefits of high global demand have yet to materialize for LDCs. Moreover, the share of LDCs in dynamic sectors is very low, typically below 1 percent, except for iron ore and concentrates where it reached 1.2 percent.

4.2 Concentration of exports

A well-known feature of LDCs’ exports is their degree of concentration, both in terms of product and market. In 2007, LDCs’ aggregated Herfindhal index was 0.23 and 0.13 for products and markets, respectively, compared to 0.19 and 0.14 for ODCs, 0.03 and 0.08 for China, and 0.03 and 0.10 for industrialized countries.⁸

⁸ The small range of the market diversification index can be explained by the limited number of markets in the world compared to the number of products.

Table 4: Growth rate and share of LDCs in world's most dynamic manufactured exports above 20 billion, 2004-2008

Ranking	Code	Technology category	Product	World average annual growth rate 2004-2008 (%)	LDC average annual growth rate 2004-2008 (%)	LDC share in world dynamic industries
1	281	Resource-based	Iron Ore, Concentrates	41.9	33.0	1.2
2	287	Resource-based	Ore, Concentr.Base Metals	37.3	69.4	0.6
3	562	Medium-technology	Fertilizer, Except Grp272	35.8	1.6	0.5
4	334	Resource-based	Petroleum Products	34.0	-3.0	1.0
5	751	High-technology	Office Machines	33.2	25.1	0.0
6	671	Medium-technology	Pig Iron, Spiegeleisen, etc	32.2	28.2	0.0
7	871	High-technology	Optical Instruments, Nes	32.1	-20.2	0.0
8	282	Resource-based	Ferrous Waste And Scrap	32.0	40.2	0.2
9	283	Resource-based	Copper Ores, Concentrates	31.5	132.8	1.0
Ranking	Code	Technology category	Product	World average annual growth rate 2004-2008 (%)	LDC average annual growth rate 2004-2008 (%)	LDC share in world dynamic industries
10	676	Low-technology	Iron, Stl. Bar, Shapes Etc.	30.6	44.3	0.1
11	288	Resource-based	Non-Ferrous Waste, Scrap	29.6	25.7	0.2
12	679	Low-technology	Tubes, Pipes, Etc. Iron, Stl	29.2	35.1	0.0

13	672	Medium- technology	Ingots Etc. Iron Or Steel	28.7	31.9	0.0
14	422	Resource- based	Fixed Veg. Fat, Oils, Other	27.8	17.1	0.3
15	335	Resource- based	Residual Petrol. Products	26.6	-1.4	0.5
16	691	Low- technology	Metallic Structures Nes	26.4	50.5	0.0
17	522	Resource- based	Inorganic Chem. Elements	25.3	9.5	0.7
18	673	Low- technology	Flat-Rolled Iron, etc.	24.73	-15.77	0.0
19	723	Medium- technology	Civil Engineering Equipt	23.45	40.25	0.1
20	793	Medium- technology	Ship, Boat, Float. Structrs	21.70	-5.75	0.1

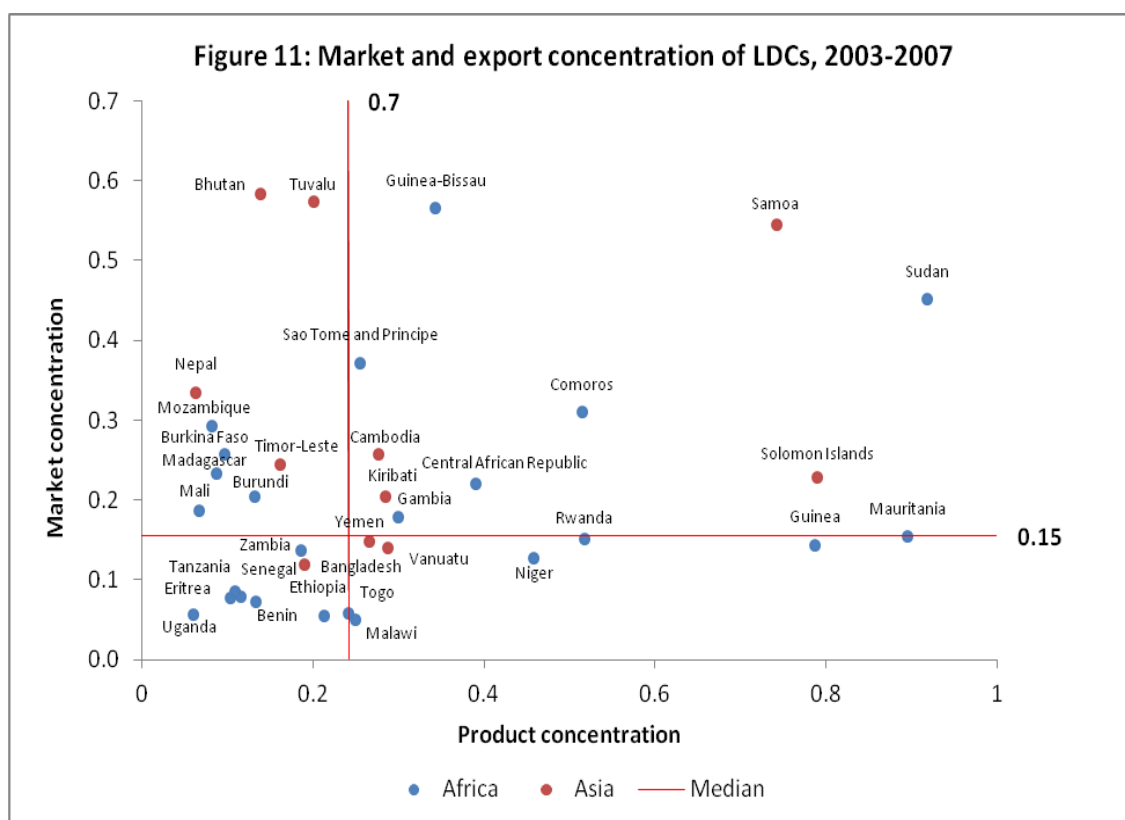
Source: UN (2011).

Figure 11 illustrates the concentration index of LDCs both at the product and market level—the higher the index, the higher the concentration level. In the Northeast quadrant, countries such as Samoa and Sudan have the highest degree of concentration, with exports concentrated, respectively, in equipments for electricity distribution to Australia and petroleum products to China. Several other LDCs in the same quadrant, such as Central African Republic, The Gambia, or São Tomé and Príncipe, display similarly high levels of concentration with around five products accounting for more than 80 percent of total exports.

Although they have a relatively low market concentration, countries in the Southeast quadrant are typically characterized by high product concentration. Over 90 percent of exports earnings in Guinea came from aluminium ore, while more than 75 percent of Niger's exports in 2007 were derived from uranium ore.

The Northwest quadrant regroups countries with relatively diversified product exports to a few markets. For example, in 2007, Bhutan predominantly traded with India (81 percent of total exports), while South Africa emerged as Mali and Mozambique's top trading partner, with 67 and 50 percent of total exports, respectively.

Finally, Bangladesh, Senegal and Uganda belong to the most diversified LDCs. However, their degree of diversification should be put into perspective. For example, in 2007, more than 85 percent of exports from Bangladesh came from the textile, leather and footwear industries, and 29 percent of total exports were destined for the USA. Compared to other countries outside the LDC group, Bangladesh's economy may appear quite concentrated.



Source: Own calculations, based on UN (2011).

Note: Several LDCs were not graphed due to lack of data.

Overall, LDCs trade mostly with industrialized countries, with 85 percent of Asian LDCs' manufactured exports and 51 percent of African LDCs' manufactured exports, on average, being exported to industrialized countries between 2005 and 2007. The second largest trading partners of LDCs in both Asia and Africa are their own regions, at 11 and 31 percent, respectively. Interestingly, the top trading region for several African LDCs is sub-Saharan Africa. The countries include Mali (77 percent), Mozambique (68 percent), Senegal (57 percent), Togo (67 percent) and Uganda (33 percent).

If African LDCs are to grow and diversify their industrial capacities, targeting intra-African markets, which absorb the bulk of sub-Saharan African manufactured exports, is a promising strategy (South Centre, 2010). Moreover, sub-Saharan African exports to other African markets appear more sophisticated than those to Europe or North America, thereby presenting more

growth-enhancing and learning opportunities for their manufacturing sectors (see, e.g., Kingler, 2009).

4.3 Exports growth

In 2007, the share of LDCs in total world exports represented less than 0.3 percent; primary products represented about 1 percent of total world exports, while manufactured products accounted for less than 0.2 percent. Manufactured exports per capita for LDCs was, on average, US\$ 44 (current values), but per capita manufactured exports was about three times higher in Asia (US\$ 75) than in Africa (US\$ 25). The per capita export of landlocked countries was typically lower than average at US\$ 16.

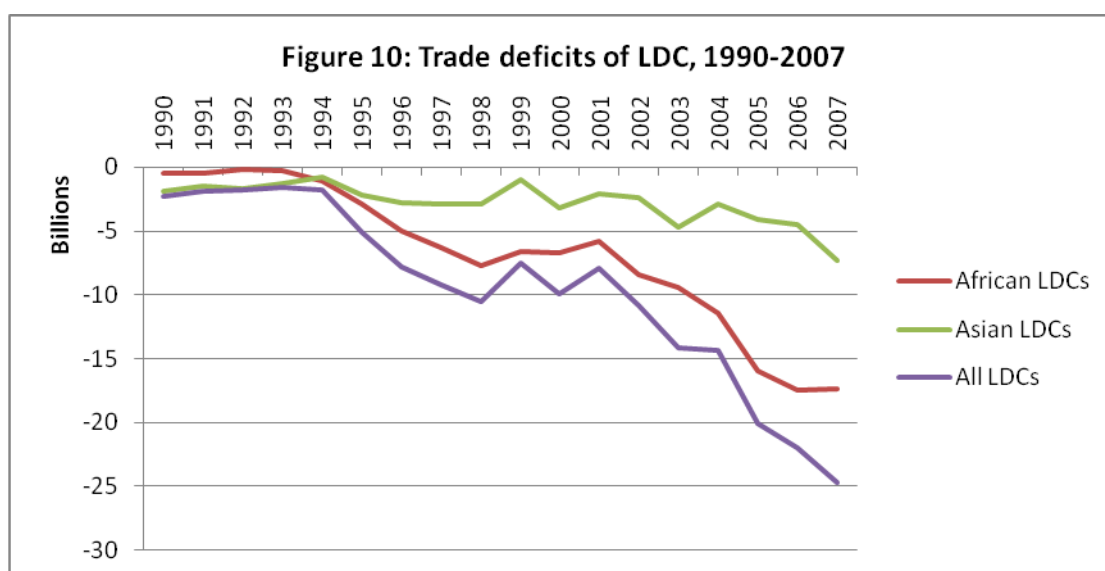
Asian LDCs accounted for 58 percent on average of LDCs' total manufactured exports, with African LDCs accounting for 48 percent in 2003-2007. Bangladesh remains the largest exporter among LDCs, accounting for about 50 percent of LDCs' manufactured exports; Bangladesh is typically followed by countries such as Sudan, Cambodia and Senegal.

Despite their marginal role in international trade, LDCs have demonstrated remarkable export performances. Total exports from LDCs reached US\$ 42 billion (current values) in 2005, up from US\$ 15 billion in 2000 (current values). Manufactured exports have grown 34 percent annually since 2000, reaching US\$ 21 billion in 2007. Primary products rose from US\$ 5 billion to US \$17 billion during the same period, growing at 22 percent per annum at a rate lower than manufactured exports. In 2008, for the first time in decades, the volume of primary exports (US\$ 27 billion) was higher than that of manufactured exports (US\$ 17 billion).

The global trade environment poses a number of additional challenges to exports growth in LDCs. Three of these are noteworthy (South Center, 2010):

- The phasing out of preferential agreements such as the Multi-Fibre Agreement, leading to increased competition among other developing countries;
- Pressure to enter free trade agreements with more advanced countries, e.g. economic partnership agreements (EPAs) between the EU and African, Caribbean and Pacific countries;
- Pressure to avoid protectionist tendencies and unilaterally correct trade-distorting measures. This is exemplified by the cotton sector which is heavily subsidized in Northern countries, but has been liberalized in several LDCs through the elimination of all forms of agricultural support.

Pressure by external partners for LDCs to adopt liberalization policies can be damaging for countries which are already running large trade deficits, especially African LDCs (see Figure 10). Indeed, several LDCs are foregoing resources from trade without being able to replace them through higher fiscal revenues (see, e.g., Glenday, 2006); this will likely erode their industrial base even further and mitigate their governments' ability to support development efforts at a time when it might be crucial given the recent global turmoil. Moreover, LDCs are highly dependent on development aid. *Official development assistance* (ODA) represents around 40 percent of LDCs' external funding.⁹ In several LDCs such as Burundi, Burkina Faso or Malawi, the ODA share is higher than 80 percent of total external funding. Foreign Direct Investments (FDI) constitute another significant external source of financing for LDCs. However, while LDCs have attracted a rising share of world FDI (1.9 percent in 2008), these investments have so far been mainly concentrated in a few resource-rich countries such as Angola (46 percent), Sudan (13 percent), and DRC (5 percent).



Source: UN (2011).

5. Discussion and conclusion

This paper has presented an overview of the industrial and manufactured export performance of LDCs. Although LDCs as a whole recorded remarkable MVA growth rates over 2001-2010, sharp differences exist between the countries. While several LDCs, in particular Asian countries, have embarked on the path towards industrialization, others, mainly African LDCs, are facing deindustrialization. With regard to international trade, LDCs continue to play a marginal role

⁹ External funds are calculated as the sum of remittances, foreign direct investments and development assistance funds, based on UNCTAD (2011).

despite remarkable export performances, with exports dominated by resource-based and low-technology products and a high concentration in terms of markets and products.

LDCs have a relatively high reliance on the primary sector, which increases their vulnerability to external shocks due, for example, to volatile commodity prices. To build more resilient economies, broadening and deepening the manufacturing sector may be deemed a desirable path as manufacturing brings several potential benefits. First, a vibrant manufacturing sector stimulates technological change with the adoption, mastery and development of improved production processes and new technologies, boosting productivity throughout the economy. This, in turn, further develops skills and learning, thereby shifting employment towards high-skill and better paid job categories. Second, manufacturing promotes economic growth through forward and backward linkages (see, e.g., Hirschman, 1958). Linkages are created when a sector utilizes the products of other sectors as inputs (backward linkages), while other sectors use their output as inputs in their production processes (forward linkages); as a result, the growth of one sector can fuel the development of other related sectors. In addition, increased activities in manufacturing can lead to the development of support sectors such as finance or transport. Finally, by taking advantage of the globalization of production, LDCs can integrate global production networks and access international markets. The expansion of trade is a central aspect of the globalization of the world economy, with manufactured exports consistently accounting for over 80 percent of total exports since 1990 (UNIDO, 2009). Compared to commodities, manufactured products are less exposed to price fluctuations (see Malik and Temple, 2009) and can yield more revenues on account of higher value-added.

Shifting economic production towards manufacturing may therefore hold higher promise for long-term growth. Yet, it will be important to lean on the primary sector as a provider of both financial resources that may be needed for investments in manufacturing and of intermediary inputs (forward linkages) that can be used in manufacturing production (see, e.g., Morris, Kaplinsky and Kaplan, 2011).

If LDCs are to improve their development performance and promote industrial development, their governments cannot continue business as usual and need to embrace evidence-based, participatory and ambitious yet realistic industrial policies and strategies. This requires simultaneous and coordinated actions in various areas of the economy, including the establishment of forward and backward linkages between agriculture and manufacturing; investments in infrastructure development for energy production, transport and telecommunication; removal of bottlenecks to improve business efficiency, e.g. by establishing commercial courts and curbing corruption; investments in technical and vocational education

and entrepreneurship development; and creation of a science-based industrial sector with links between industry, research institutions and financial actors.

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Annex 1: Country groups

Commonwealth Independent States	Newly Industrialized Countries	Other Developing Countries (cont'd)
Turkmenistan	Tunisia	Palestinian Territories
Republic of Moldova	Indonesia	Saint Lucia
Ukraine	Mexico	Papua New Guinea
Russian Federation	Argentina	Pakistan
Kyrgyzstan	Brazil	Albania
Tajikistan	India	Cameroon
Armenia	Morocco	Jamaica
Kazakhstan	Philippines	Libyan Arab Jamahiriya
Georgia	Egypt	El Salvador
Uzbekistan	Uruguay	Nicaragua
Belarus	Colombia	Kenya
Azerbaijan	Turkey	Serbia
	Thailand	Martinique
Industrialized Countries	Malaysia	Mauritius
Belgium	Chile	Bolivia (Plurinational State of)
Poland	China, Taiwan Province	Saudi Arabia
Israel	China, Hong Kong SAR	Peru
Romania		Croatia
Switzerland	Other Developing Countries	Nigeria
Italy	Montenegro	Zimbabwe
Greece	Cook Islands	Puerto Rico

Finland	Netherlands Antilles	Panama
Ireland	Lebanon	French Guiana
Cyprus	Mongolia	Kuwait
Portugal	Réunion	Bahrain
Lithuania	United States Virgin Islands	Costa Rica
Austria	Viet Nam	Seychelles
Canada	Guatemala	Gabon
Malta	Ghana	Fiji
Norway	British Virgin Islands	Palau
Denmark	Trinidad and Tobago	Honduras
Bulgaria	Saint Kitts and Nevis	Maldives
Latvia	Tonga	Venezuela (Bolivarian Republic of)
South Africa	The f. Yugosl. Rep of Macedonia	Iraq
Iceland	Montserrat	Guadeloupe
Slovenia	Belize	Dominican Republic
United States of America	United Arab Emirates	Algeria
France	Grenada	Guyana
Hungary	Swaziland	Aruba
Japan	Brunei Darussalam	Côte d'Ivoire
Estonia	French Polynesia	Marshall Islands
Australia	Anguilla	Congo
United Kingdom	Sri Lanka	Jordan
Republic of Korea	Qatar	Bermuda
Netherlands	China, Macao SAR	Cape Verde
Spain	Dominica	Iran (Islamic Republic of)

Czech Republic	New Caledonia	Democratic People's Rep of Korea
Singapore	Equatorial Guinea	Saint Vincent and the Grenadines
Slovakia	Syrian Arab Republic	Paraguay
Luxembourg	Cuba	Antigua and Barbuda
Sweden	Botswana	Guam
Germany	Namibia	Bosnia and Herzegovina
New Zealand	Micronesia, Federated States of	Barbados
Liechtenstein	Ecuador	Suriname
	Bahamas	Oman



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