4

"Technology and know how, innovation and creativity are today key factors for productivity improvement and economic growth. Unfortunately, the international environment presents to the LDCs more challenges than opportunities. We need to address this gap to achieve our MDGs and other development goals."
Sheikh Hasina, Prime Minister of Bangladesh

Building the Productive Capacity of the Least Developed Countries

The previous chapter considered how future growth and development in the region could be achieved through greater regional integration supported by greater connectivity. If the least developed countries are to benefit from regional integration, however, they will need to increase their productive capacity. For this purpose, they must do more than increase the output of existing products; if they are to climb the rungs of the development ladder, they will instead need to produce and trade new and more sophisticated products. This was the development path successfully followed by Japan and, from the early 1960s, by the Republic of Korea, Singapore and Taiwan Province of China.

Table 4.1 summarizes a few indicators that are typically associated with productive capacity for the production and trade of Asia-Pacific least developed countries. It shows that their share in total GDP is less than one tenth of their share in the global population, and for the past 30 years, it has been lower than it was 40 years ago—lower than 0.25% since 1980 compared with 0.43% in 1970. Similarly, their share of global manufacturing value added, which measures the contribution of the manufacturing sector in total production, has also been lower—it was 0.6% in 1970 and declined to about half of that value for most of the past three decades. In terms of trade, least developed countries have been marginal exporters—their share in merchandise exports has been lower than 0.25% throughout a period when total world merchandise exports in current terms has increased 42-fold. In addition, least developed countries have contributed less than 0.2% of manufactured exports and less than 0.01% of world's high-technology products.

The importance of the transformation of productive capacities for development has received growing attention through a series of United Nations Conference on Trade and Development (UNCTAD) least developed country reports,[1] which have argued that national and international policy should focus on developing productive capacities—and the related expansion of productive employment—to achieve sustained development and poverty reduction in the least developed countries (see box 4.1). Such an approach to development presents an alternative to the set of orthodox growth theories that have guided policy discourse over the past three decades, and it brings production and productive employment back to the development agenda. Strategic diversification of production is a key element of this approach.

Anyone from a developing country visiting a supermarket in an industrialized country for the first time will be struck by the amount and variety of products on offer. Wondering how her own country could one day become that rich and match that range, the curious visitor would be told that the country should specialize in the things that it can produce with higher relative efficiency. Hence, if it grows bananas more efficiently than it manufactures cars, computers or airplanes, then it should stick to bananas and acquire the variety of products needed to fill its supermarket shelves through trade.

The inquisitive visitor would certainly note, however, that the developed country also has the advantage of many other kinds of diversity. For example, it has a rich variety of professionals specializing in every imaginable area, along with a wide range of companies producing all manner of goods and services, and farms producing an ever-increasing range of agricultural products. Further, this variety of economic activities and the whole social structure that supports and co-evolves with them emerged not more than few generations ago—a time in which the living standards were comparable with those in her own country. How could her country rapidly achieve something similar by producing bananas? The answer is: it cannot.

Table 4.1. Share of Asia-Pacific least developed countries in international production and trade

(Percentage)

Indicator	1970	1980	1990	2000	2007	2008	2009
Population	3.18	3.21	3.44	3.65	3.83	3.78	3.86
GDP	0.43	0.22	0.18	0.22	0.23	0.24	0.25
Manufacturing, value added	0.60	0.14	0.16	0.16	0.20	0.31	0.58
Merchandize exports	0.11	0.12	0.09	0.17	0.19	0.19	0.24
Manufactured exports	0.01	0.06	0.07	0.16	0.12	0.04	0.01
High-technology exports	..	..	0.00	0.00	0.01	0.00	..

Source: ESCAP, based on data from the World Bank.

Box 4.1. Least developed countries in Asia and the Pacific

The ESCAP region currently has 13 designated least developed countries: Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, Lao People's Democratic Republic, Myanmar, Nepal, Samoa, Solomon Islands, Timor-Leste, Tuvalu and Vanuatu. Maldives graduated from that status in January 2011 but it is included in the group of least developed countries analysed in this chapter given that it refers to the period prior to the graduation. The list is reviewed every three years based on three criteria. The first criterion is low income, based on gross national income (GNI) per capita, with a threshold of $905 for addition to the list and $1,086 for graduation from it. The second is human assets weakness, based on indicators of nutrition, health, school enrolment and literacy. The third is economic vulnerability, based on indicators of exposure and vulnerability to natural and trade shocks. To graduate from least developed country status, a country needs to meet thresholds under at least two criteria in at least two consecutive reviews. Regardless of its performance on the other two criteria, however, a country will be eligible for graduation if it has a GNI per capita of more than double the threshold.[2]

The least developed countries in Asia and the Pacific face a range of problems. They generally suffer from high costs for food, development and transport. In addition, they lack technical skills, have limited domestic savings and are vulnerable to external shocks, including natural disasters.

They also have limited opportunities for realizing economies of scale. For some, such as those in the Pacific, this is because they are remote and have small populations. For others, such as Bangladesh, Cambodia and Nepal, it is because a high proportion of their people live below the poverty line. These limitations have hampered progress towards reducing poverty and hunger and achieving other Millennium Development Goals. Their progress has also been slowed by the food and energy crises of 2008 and 2009, the global financial and economic crisis, and the recent increase in food and oil prices, all of which have increased their vulnerability and further undermined their economic and social development.

Source: ESCAP.

The recent literature has demonstrated that economic development is associated not with producing more of the same goods and services but with expanding the range.[3] As incomes increase, economies become more diversified. Only much later are they likely to specialize.[4] As a result, the rich nations export a wide range of products, including goods also exported by poorer nations, although the rich-country versions have higher unit values.[5]

The importance of diversity may not be evident in current mainstream economic policy discourse, but it has certainly been noticed in the past. One review of the work of seventeenth century economists, for example, concluded: "… it is as if these theorists said: if you wish to estimate the wealth of a city, count the number of professions found within its walls…the larger the number of professions, the wealthier the city".[6]

This chapter reviews the relationship between development, diversity and productive capacities. Instead of the usual approach, which focuses on particular elements of productive capacities, such as productive resources, entrepreneurial capabilities and production linkages, this chapter takes an empirical approach, inferring a country's productive capacity from its mix of actual products (see box 4.2).

Since there are few systematically disaggregated data on each country's production, however, it uses as a proxy the more readily available data on the composition of exports (see box 4.3). It then identifies the opportunities for expanding capacities and take greater advantage of regional integration.

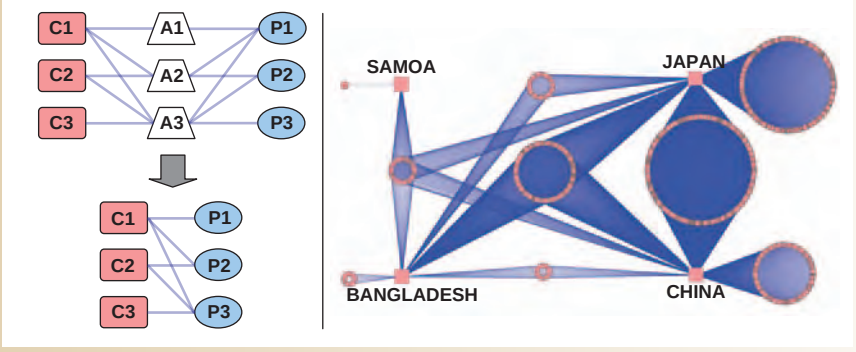
Patterns of diversification

Diversification is the process of expanding the range of goods produced. It may involve producing higher

Box 4.2. Assessing productive capacities

This chapter's assessment of productive capacities seeks to infer the capabilities available in a country by looking at the products that it already produces.[7] The methodology assumes that: (a) products require specific combinations of capabilities; (b) countries have some capabilities but not others; and (c) if they have all the required capabilities, they will produce the corresponding goods.[8]

As illustrated in the figure below, if country C1 has capacities A1, A2 and A3, it can produce all three products P1, P2 and P3. Country C2, however, only has capacity A2 and A3, so it can only produce P2 and P3. The figure also presents a subset of the bipartite network showing Bangladesh, China, Japan and Samoa and all the products they exported. Thus, each country has products that are also produced by other countries, which are indicated in the shared circles, along with other products for which it is the sole producer in this group.



Source: ESCAP, based on Hidalgo and Hausmann (2009).

Box 4.3. Use of trade data to assess productive capacities

To estimate the products that a country can produce, this chapter uses trade data from the United Nations Commodity Trade Statistics Database (COMTRADE),[9] disaggregated at the five-digit level using the Standard International Trade Classification (SITC), Rev. 2, which makes it possible to differentiate products that are otherwise very similar. For example, one can differentiate women's dresses based on their fabric, such as cotton or man-made fibre.

If a country exports a certain product, it is assumed that the country has the capabilities required to produce it. Exports may not, however, fully reflect diversification since some of the production may only be for local consumption. This chapter, however, uses the composition of exports as a proxy for the country's production and uses the terms "exports", "products" and "goods" interchangeably.

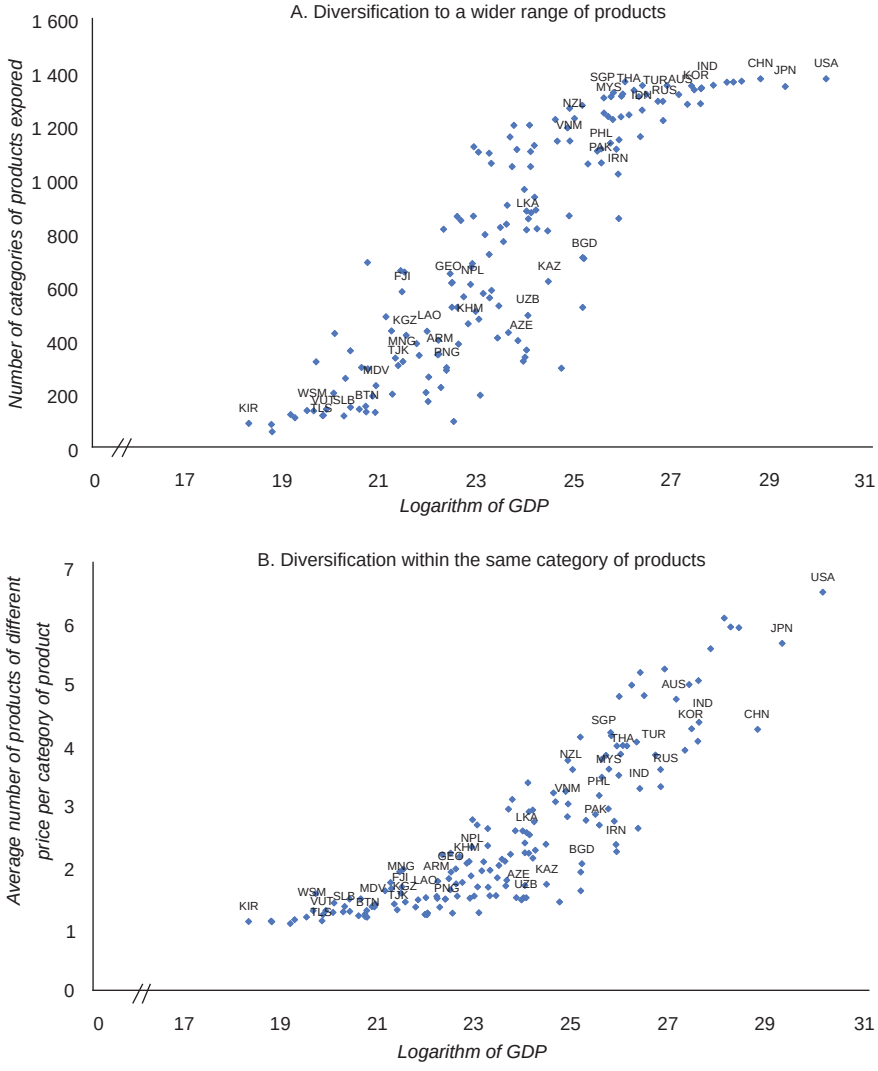
One issue to take into account is that, for a given product, one country seldom produces all the constituent parts. Indeed, many developing countries export, with minor value added, products that they have just imported. The analysis in this chapter, however, is able to differentiate between two cases, as can be illustrated by the production of computers. In the first case, a developing country may import from a developed country the microprocessors needed to assemble computers. The analysis considers that the capacities required to produce computers are different from those required to produce microprocessors. The fact that developing countries import sophisticated parts and components of products does not, therefore, increase their productive capacity. A second issue is the degree of sophistication, even of the same product. When developed and developing countries export the same product to the same country, the higher-income country will systematically export one with a higher unit price. In the analysis, we consider computers, for example, of different prices as different products. Hence, the productive capacities available in these countries for these products are inherently different.

Source: ESCAP.

value added versions of the same good: firms can, for example, sell a product at a higher price by incorporating different designs, developing new brands or exploring new ways of marketing. Diversification may also involve producing a wider range of products. Thus, Bangladesh or Cambodia, for example, could diversify to produce more expensive garments or they could diversify into the manufacture of the relevant machinery and other related products.

Diversification leads to increases in total output, as illustrated in figure 4.1, which shows that the countries that export the greatest number of categories of products and those which have more products at different prices within those categories tend to have higher levels of GDP. The patterns of GDP increase differ, though. For diversification towards a wider range of products, the increase tails off at higher levels of GDP – in the figure that happens near the GDP value for Malaysia. This

Figure 4.1. Diversification and GDP, 2009



Source: ESCAP, based on data from the World Bank, World Development Indicators Database and the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: Products are classified using five-digit SITC, Rev. 2 classifications. Products under the same five-digit classification are further differentiated based on their unit value. See Freire (2011) for details. The three-letter codes used in the figure to represent country names are the alpha-3 country codes published in International Organization for Standardization (2006).

observation is consistent with other studies that have used disaggregated export data.[10] For diversification into different varieties of similar goods, however, the increase does not seem to reach an upper limit.

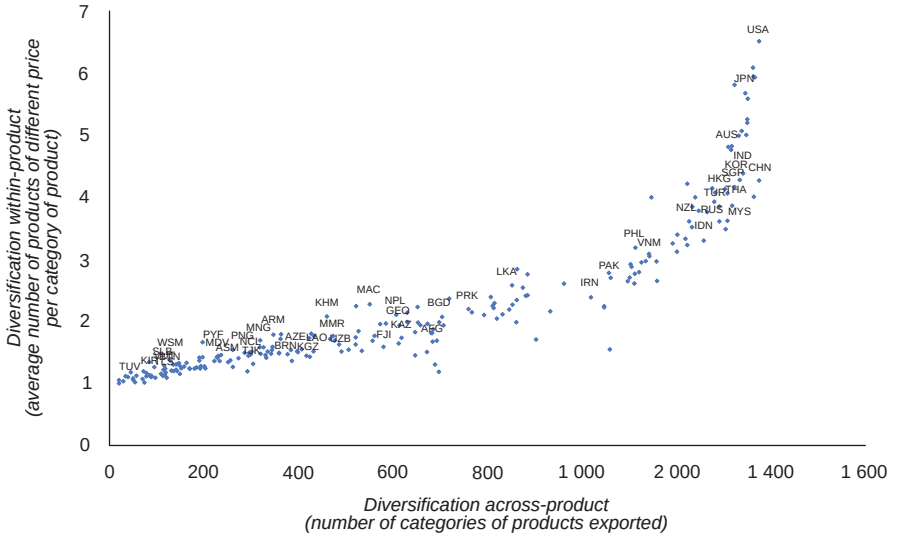
These results suggest that richer countries continue to diversify. Japanese garment firms, for example, diversified into medium- and high-unit-value products beginning in the 1980s. Jane Jacobs noted in 1969 the emergence of the differentiated production of garments, based on much smaller production runs: "This method produces relatively modest amounts of each item as compared with mass production, yet it is not craft manufacturing either…. Thanks to this… kind of garment making, one can look at a crowd of thousands of persons in a large city park… and be hard put to find two women or two children dressed in identical outfits." The richer countries have steadily adopted this differentiated production leaving most of the mass production to poorer nations.[11]

Diversifications within and between categories of products are not mutually exclusive. On the contrary, they occur simultaneously, as illustrated in figure 4.2, which shows that the countries that produce the larger range of products are also those that produce the larger variety within each category. As the number of product categories rises, however, (for example, to over 1,200 in 2009), the dominant form of diversification is the expansion of production of different varieties within the same category. Given that the two processes are interlinked, the analysis in this chapter will therefore consider diversification to be the sum of the two—both the number of different categories and, within these, the products at different unit values.

Making exports more exclusive

As economies diversify, they tend to export products that are exported by fewer other countries. This will generally mean more exclusive manufactured goods as opposed to more common exports, such as vegetable oils, fish, textiles, garments or mining products. This is illustrated in figure 4.3. Each country's position on this chart is determined by both the number of products it exports and their exclusiveness, as indicated by the number of other countries exporting a similar product mix.

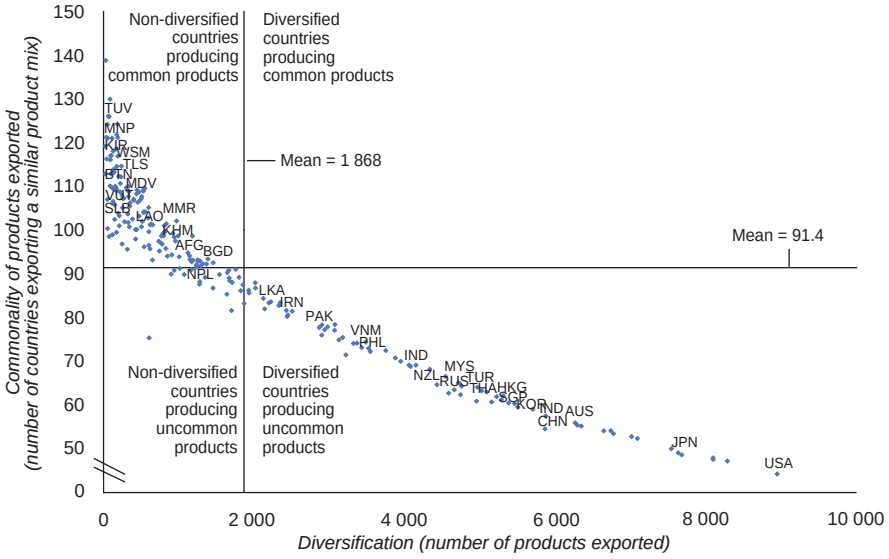
Figure 4.2. Simultaneous diversification within and across product categories, 2009



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: Products are originally classified using five-digit SITC, Rev. 2 classifications. Products under the same five-digit classification are further differentiated based on their unit value. See Freire (2011) for details. The three-letter codes used in the figure to represent country names are the alpha-3 country codes published in International Organization for Standardization (2006).

Figure 4.3. As countries diversify, they produce more exclusive products



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: Products are originally classified using five-digit SITC, Rev. 2 classifications. Products under the same five-digit classification are further differentiated based on their unit value. See Freire (2011) for details. The three-letter codes used in the figure to represent country names are the alpha-3 country codes published in International Organization for Standardization (2006).

Countries that fall in the top left quadrant are the least diversified. This is typical of small island economies in the Pacific. Tuvalu, for example, exported only 75 different types of products in 2009 and was in competition with 126 other economies that exported products of that same export mix. Very different, and diagonally opposite, is the United States, which exported almost 9,000 types of products, which are also less common, being exported, on average, by only 44 other economies. This suggests that, as they diversify, countries do not select new goods at random but rather choose those that are likely to be more exclusive.

Table 4.2 lists countries in the Asia-Pacific region that fall in each quadrant. The countries with more diversified production and more exclusive product mixes are Japan, Australia, China and India, with Japan being the most diversified. In general, the least developed countries are less diversified and produce fairly standard goods. One exception is Nepal: although not yet diversified, it has an above-average exclusive mix, including medium-priced textile yarn, floor coverings, and apparel and clothing accessories. Similarly, the Democratic People's Republic of Korea and Kazakhstan are not very diversified but they nevertheless have less common products, such as electrical machinery, base metal manufactured goods, and artificial resins and plastics.

All of the Pacific island developing economies are less diversified and tend to produce common goods. The least diversified is Palau, which exported 64 products in 2009 with a mix that is exported by 126 economies, while the most diversified is Fiji, which exported 922 products. Most countries in North and Central Asia also produce relatively common products.

Figure 4.4 highlights the situation of the least developed countries. Here again, the Pacific island countries are in the weakest position. To some extent, this is a result of their small size. Bangladesh, on the other hand, with the largest population, can

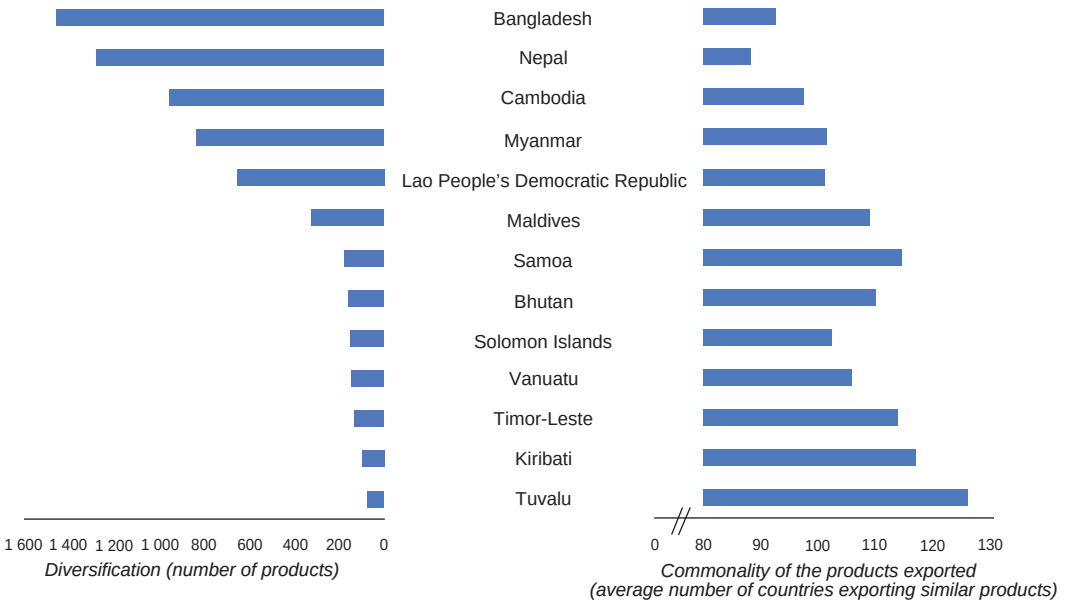
Table 4.2. Economies classified by the diversity of their product mix

Subregion	Economy
Diversified economies producing uncommon products	
ENEA	China; Hong Kong, China; Japan; Republic of Korea
NCA	Russian Federation
PAC	Australia, New Zealand
SEA	Indonesia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
SSWA	India, Iran (Islamic Republic of), Pakistan, Sri Lanka, Turkey
Non-diversified economies producing uncommon products	
ENEA	Democratic People's Republic of Korea
NCA	Kazakhstan
SSWA	Nepal
Non-diversified economies producing common products	
ENEA	Macao, China; Mongolia
NCA	Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
PAC	American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu
SEA	Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Myanmar, Timor-Leste
SSWA	Bangladesh, Bhutan, Maldives

Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Note: Subregional groupings are as follows: ENEA, East and North-East Asia; NCA, North and Central Asia; PAC, Pacific; SEA, South-East Asia; SSWA, South and South-West Asia.

Figure 4.4. Diversification in the least developed countries



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

support more diversified production. Overall, a 1.0% increase in population is associated with a 0.3% increase in diversification. This association is statistically significant and explains over 30% of the intercountry variation in diversification. Countries with small populations therefore face an inherent disadvantage in their process of diversification.

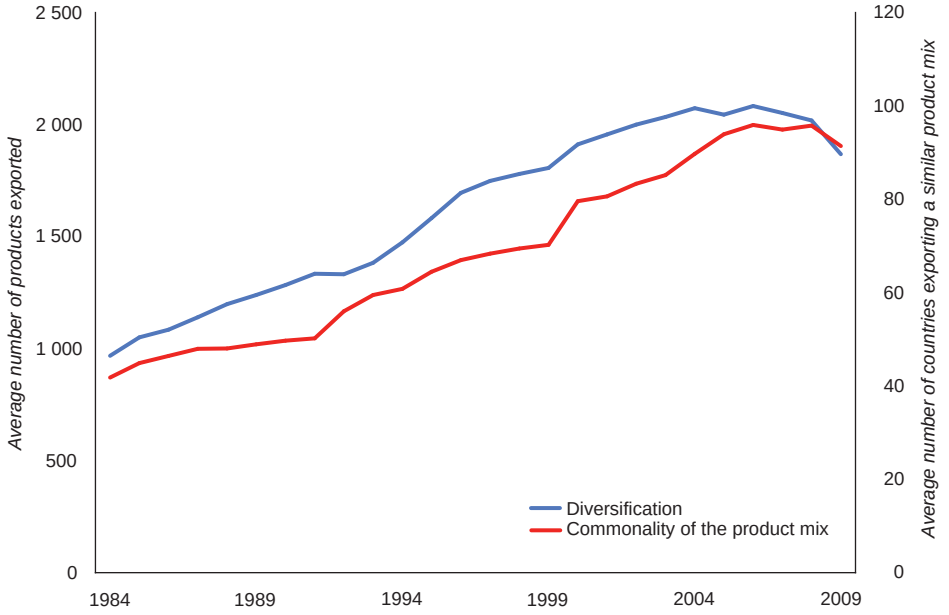
Countries wishing to diversify can anticipate competition, since most other countries are aiming to move in a similar direction. Figure 4.5 tracks global progress in diversification. Between 1984 and 2009, average diversification rose from 968 to 1,868 products. The product mix, however, was becoming more standard: for the average country, the number of countries exporting a similar product mix increased from 41 to 91. Given this global trend, countries that do not diversify are likely to fall behind.

Mapping diversification

In order to diversify, firms in poorer countries will need to choose the most appropriate new products. The easiest will be those for which the required capabilities are similar to those already available. Moving from women's dresses to undergarments, for example, would be quicker than moving to the production of women's shoes, which would not only entail working with new materials, such as leather, plastic, rubber, wood, jute or metal, but also have different environmental and health requirements. New products may need different capabilities, such as machinery or skills, as well as better infrastructure, marketing strategies, standards and regulations.

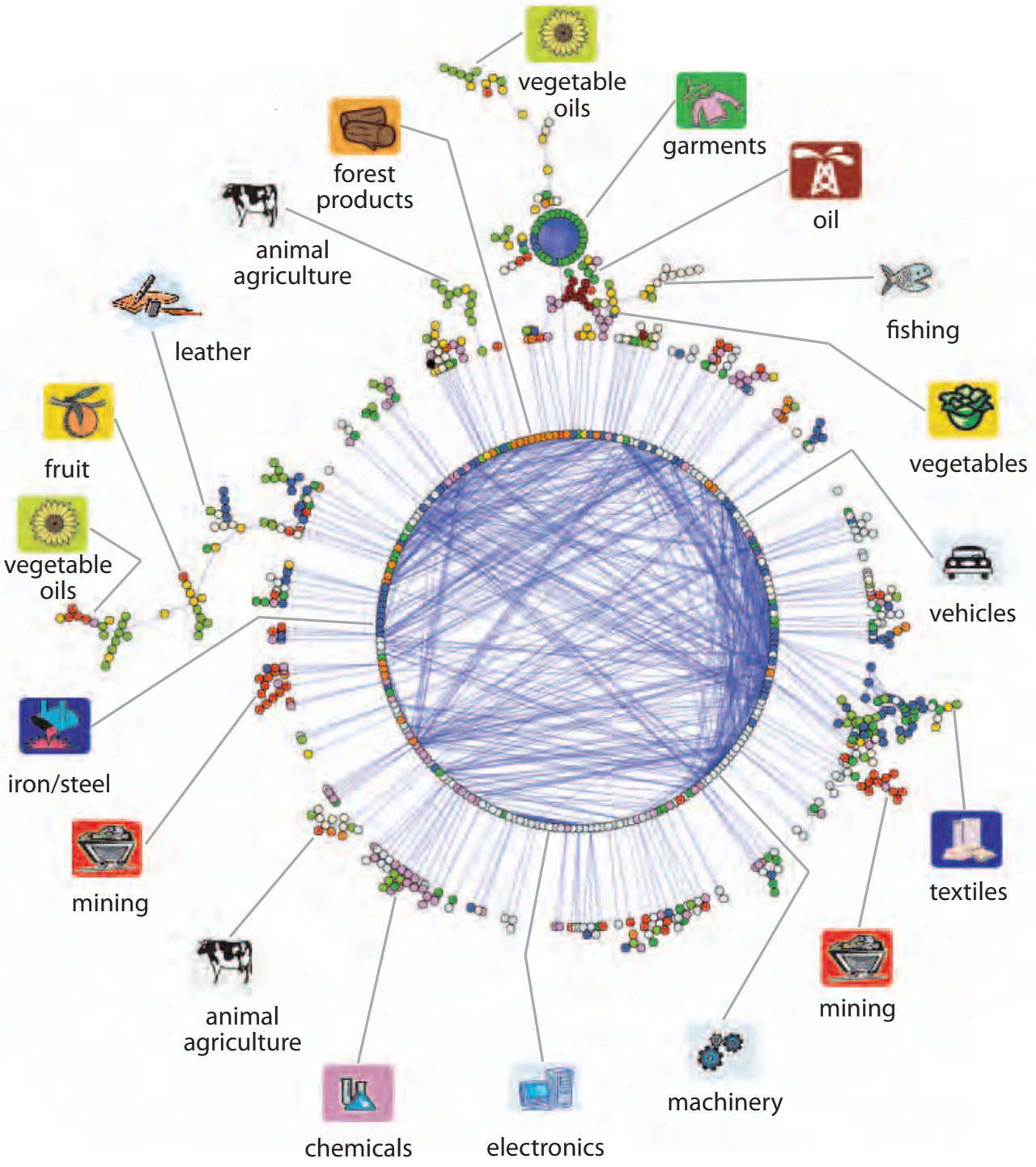
When considering the most appropriate diversification path, it is therefore useful to get a sense of how products are related. This might be done by analysing the package of resources and skills used for their production, but it is also possible to do so more empirically by observing the positions that the country occupies on the "product space map".[12] Using international export data, it is possible to create a global product space map (see figure 4.6).[13]

Figure 4.5. A dynamic world: diversity and ubiquity of production, 1984-2009



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Figure 4.6. The global product space map



Source: ESCAP, based on Hidalgo and others (2007) and on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: This map indicates clusters and the links between the clusters. The overall shapes they form are arbitrary. For clarity, however, most products are aligned around circles.

In this map, each small circle represents a single product and is coloured according to the broad industry with which it is usually associated. These products are then clustered according to the likelihood that they are part of the same export mix. The grey lines to icons around the edge of the map also indicate the broad industry of clusters. The lines linking the products indicate associations, based on the probability that the export of one is accompanied by the export of the other.

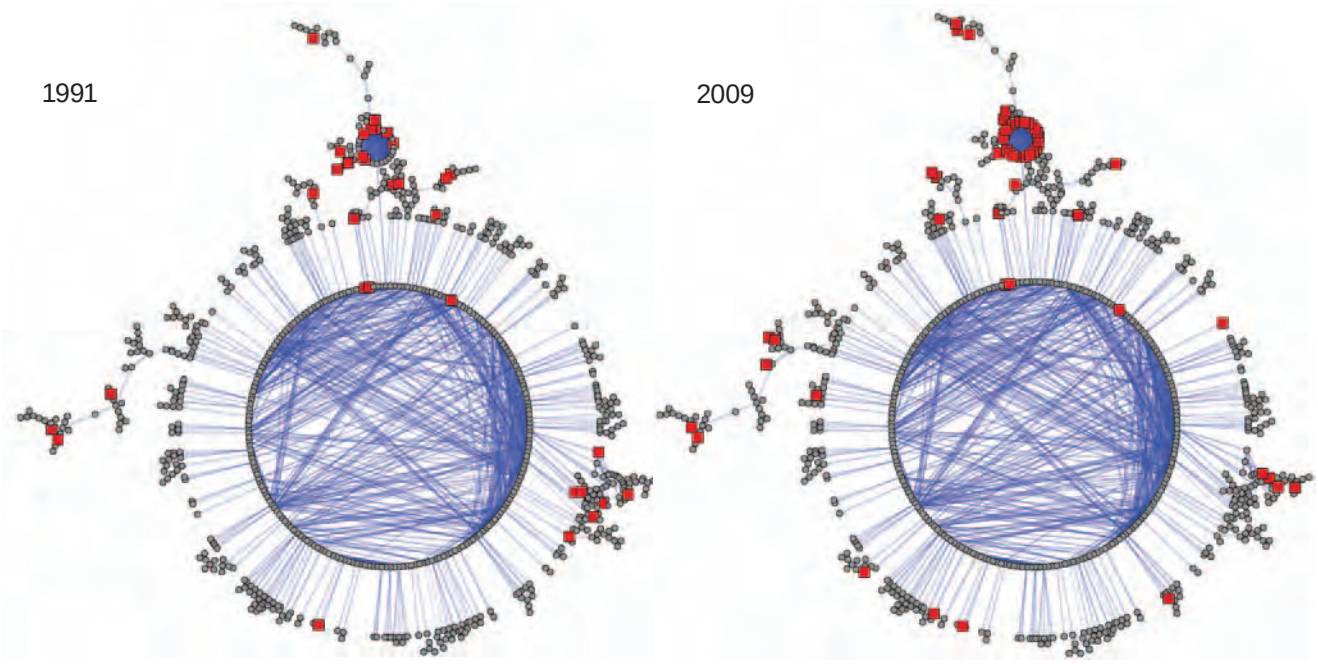
The large circle at the centre of the map represents the core of the space where many products—largely manufactured goods, machinery and transport equipment—are linked by a dense network of lines. Further out, around the periphery, are clusters of less connected products, including some traditional industries of developing countries, such as garments, fish, fruit, vegetable oils and textiles. Of these more peripheral clusters, the largest is that of garments, for which the products, arranged in a circle in the upper middle of the space, are so closely connected that the lines fill the circle solidly with blue.

One surprising characteristic of the product space map is that goods produced by the same industry can be far apart. For example, the map has two clusters of products under the vegetable oils industry. In addition to the main one at the top, which is linked with garment production, there is another in the middle right, which is associated with the production of fruit.

Each country can consider this product space when assessing the most appropriate opportunities for diversification. If its main products are in the core, it should have the capability to produce many others. If its products are on the periphery, the immediate options are probably more limited, and diversification will require more new capabilities.

It is also possible to use the map to track each country's diversification history, as illustrated in figure 4.7

Figure 4.7. Cambodia's occupation of the product space map



Source: ESCAP, based on Hidalgo and others (2007) and on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: Small circles represent a single product in the product space, which is independent of the country. Red squares represent the effective products of the country depicted in the figure.

for Cambodia in 1991 and 2009. Its "effective products"—those for which the share in national exports is higher than the share in world exports—are highlighted on the map with red squares. In 1991, almost all of Cambodia's effective products were on the periphery: one in the vegetable oils cluster at the top of the map; a few others in the garment, fishing, textiles and mining clusters on the right; and still others in the animal agriculture, fruit and vegetable oils clusters on the left. The only ones at the core were forest products. By 2009, however, Cambodia was exporting almost all the products in the garment cluster. Figure 4.7 shows how Cambodia has steadily occupied the product space. Some of the notable changes in the product space of other least developed countries during the same period are presented in table 4.3.[14]

The product space presented in figure 4.6 focuses attention on the supply side. When firms are investing in new production, however, they also need to consider potential demand. United Nations Conference on Trade and Development (UNCTAD) has found, for example, that if demand is taken into account, the opportunities for diversification can be greater in commodities than in certain labour-intensive manufacturing industries.[15]

Table 4.3. Changes in occupation of the product space for least developed countries, 1991-2009

Bangladesh	Exports remain highly concentrated in the garment, fishing and textile clusters. Little diversification towards the core products (see box 4.4).
Bhutan	Less diversified in 2009 than in 1991. Forest products in the core.
Cambodia	Diversification in the garment cluster, which is almost totally occupied in 2009, and to some extent in the textile cluster. No move towards products at the core.
Kiribati	Some diversification in textiles and fishing clusters by 2009. No move towards products at the core.
Lao People's Democratic Republic	Diversification in the garment cluster, which is almost totally occupied in 2009, in vegetable oils, and to some extent in mining and textiles. Reduction of the number of forest products at the core.
Maldives	Concentration in the fishing cluster and reduction of products in the garment cluster. Few new machinery products at the core were exported in 2009.
Myanmar	Diversification in the garment cluster, which is almost totally occupied in 2009, and in the fishing and, to some extent, mining clusters. Few new forest products at the core.
Nepal	Diversification in the periphery and towards the core. Sectors that have diversified are the garment cluster and textiles, which are almost totally occupied by 2009. Most products at the core in 2009 were related to textiles, machinery, iron, paper and forest products.
Samoa	Diversification towards the core. Moved into the textiles cluster and away from the garment cluster. No changes in diversification in the fishing and vegetable oil clusters. Products at the core in 2009 are in the iron, vehicles and machinery industries.
Solomon Islands	Exports remain concentrated in the vegetable oil and fishing clusters in the periphery, with a few forest products at the core. No further move towards core products.
Timor-Leste	Some diversification in the textile cluster and machinery products.
Tuvalu	Some diversification in textiles, mining, and chemicals in the periphery and forest products in the core.
Vanuatu	Further diversification in the fishing cluster and some diversification in textiles, mining and vegetable oils in the periphery.

Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Box 4.4. Ready-made garments business in Bangladesh

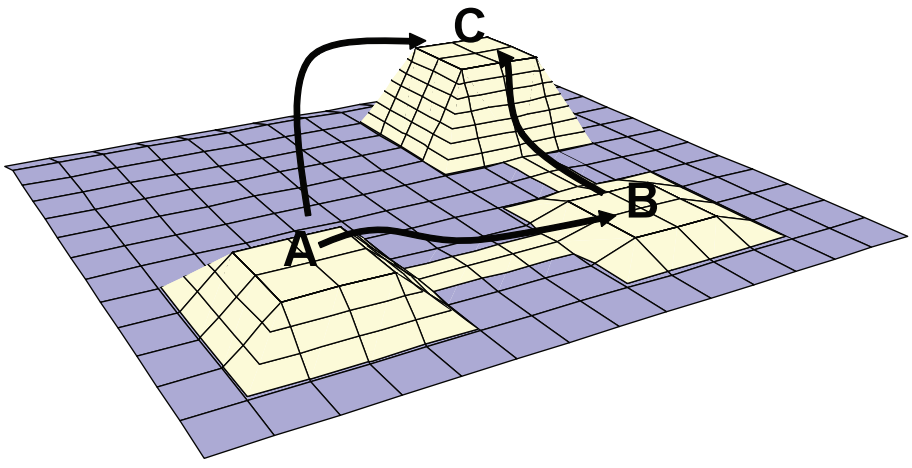
Since the late-1980s, Bangladesh has focused on ready-made garment manufacturing, which has created numerous market opportunities for small, export-oriented enterprises. The industry is highly labour-intensive and employs approximately 2 million workers, 90% of whom are women. The industry imports most of its raw materials, since domestic cotton production is very limited. It exports primarily to the United States and European Union markets. Bangladesh benefited from the abolition of the Multifibre Arrangement. The Government responded proactively and established close ties with China, which included direct air connections and road links through Myanmar.

Most garment companies are located in export processing zones, which account for three quarters of Bangladesh's foreign direct investment in manufacturing. The main foreign investors are China, India, Japan, Malaysia, the Republic of Korea, the United Kingdom and the United States. The most important zone of this type, established in 1993, is the Dhaka Export Processing Zone. Bangladesh's garment production remains highly competitive on the garment market, focusing on labour-intensive, low-value garments based on lower labour costs than in China or India. Domestic firms, however, have little capacity for innovation: lacking design capacity, most simply assemble products according to buyers' specifications.

Source: United Nations Industrial Development Organization, "Bangladesh: sustainable exports of ready-made garments in a new competitive environment", n.d. Available from www.unido.org/index.php?id=953.

The demand situation is analogous to mountain climbing, where products are equivalent to mountains; the higher the mountain, the higher the demand. If one domestic firm starts climbing a mountain that represents a high-demand product, others will follow. This concept is illustrated in figure 4.8. Initially, firms are producing product A but are looking to branch out to a closely-related product that offers an easy path for diversification. Suppose that the most closely-related product is B. Unfortunately, this mountain is smaller, so it offers fewer incentives. Mountain C is higher, and thus more attractive, but firms cannot jump directly to C because it is too far away—the product requires too many new capabilities. One solution, elaborated in the final section of this chapter, is for the State and the private sector to jointly identify the required supportive policies, incentive structures and institutional arrangements required to travel the distance from A to C.

Figure 4.8. Demand side of the product space



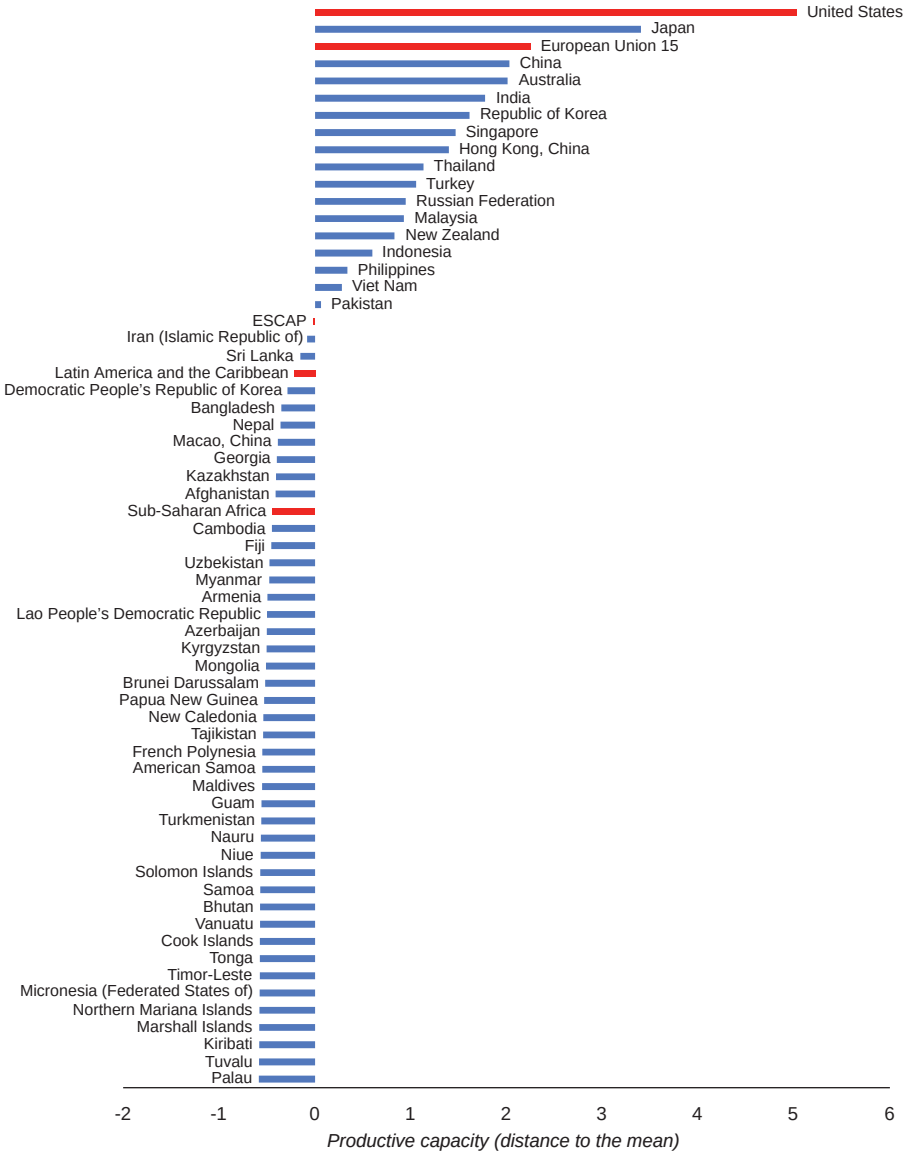
Source: ESCAP.

Assessing productive capacity

If a country is to consider how best to diversify, it will need to assess its current productive capacity. For this purpose, it might consider, for example, current levels of technology, education and skills, along with policies, regulations and infrastructure, as well as how all of these things are related. This is a daunting task.

As previous sections have indicated, however, an alternative is to focus not on the possible components of the productive capacity but on its result—the actual production. The assumption is that the fewest capabilities will be found in the countries that are the least diversified and whose product mixes are similar to those of many other countries. This information on diversification can be combined with other measures to arrive at a composite "productive capacity index".[16]

Figure 4.9. Productive capacities, compared with the global mean, 2009



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: The unit of measurement is the standard deviation of the distribution of productive capacities. See Freire (2011) for details.

The results for countries of Asia and the Pacific are indicated in figure 4.9, in which each country is compared with the global mean. It shows that most countries in the region are below the global average, and by a similar amount (about half a standard deviation).

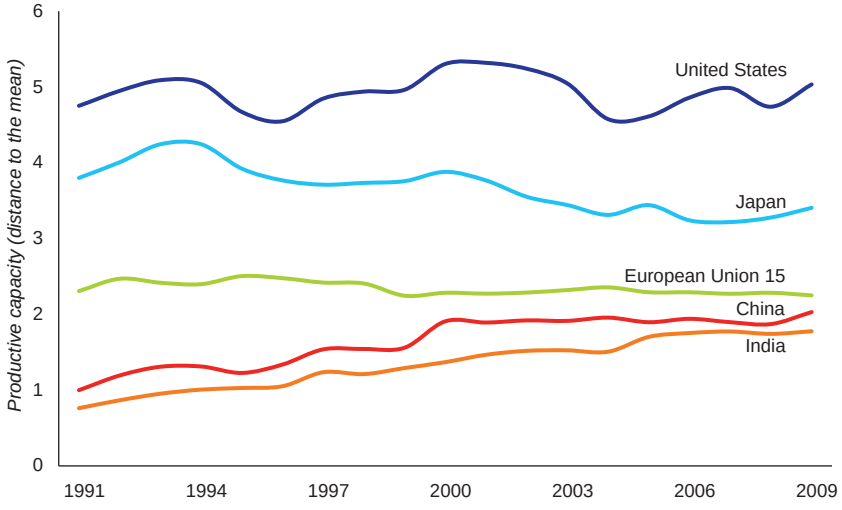
Developing countries should aim for a productive capacity that will allow them to reach a GDP per capita similar to that of developed countries

Other things being equal, the greatest production capacities, which lead to higher total GDPs, are found in countries with larger populations. This will not necessarily translate into higher standards of living, however, since what matters most is GDP per capita. Singapore, for example, has a lower productive capacity than the United States, but it has a similar GDP per capita, and it also has a comparable standard of living. Developing countries do not, therefore, need to aim for a productive capacity that is above average but rather for one that will allow them to reach a GDP per capita similar to that of developed countries.

Some of the region's larger economies have been moving in this direction, as is depicted for the period 1991-2009 in figure 4.10, which shows that, relative to the global mean, capacities in China and India have been rising while those in the United States and the European Union have remained fairly flat, and those in Japan have been falling. Figure 4.11 shows the corresponding picture for Asia-Pacific subregions. It indicates a slow increase in South-East Asia, mostly in the 1990s, but little change in North and Central Asia and in East and North-East Asia. The situation in the Pacific is disturbing since this subregion has experienced a fall, even though its average level will have been boosted by the rising capacities of Australia and New Zealand.

This information is confirmed in figure 4.12, which shows the pattern in the Asia-Pacific least developed countries. Bangladesh and Nepal have held their positions, while all of the other countries, despite recent rises, have generally lost ground. It is worth noting that this is not because they have lost productive capacity but because they have progressed more slowly than other economies.

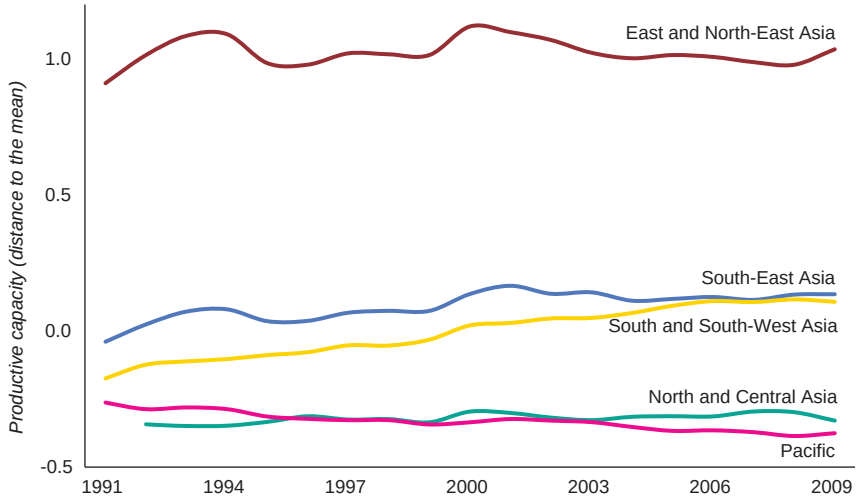
Figure 4.10. Evolution of average productive capacity, 1991-2009, selected countries



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: The unit of measurement is the standard deviation of the distribution of productive capacities. See Freire (2011) for details.

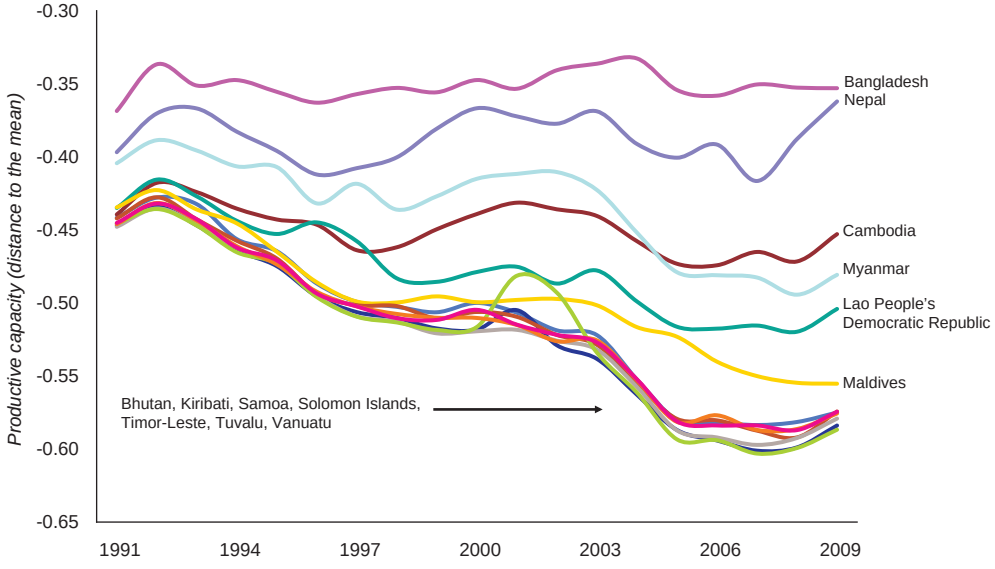
Figure 4.11. Evolution of average productive capacity, 1991-2009, Asia-Pacific subregions



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: The unit of measurement is the standard deviation of the distribution of productive capacities. See Freire (2011) for details.

Figure 4.12. Evolution of average productive capacity, 1991-2009, Asia-Pacific least developed countries



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: The unit of measurement is the standard deviation of the distribution of productive capacities. See Freire (2011) for details.

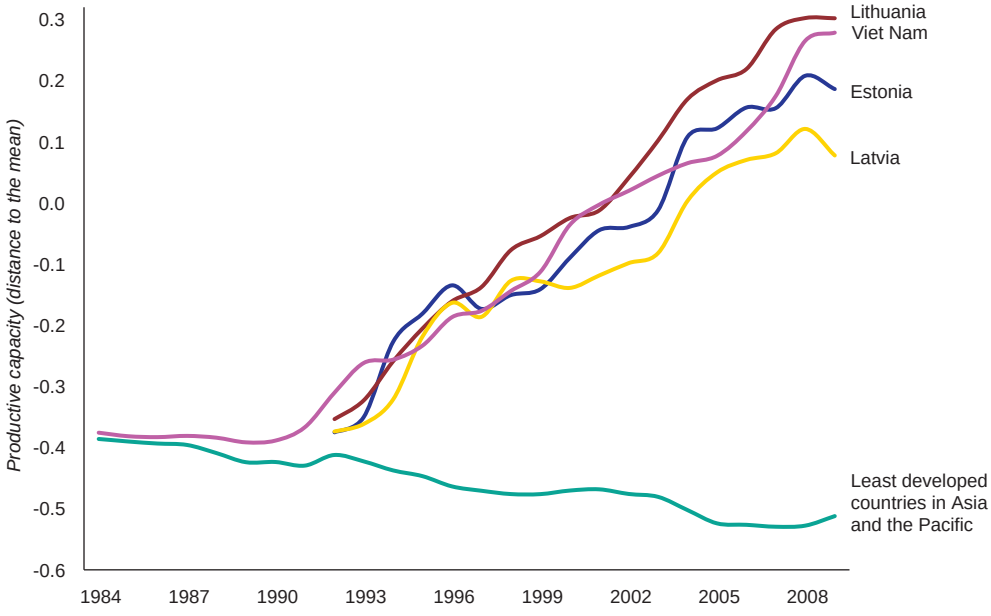
Learning from the transformers of productive capacity

Valuable lessons can be learned from the more successful countries that have transformed themselves while starting from productive capacity levels similar to those of the Asia-Pacific least developed countries. Only four countries have done so: Estonia, Latvia, Lithuania and Viet Nam. Having started far behind, they were able to raise their productive capacity to above the world average (see figure 4.13).

Particularly instructive is the experience of Viet Nam, where diversification took off from 1987 with the shift to free-market reforms known as Dổi Mới (renovation). In 1985, Viet Nam exported only 15 more product categories than in the previous year, but from 1987 to 1990 the annual average increase rose to 34, and during the period 1991-1997, the average number of additional product categories exported annually had reached 77. From 1984 to 2009, the number of product categories exported increased ninefold: from 125 to 1,143. Since then, the pace has slowed and, particularly in terms of within-product differentiation, it has flattened out (see figure 4.14). Viet Nam has not only diversified, it has also achieved a more exclusive product mix that requires a larger set of capabilities for production and marketing (see box 4.5).

Viet Nam's progress can also be assessed by considering its occupation of the product space map over time (see figure 4.15). In 1984, Viet Nam had only a few effective products, mainly in the vegetable oil, fruit, fishing, textile and mining industries. By 1990, however, it had made inroads into the garment cluster, and by 1995, it had fully occupied the cluster. Since 1990, Viet Nam has also consolidated its position in textiles and fishing. At the same time, it has occupied more of the core of the product space, mainly through manufacturing related to electronics, textiles and forest products, although this was a gradual process, with new products linked to existing ones.

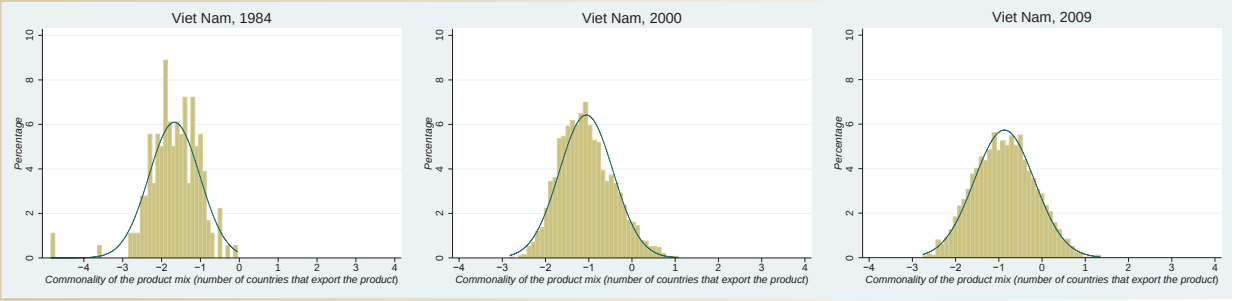
Figure 4.13. Evolution of productive capacity: Asia-Pacific least developed countries and successful countries starting at similar levels, 1984-2009



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Box 4.5. Complexity of Viet Nam's product mix, 1984-2009

Product complexity can be assessed by analysing how diversified the countries that export a product are and how common the other products that they export are. Products that are exported by diversified countries that export an exclusive product mix are considered to be more complex than products that are exported by less diversified countries that export broadly common products. The figure below shows how the complexity of the product mix exported by Viet Nam has changed over time, shifting to the right towards more complex products.

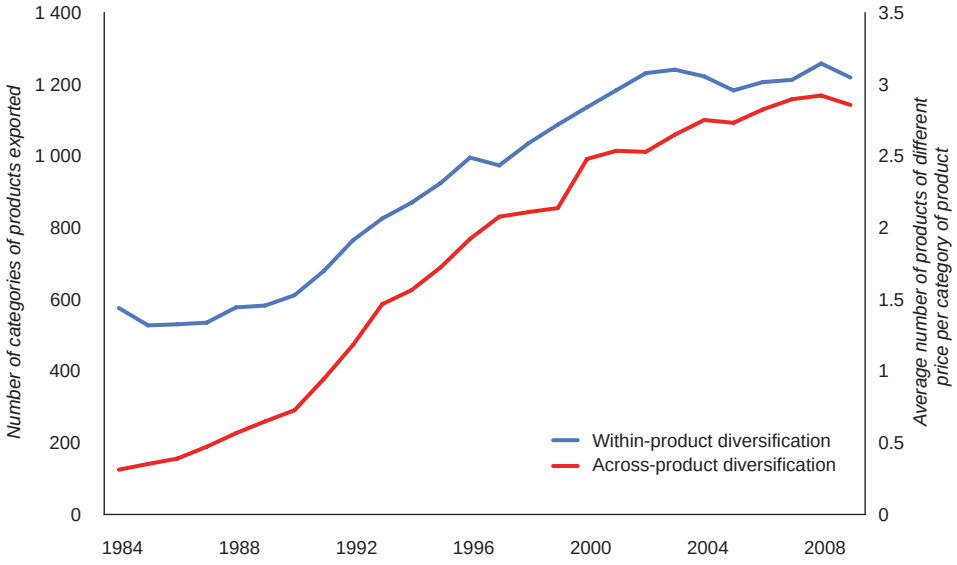


Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Note: Graphs are normalized so that products with average complexity are in the middle (measured as zero complexity) and the standard deviation from the average is one. See Freire (2011) for details on the calculation of product complexity.

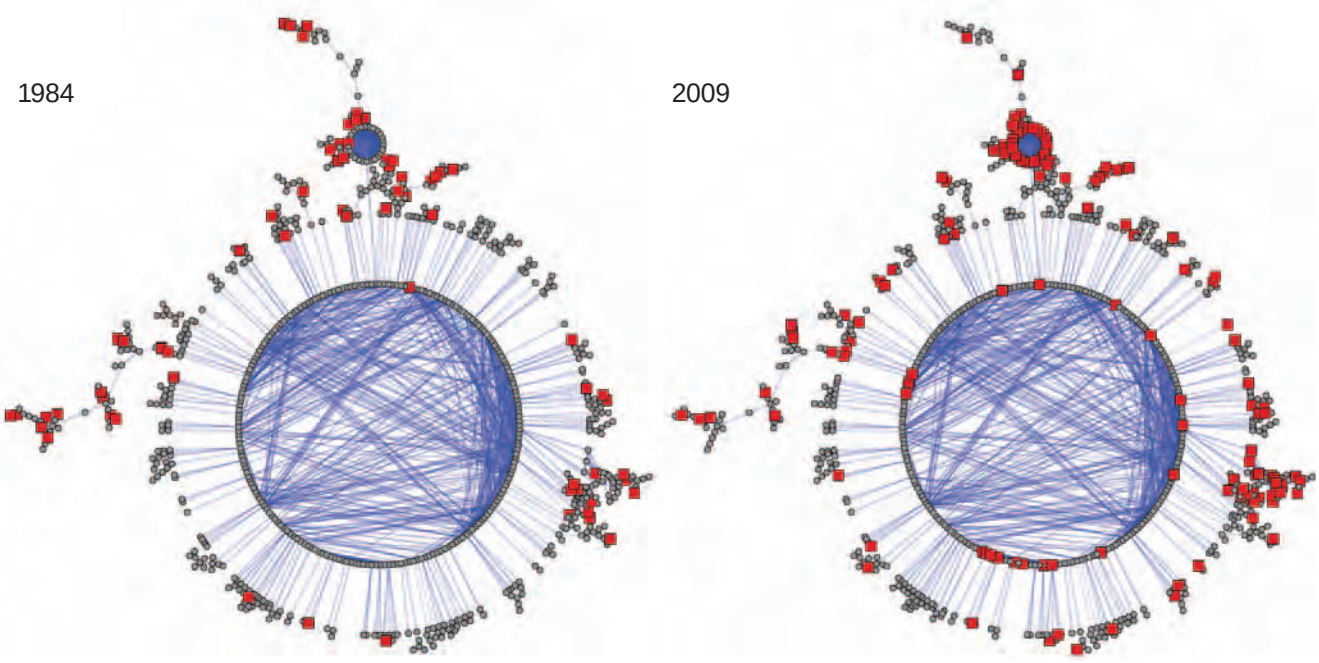
These charts also indicate that there have been no big jumps in product complexity. New products of higher complexity are only slightly more complex than the products that were previously the most complex. The transformations have thus been based not on sudden jumps but on steady increments.

Figure 4.14. Evolution of Viet Nam's product diversification, 1984-2009



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Figure 4.15. Evolution of Viet Nam's occupation of the product space



Source: ESCAP, based on Hidalgo and others (2007) and on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Notes: Small circles represent a single product in the product space, which is independent of the country. Red squares represent the effective products of the country depicted in the figure.

Graduating from least developed country status

Can Asia-Pacific least developed countries make similar progress? How can Tuvalu, for example, with a population of around 10,000, sufficiently increase its productive capacity and produce a wider range of goods and services? The prospect is not as daunting as it might seem since countries with small populations do not have to increase productive capacity as much as Viet Nam to boost their GDP per capita above the threshold required to graduate from least developed country status.

Table 4.4 presents estimates of the increase in the number of products that the less populated least developed countries would need in order to graduate. For example, Bhutan exported 158 products in 2009, and to graduate from least developed country status, it would need to increase that number to 260. This is a sizeable increase, but by no means impossible; this total number has already been reached by some other small developing economies, such as the Central African Republic, Grenada and Guam.

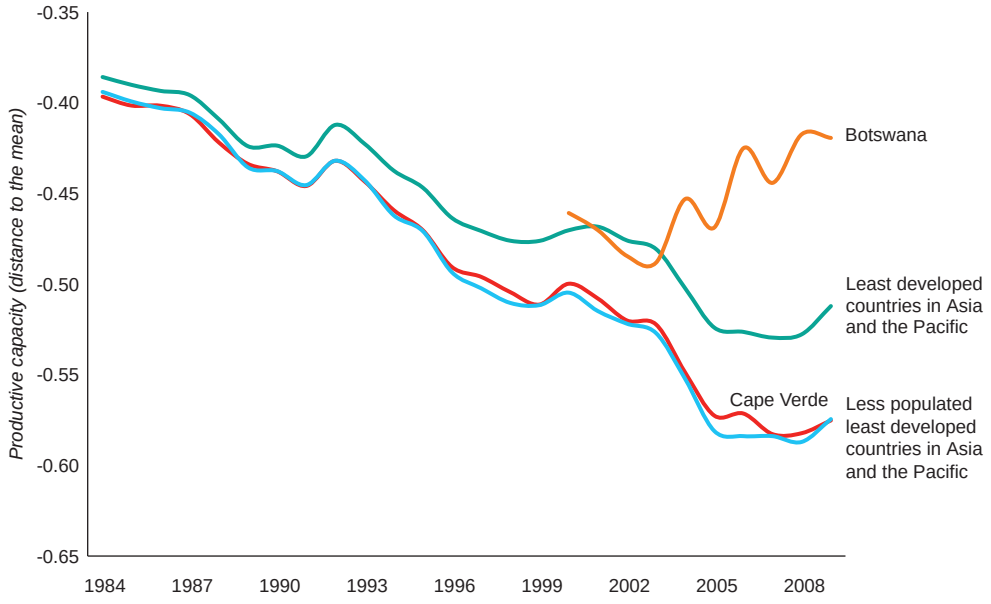
It should also be emphasized that small least developed countries can boost their per capita GDPs, and thus their prospects of graduation, through means other than expanding their productive capacities. They can, for example, exploit and expand tourism. In fact, the only two countries that have graduated so far—Botswana and Cape Verde—have taken different paths, as indicated in figure 4.16. Botswana does have a higher productive capacity, mainly due to diversification within the mining industry, but Cape Verde has had a capacity trajectory similar to that of less populated countries in Asia and the Pacific. It was able to graduate largely by boosting tourism, from less than 6% in 1995 to 28% of its GDP in 2008. Analysis suggests that, after controlling for

Table 4.4. Diversification required to graduate from least developed country status, 2009

Country	Current number of products	Number of products required	Percentage increase require	Countries with diversification similar to the desired level
Bhutan	158	260	64	Central African Republic, Grenada, Guam
Kiribati	99	210	112	Rwanda, Somalia
Solomon Islands	149	330	121	Bermuda, Maldives
Timor-Leste	133	470	253	Guyana, Suriname, Togo
Tuvalu	75	100	33	Montserrat, Northern Mariana Islands
Vanuatu	146	220	50	Eritrea, Nauru, Turks and Caicos Islands

Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Figure 4.16. Evolution of productive capacity: Asia-Pacific least developed countries and other graduating countries, 1984-2009



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

population size and the level of productive capacity, a 1.00% increase in tourism revenue increases the total output of a country by around 0.25%. The two Asia-Pacific countries already recommended for graduation could follow a similar path. For Maldives, which graduated in January 2011, tourism contributes 50% of GDP. For Samoa, which is set to graduate in 2014, tourism represents 21% of GDP.

Tourism can and does promote development in less populated countries. It is self-evident, however, that such activity has inherent limits. In the long run, an increase in productive capacity and the associated increase in diversification through the production of more complex goods is the most viable way to attain sustainable development in all countries, regardless of their size. For less

populated least developed countries to reduce their economic vulnerability and promote sustainable development, they ultimately have to steer their development towards enhancement of their production capabilities.

The benefits of regional integration

Chapter 3 indicated how countries in Asia and the Pacific can facilitate the movement of goods, services, people and finances across the region and overcome market constraints through greater regional integration. How could such integration also help least developed countries increase their productive capacity?

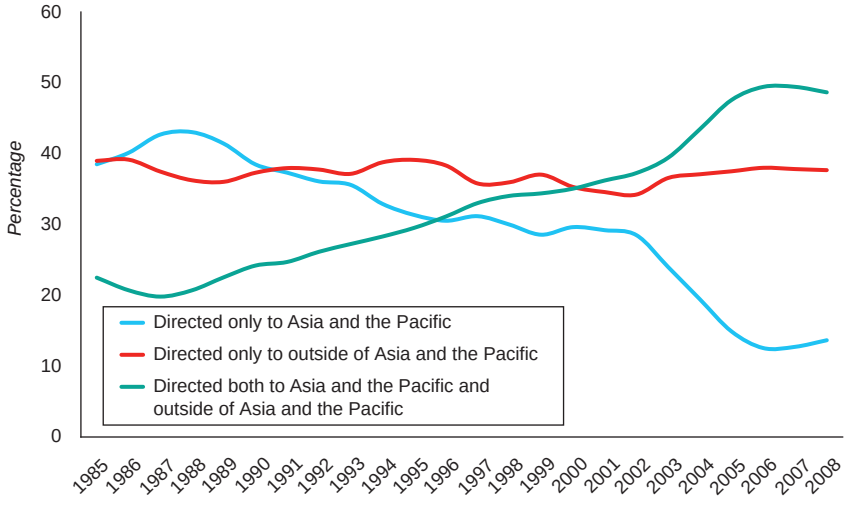
Over the past two decades, as globalization has intensified, the region has been redirecting its output to the rest of the world, as illustrated in figure 4.17. Between 1985 and 2008, the productive capacity that the region directed exclusively to itself fell from 40% to 14%, while that used to service exports both within and beyond the region rose from 22% to 48%. This suggests that countries initially produce for the region and later direct these products to global markets.

Trade within the Asia-Pacific region can serve as a training ground for economies to increase their productive capacities

Does the outside market promote an increase in productive capacities or is the regional market a better training ground for firms to upgrade their production? To try to answer this question, this chapter assesses the level of complexity of new exports directed to economies both inside and outside the region. New products are defined here as products that were not exported in the previous two years, and products are considered more complex if they are commonly exported by more diversified countries producing more exclusive goods.

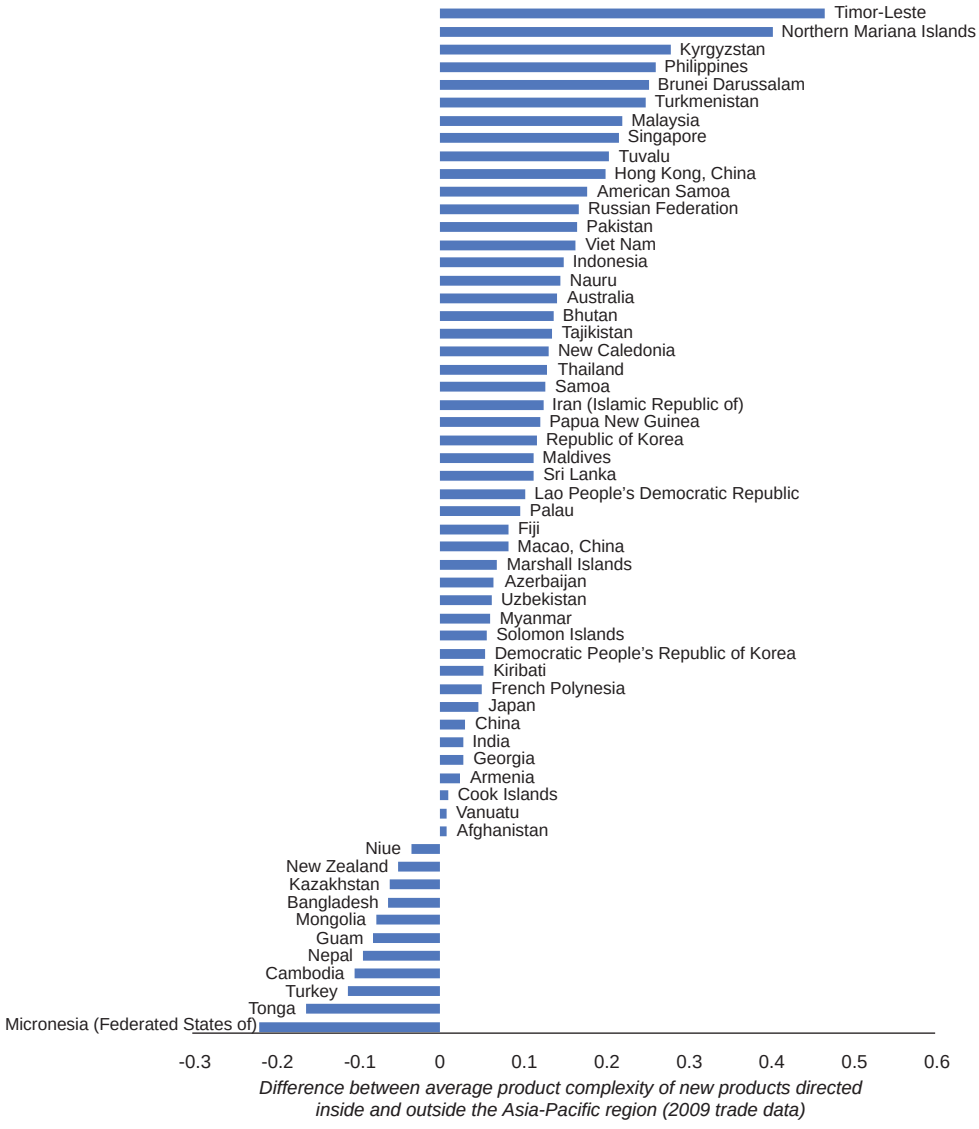
For the majority of the economies in the region, the new products directed to the regional market are more complex than the new products directed to the outside market. This is illustrated in figure 4.18, which shows the list of Asia-Pacific countries for which 2009 trade data are available ordered by the difference between the average product complexity of

Figure 4.17. Direction of Asia-Pacific productive capacity: to itself and to the rest of the world



Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Figure 4.18. Trade within Asia and the Pacific is a training ground for increasing productive capacity



Source: ESCAP secretariat based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

Note: The unit of measurement is the standard deviation of the distribution of product complexity.

new exports directed inside and outside the region, with positive values for this difference represented by positive values on the horizontal axis (right side). The fact that there are more positive values than negative values reflects the fact that the new products directed to the regional market are more complex than the new products directed to the outside market for the majority of the economies in the region. This, in turn, suggests that trade within the Asia-Pacific region can serve as a training ground for economies to increase their productive capacities, thereby facilitating the production of more complex goods.

In summary, although the outside market is undoubtedly very important for the sustainability of current levels of productive capacity of the economies

in the region, the intraregional market is the one that generally provides the opportunities for product upgrades that lead to the production of more complex products. Therefore, regional integration that facilitates intraregional trade has the potential to increase the productive capacities of the economies in the region.

Strategy for increasing the productive capacities of least developed countries

The discussions in the previous sections suggest that the increase in productive capacities is not a matter of the efficient exploitation of the existing comparative advantages. It requires the exploration of new economic activities and a strategic sense of direction towards building up the capabilities to produce goods that are more exclusive and only produced by countries that are more diversified.

Least developed countries, however, are constrained by several structural factors, such as small market size, along with other handicaps, such as their status as landlocked countries or small islands, a high degree of vulnerability to natural disasters and the effects of climate change, a poor base of domestic savings and entrepreneurship, skills and technological capability and infrastructure, and the lack of well-developed capital markets and financial and other institutions that foster industrialization. Least developed countries were at the tail end of the ESCAP infrastructure index, which captured a composite measure of infrastructure development as summarized in figure 3.19.[17] Their process of industrialization has also been adversely affected in a number of cases by the reduction in policy space resulting from the policies adopted under the structural adjustment programmes pursued since the mid-1980s by the international financial institutions, which focused on liberalization and privatization as a part of the Washington Consensus. Premature liberalization of trade and investment regimes exposed relatively fragile fledgling industries to international competition, leading to their sickness and the closure of whatever capabilities had been built up while FDI inflows that were expected to assist in building productive capacities failed to turn up.

Productive capacities can be generated as part of the process of strategic diversification through the combined efforts of the State and the private sector with a supportive role played by development partners

This section discusses some elements of a strategy that countries with special needs, in particular the least developed countries, should consider to increase their productive capacities. In the past, the mainstream approach to expanding productive capacity has been to try to identify and strengthen some contributing factors, such as levels of human capital and the quality of infrastructure, along with good governance and the rule of law. The development experience of industrialized and newly industrializing countries, however, has demonstrated the critical role played by strong and active intervention by the "development State" in fostering their industrialization and building up productive capacities in the early stages.[18] Such a State would adopt macroeconomic policies oriented towards growth, investment and employment, while also creating fiscal space for the delivery of key services and long-term public investment in infrastructure, agriculture and human skills. It would also have a proactive industrial policy that would involve selective investment financing, along with a strategic trade policy to promote diversification and value addition. At the same time, it would encourage innovation and entrepreneurship. The State would also need to encourage local demand in order to encourage the further development of productive capacities and thus drive a virtuous circle.

The analysis presented in the previous sections suggests that economies build their productive capacities through a path-dependent diversification process that expands their production bases by including products that are increasingly more complex, thus facilitating even further diversification in the future. The idea is to let the productive capacities be generated or acquired as a part of the process of such strategic diversification through the combined

efforts of the State and the private sector with a supportive role played by development partners.

The strategy for increasing the productive capacities comprises three main processes for discovering, acquiring and spreading the productive capacities required for developing economies to catch up

Such a strategy is related to models in which new capabilities emerge as combinations of previous capabilities through an evolutionary process.[19] The evolutionary strategy comprises three main processes that, when set in motion, can act as an algorithm for discovering, acquiring and spreading the productive capacities required for developing economies to catch up to more developed economies.

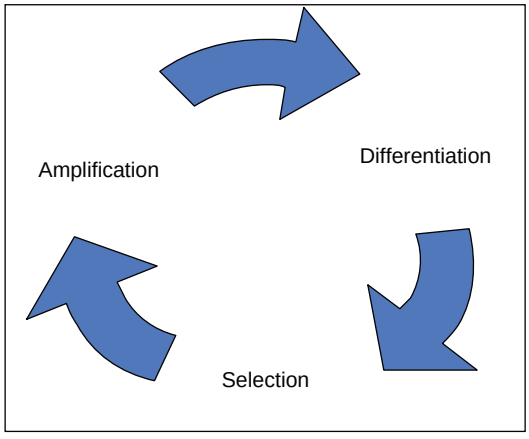
The first process is differentiation through strategic product innovation—the identification and production of products that are new to the firms or farms in the economy and that are more complex and facilitate further diversification. The second process is the selection of the business models of those firms and farms that were successful in the differentiation process. Here, the qualifier "successful" implies a judge and criteria for judgement. Invariably, the best judge is the market and the ultimate criterion is the demand for the products. The third process is the amplification of the successful business models and the exploitation of the new market. It is important to the strategy that these processes be repeated continuously (see figure 4.19).

The objective of the strategy is not to outsmart the evolutionary process of the economy, but to better understand how it happens and to harness its power to benefit the least developed countries.

Differentiation

During the differentiation process, possible new activities that could be added to the economy are explored. This process is the same as product innovation—the production of new products—as opposed to process innovation, in which the use of new technologies (physical or managerial) is employed to increase the scale of the production of existing products. Such products are not necessarily new to the world and, in the context of developing countries, they rarely are. In fact, the discussion in the previous sections presented the stylized fact that countries develop by diversifying towards products that are produced by fewer and more diversified countries. That empirical regularity highlights an important element of the strategy that countries follow while developing: they emulate the countries that are more developed than they are. Emulation of the production of richer countries seems to be a constant characteristic of the process of catching up.[20]

Figure 4.19. An evolutionary strategy: differentiation, selection and amplification



Source: ESCAP, based on Beinhocker (2007).

The first process is differentiation through strategic product innovation

The State and the private sector should jointly identify a strategic direction for differentiation. Without a strategic direction, differentiation may lead to products that are less complex or to products that,

although more complex, do not serve as an easy platform for further diversification in the future, in which case the short-term progress will be doomed to grind to a halt. Having a strategic direction helps to avoid this problem.

A pragmatic way to look for potential new products is by emulating the production pattern of countries that have higher productive capacities

Each economy can estimate this potential for incremental innovation by comparing its existing output with that of other economies producing similar products. This suggests that each of the least developed countries in Asia and the Pacific could produce about 400 new products closely related to existing ones. Only around 10% to 15% of them, however, would be both more complex and better connected to other products, thereby helping the country move forward and position itself for future innovation (see table 4.5). It is therefore important to focus on those products which yield the highest social benefit.

A pragmatic way to look for potential new products is by emulating the production pattern of countries that have higher productive capacities, even if they do not have higher per capita GDPs. Bhutan, for example, might look to India, which has a lower per capita GDP but, thanks to its larger population, is producing a more diverse range of goods. Ideally, the country to be followed should not be too far ahead so that emulating it does not entail too great a leap.

The State and the private sector should jointly identify a strategic direction for differentiation

New products need not be restricted to exportables; they should also replace some of the current imports of the country. Products that are imported, if they have levels of complexity similar to the products domestically produced, help domestic firms to discover new possibilities for the recombination of existing productive capacities; they show the frontier

Table 4.5. Potential new products related to those already produced by Asia-Pacific least developed countries

Country	Total	Product that are more complex and better positioned for future diversification	
		Number	Percentage
Bangladesh	439	43	10
Bhutan	498	51	10
Cambodia	468	47	10
Kiribati	343	42	12
Lao People's Democratic Republic	493	74	15
Maldives	423	75	18
Myanmar	481	62	13
Nepal	514	58	11
Samoa	561	63	11
Solomon Islands	434	39	9
Timor-Leste	464	48	10
Tuvalu	340	35	10
Vanuatu	446	47	11

Source: ESCAP, based on trade data from the United Nations Commodity Trade Statistics Database (COMTRADE). Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

of possibilities available for the use of the productive capacities that they already have. That increases the chances for new combinations of the productive capacities, replacing some of the imports or creating new products altogether. Trade decreases the cost of discovering such possibilities.

In the process of strategically identifying potential new areas of differentiation, other factors should be taken into consideration, such as the potential for employment creation in the new economic activities and the ecological sustainability of the production process. It is important for the State to lead the process, to function as a catalyst that facilitates the interests of new businesses to overcome the expected resistance to change of traditional businesses.

The second process is the selection of the business models of those firms and farms that were successful in the differentiation process

After setting such a strategic direction for differentiation, the State should establish a process designed to find areas where policy actions are most likely to make a difference—a process whereby the State and the private sector jointly come up with the required supportive policies, incentive structure and institutional arrangements to ensure the flow of private investment in the identified niche.[21] The implementation of such strategic differentiation therefore requires the selective promotion of certain economic activities over others through the use of industrial policy. In this case, the policy would promote new economic activities/products that are more complex and allow for further diversification in the future, regardless of whether they are located within industry or manufacturing, per se. Such policies would be much more focused than most current policies, which provide incentives for any new investment regardless of its potential to spawn new economic activities.

Selection

As in any entrepreneurial venture, some of these new activities and business models will fail. For example, entrepreneurs may try to start the production of a new good for which there is not enough demand, or the costs of production may end up being higher than was planned and the resulting profits may therefore not justify the investment. Ideally, clear benchmarks for success should be set and the market is invariably in a better position than the State to establish them.

Perhaps the most pragmatic measure of success is progress in foreign markets, which was the measure used by East Asian countries during their industrialization process. In the case of import-substituting products, though, the State needs a sunset plan for the removal of protection. When the State provides supportive incentives to ensure private investment to new activities, as is the case with the industrial policies required for the differentiation process, corruption and rent-seeking can slow down the process of economic evolution or even bring it to a halt by allowing business failures to continue.

An important element of the selection process is choosing the time frame for the assessment of performance. Different economic activities require different periods to come to fruition. The greater the jump in complexity from existing to new products, the longer it will take the private sector and the State to acquire the necessary capabilities.

Amplification

When business models leading to new production are successful, they need to be further promoted and replicated by attracting sufficient capital. It should be noted that this amplification need not take place in the original companies: the aim is not to scale up particular firms but to replicate the model. In Bangladesh and Cambodia, for example, successful models in the garment sector were

initially implemented in a few companies before being replicated by many other firms.

Amplification will also depend on sufficient demand. The opportunities for boosting domestic demand may well be limited if the country is too small or too poor. One option for small developing economies is for them to pool their demand by providing preferential access to other small economies. Economies in the South usually import many goods from the North that are available, under competitive conditions, in other developing economies, often in the same region.[22]

The third process is the amplification of the successful business models and the exploitation of the new market

Repetition

The three processes described above should be put into perpetual motion for least developed countries to catch up with the frontier countries. In this process, it is essential to strengthen national institutions and good governance in order to provide a stable environment for the evolution of the economy, the curbing of capitalist cronyism and the promotion of development goals.

Implementing the strategy: national effort and international partnership

In what follows, we outline a policy agenda for national action and a supportive global partnership for implementing the strategy to increase the productive capacities of least developed countries, drawing upon the outcome of the High-level Asia-Pacific Policy Dialogue on the Brussels Programme of Action for the Least Developed Countries organized by ESCAP in collaboration with the Government of Bangladesh in Dhaka in January 2010.[23]

National policy framework

Stable investment-friendly macroeconomic policy framework

Least developed countries need to maintain strong macroeconomic fundamentals aimed at increasing productive investments, which are critical for strong and sustained economic growth leading to expanding employment opportunities with macroeconomic stability, including low and stable inflation, and sustainable domestic and external imbalances. Countries need to utilize the full scope of appropriate countercyclical policies to maintain economic and financial stability in the face of domestic and external shocks in order to avoid abrupt economic fluctuations. The international community and the G20 should aim to assist least developed countries in their development processes by providing a stable and benign external environment for development and by fostering the flow of long-term development financing.

Least developed countries need to maintain strong macroeconomic fundamentals aimed at increasing productive investment

Industrial policy and infrastructure development

In addition to a stable macroeconomic policy framework, the fostering of productive capacities requires more active public intervention aimed at creating infrastructure, including industrial estates and economic zones, capacity-building in entrepreneurship development, support services to small and medium-sized enterprises (SMEs) in technology, marketing and export market development and other promotional measures that are covered under industrial policy. An important aspect of industrial policy has been infant industry protection provided to domestic industry in the early stages of development. Infant industry protection was extensively employed as a policy tool by most developed countries and newly industrialized

countries in the early stages of their development.[24] Least developed countries have every right to use infant industry protection to diversify their productive capacities in new areas and provide fledgling productive capacities some space to grow.

Public investment could play a proactive role in infrastructure development and act as a catalyst for public-private partnerships by creating a virtuous cycle of investment and spurring inclusive growth. For that reason, countries need to implement fiscal and tax reforms, improve budgetary processes, improve the quality of public expenditure, promote financial inclusion through creative monetary policies and enhance the transparency of public financial management.

Domestic resource mobilization

It is vital for the Asia-Pacific least developed countries to create a financial architecture that provides access to a variety of financial services and products, especially for SMEs and microenterprises, with particular emphasis on women, the poor and those in rural areas. This requires a diversified, well-regulated and inclusive financial system that promotes savings and channels them to productive investments, especially in rural areas. The domestic supply of long-term capital also needs to be increased by developing domestic capital markets, venture capital funds, term lending institutions and industrial development banks to provide the finances required for the creation of new productive capacities. Microfinance, including microcredit, is an effective tool in generating employment, especially self-employment, improving the well-being of poor households, including women, in the Asia-Pacific least developed countries, empowering individuals and communities, and initiating social development. Governments should provide appropriate and coordinated support to meet the rising demand for microfinance, including capacity-building for microfinance institutions and the creation of the necessary regulatory framework. Effective domestic resource mobilization and institution-building by least developed countries have to be supported by development-oriented FDI and targeted ODA, as well as trade policies of development partners that create favourable conditions for productive capacity-building. Support is also needed to foster the growth of the scale and scope of indigenous enterprises and their ability to partner with global enterprises and with production and retail chains and networks.

Least developed countries have every right to use infant industry protection to diversify their productive capacities in new areas and provide fledgling productive capacities some space to grow

Least developed countries need to foster a diversified, well-regulated and inclusive financial system that promotes savings and channels them to productive investments

Technological upgrading

It is important to upgrade and further diffuse technology in the least developed countries in order to strengthen productive capacities. The scientific and technological and research and development capacities of these countries need to be built up through national programmes and supported by international institutions and programmes. It is timely to consider setting up a technology bank for least developed countries, which could promote the transfer of key technologies, including pro-poor, green, agricultural and renewable energy-related technologies. In order to address the development challenges facing the Asia-Pacific least developed countries, it is vital to take specific measures to support creative, inventive and innovative activities, including the involvement of universities and research institutions, across all economic sectors and to emphasize the need for the commercialization of research outputs. Least developed countries should be fully assisted in meeting all of their technological development and adaptation objectives.

The creation of an enabling national environment for technological capacity-building should be supported by all organizations and development partners. Least developed countries should be fully supported in the formulation of national innovation strategies and their access to technological and scientific information for development should be ensured. Article 66.2 of the World Trade Organization (WTO) Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS Agreement) requires developed countries to facilitate technology transfer to least developed countries. It remains rather a statement of intent, however, as it defines neither technology transfer nor the mechanisms for encouraging it; it has therefore remained ineffective. In the new programme of action for least developed countries, transfer of technology should be a critical component of the global partnership if such countries are to develop productive capacities and exploit the potential of green industry, in particular.

Least developed countries should be fully assisted in meeting all of their technological development and adaptation objectives

Supportive global partnership for building productive capacities in least developed countries

Financing for development: foreign direct investment and official development assistance

FDI can help least developed countries to expand their production structure into more modern and knowledge-intensive areas that are characterized by higher value added production. Asia-Pacific least developed countries, however, continue to remain rather minor recipients of FDI, with their share of global inflows at a negligible 0.23% in 2009. The bulk of this FDI is concentrated in their traditional sectors, such as mining, textiles and garments, and they have not been successful in attracting high quality investments that would help them to build diversified and complex production capacities.[25] Policies aimed at harnessing the potential of FDI should be oriented towards stimulating productive investment, building technological capacities, developing infrastructure and strengthening linkages within and across sectors and between different enterprises. The strengthening of domestic productive capacities should also be aimed at producing a wider range of more sophisticated products. Given that many least developed countries have not been able to attract FDI despite liberalization and reform, in order to enhance private capital flows, there is a need to strengthen national, bilateral and multilateral efforts to overcome structural and other constraints that limit their attractiveness as destinations for private capital and FDI. Bilateral and multilateral partners can provide technical, financial and other forms of assistance; share best practices; promote and strengthen partnerships and cooperation arrangements; provide political risk cover and guarantees; leverage aid resources, business development services and funding for feasibility studies; and support national efforts to create a stable and predictable investment climate. Promoting investment proactively by developing projects and then inviting key international players in the sectors to undertake these projects may also help. In addition, least developed countries could adopt associated policies, such as performance requirements and incentives for the promotion of inter-firm linkages, to facilitate the transfer and diffusion of technologies that are introduced through FDI. The emergence of outward FDI from developing countries is enhancing

Policies aimed at harnessing the potential of FDI should be oriented towards stimulating productive investment, building technological capacities, developing infrastructure and strengthening linkages within and across sectors and between different enterprises

options for least developed countries in terms of sources of FDI, especially FDI that brings with it more appropriate technologies for the geo-climatic conditions and market sizes of least developed countries. South-South FDI flows have been rising faster and now account for over a third of FDI flows received by least developed countries, as observed in chapter 3.

Efforts need to be made to continue to improve the quality of ODA and increasing its development impact

ODA has a potential catalytic role to play in helping least developed countries to promote sustainable and inclusive development; enhancing social, institutional and physical infrastructure; promoting FDI; adapting trade and technological inventions and innovations; improving health and education; fostering gender equality; ensuring food security; and reducing poverty. Despite a significant increase in ODA to least developed countries in recent years, only the 9 smallest countries out of the 22 donors on the OECD Development Assistance Committee met the target of providing at least 0.15% of their gross national income in ODA to least developed countries in 2008. While it is important that the internationally agreed targets for ODA be met, there is also a need to match the assistance provided to the priorities set by the least developed countries, which include economic infrastructure-building, skills development and the necessary social infrastructure to enable universal access to essential services and aid for leapfrogging into green production, food security and rural development. Aid for "new" purposes, such as aid for trade and financing for adaptation to climate change, needs to be truly additional and should not divert resources from other internationally agreed goals. Efforts need to be made to continue to improve the quality of ODA and increase its development impact by building on the fundamental principles agreed in the 2005 Paris Declaration on Aid Effectiveness and the 2008 Accra Agenda for Action, which include aligning aid with country priorities, untying aid to least developed countries and increasing the predictability of aid. There is a need to set up special purpose thematic funds dedicated to and earmarked for least developed countries, such as a commodity stabilization fund, a technology fund, a diversification fund and environment-related funds. Least developed countries themselves should be able to determine the terms of access to these funds and they should have equitable representation in their governance. Commitments to provide additional resources to least developed countries made at the G8 and G20 summits should be implemented expeditiously and monitored by the international community.

Least developed countries need to be provided with enhanced and predictable market access, support for the establishment of export supply capacities and new trade-related infrastructure

Market access and aid for trade

In order for the least developed countries to substantially increase their contribution to world trade, which would, in turn, enhance their development, they need to be provided with enhanced and predictable market access by their partners, support for the establishment of export supply capacity that is competitive in both cost and quality, and new trade-related infrastructure. Tariff and non-tariff barriers and subsidies in developed countries adversely affect the export earnings of the Asia-Pacific least developed countries. Although developed countries generally levy lower overall tariffs, tariff peaks and tariff escalation are applied to agricultural and labour-intensive products, which are typically exported by least developed countries. As a result, these countries face higher average tariffs than their developed country counterparts. Most least developed countries enjoy preferential access to industrial country markets under the Generalized System of

Preferences (GSP), but experience suggests that the benefits of many GSP schemes are limited due to stringent rules of origin, small preference margins and intense competition among the beneficiary countries. More transparent and simplified rules of origin, allowing for cumulation of origin, at least at the regional level, could improve the use and value of preferences, as would more comprehensive product coverage. Least developed countries should be granted greater preferential treatment than other countries to enable them to offset some of their disadvantages. Few of the least developed countries in the Asia-Pacific region have been granted preferential schemes similar to those that benefit such countries in Africa and the Caribbean, such as the African Growth and Opportunity Act and the Caribbean Basin Initiative of the United States and the benefits for African, Caribbean and Pacific States granted by the European Union under the Lomé Convention. Even though the WTO agreements include special and differential treatment for least developed countries, most of the provisions are best endeavour clauses lacking specific targets and legal enforcement mechanisms and they sometimes provide a few additional years for implementation. Furthermore, a number of least developed countries are not yet able to benefit from the multilateral trade rules. In the Asia-Pacific region, Bangladesh, Cambodia, Myanmar, Nepal and Solomon Islands are WTO members and Afghanistan, Bhutan, the Lao People's Democratic Republic, Samoa and Vanuatu are undergoing the accession process, while Kiribati, Timor-Leste and Tuvalu have yet to initiate the accession process. Concerns have been raised about the arduous conditions imposed on the least developed countries in the process of their accession, which make them undertake obligations far beyond those justified by their level of development. To enable them to benefit from the multilateral framework, the accession process should be simplified and made less onerous.

Least developed countries should be granted greater preferential treatment than other countries to enable them to offset some of their disadvantages

For the Asia-Pacific least developed countries, the full implementation of duty-free, quota-free market access by developed countries and developing countries in a position to do so, as agreed in the Hong Kong Ministerial Declaration, is critical to integrating beneficially into the global trading system. Notable initiatives in this direction include the expansion of the European Union GSP scheme for least developed countries to the "Everything but Arms" initiative in 2001. Similar initiatives have been adopted by Australia, Canada, Iceland, Norway, Switzerland and Turkey. The Republic of Korea's presidential decree of 2008 granted preferential tariffs, including duty-free access, to least developed countries on 75% of tariff lines,[26] and the harmonized system of preferences adopted by the Eurasian Economic Community, whose membership included Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan and Uzbekistan, entered into force in May 2001 and offered preferential tariff rates to least developed countries on 100% of tariff lines.[27] What is more encouraging is the initiative of some developing countries to announce their own preferential schemes for least developed countries. They include India's duty-free preference scheme announced in 2008 for least developed countries on 85% of tariff lines within a five-year time frame, in addition to unilateral tariff exemptions on all products for Bhutan and Nepal and tariff reductions on 38 lines for Afghanistan; and China's special preference tariff for Afghanistan, Maldives, Samoa, Vanuatu and Yemen on 288 categories of products.[28] China and India have also offered special preferences to least developed country partners in the South Asian Association for Regional Cooperation and ASEAN under different agreements with these groupings and the Asia-Pacific Trade Agreement.

The focus of aid for trade and the Enhanced Integrated Framework should be to assist the least developed countries in building productive infrastructure and trade capacities to enable them to participate effectively in

the multilateral trading system. They also need to build their capacity to comply with international product and safety standards. Aid for trade should be aligned with the national development strategies of individual countries to support them in specific areas, such as trade policy and regulations, trade development, the building of productive capacities, trade-related infrastructure and trade-related adjustments. Although total aid for trade commitments increased to $42 billion in 2008, least developed countries received only 25% of the allocations, and Afghanistan and Bangladesh were the only Asia-Pacific least developed countries among the top 20 recipients.[29] Least developed countries should receive priority attention for the disbursement of funds from aid for trade.

Focus of aid for trade should be to assist the least developed countries in building productive infrastructure and trade capacities to enable them to participate effectively in the multilateral trading system

South-South, triangular and regional cooperation

With the rise of emerging countries in the region as the growth poles of the world economy, South-South cooperation and regional economic cooperation have become viable strategies for development. An increasing number of countries, including China, India, Malaysia, the Russian Federation, Singapore and Thailand, have well-developed programmes for assisting other developing countries, especially the least developed countries, in their neighbourhoods. The bulk of South-South cooperation is directed at the capacity-building programmes through which emerging countries share their expertise with least developed countries to enhance education and vocational skills, thereby developing infrastructure that can be critical for increasing production capabilities. Given that developing countries may sometimes possess technologies and skills that are appropriate for other developing countries, triangular cooperation, in which a traditional partner supports South-South cooperation projects, also has a significant potential. In the Asia-Pacific region, Japan supports triangular cooperation as a modality for fostering development.[30]

With the rise of emerging countries in the region, South-South cooperation and regional economic cooperation have become viable strategies for development

The emergence of South-South FDI flows is also helping least developed countries to build productive capacities, as observed earlier. In addition, emerging countries, such as China and India, have announced their own duty-free-quota-free schemes for exports from least developed countries, as described above. Given the dynamism of Asian economies, regional economic integration complemented by stronger connectivity provides valuable opportunities for mutually beneficial cooperation and the sharing of dynamism across the region, as discussed in chapter 3. As observed earlier in the present chapter, regional markets provide opportunities for venturing into more complex areas. The Global System of Trade Preferences among Developing Countries is another framework for cooperation that makes use of the exchange of trade preferences, especially between regions. It needs to be strengthened, taking into account the special trade and economic needs and prospects of Asia-Pacific least developed countries.

Choosing the diversification path

As this chapter has indicated, countries develop not by producing more of the same products but by diversifying to more complex products. The process of diversification is path-dependent: products that a country produces today affect those it will be able to produce tomorrow. As a result, diversifying to include certain products would increase the range of possibilities for further diversification.

Based on market forces alone, least developed countries may not diversify along the path that will bring them the highest possible future returns. Nor does the current WTO international trade regime encourage the most effective improvement of their productive capacities. As a result, over the past 25 years, the least developed countries have lagged behind world averages. This chapter argues that a pragmatic strategy for increasing productive capacity is to move towards increasingly more complex products that would serve as better platforms for further diversification.

This would require the State and the private sector to coordinate their efforts to steer innovation and replicate successful business models. Least developed countries will therefore need to pursue macroeconomic, trade, finance and infrastructure policies that promote strategic diversification and the evolution of their economies. All of this needs to be supported by enhanced and targeted development assistance, financing, preferential market access, and South-South and regional cooperation.

Endnotes

1 United Nations Conference on Trade and Development, 2006b, 2007 and 2010c.

2 United Nations, Economic and Social Council, 2004; United Nations Conference on Trade and Development, 2010c.

3 Imbs and Wacziarg, 2003.

4 Klinger and Lederman, 2004; Carrère, Strauss-Kahn and Cadot, 2007.

5 Schott, 2004.

6 Reinert, 2007.

7 Hidalgo and Hausmann, 2009.

8 Hausmann and Hidalgo, 2010.

9 Available from http://comtrade.un.org/db/default.aspx (accessed November 2010).

10 Klinger and Lederman, 2004; Carrère, Strauss-Kahn and Cadot, 2007.

11 Jacobs, 1969, pp. 236-238.

12 Hausmann and Klinger (2007); Hidalgo and others, 2007.

13 For the creation of the product space maps shown in this chapter, the software created by César Hidalgo was used to generate the information regarding the product space network. The software is available from www.chidalgo.com/productspace. The networks created were then reformatted using a circular layout using the program Cytoscape, which is available from www.cytoscape.org.

14 Corresponding product space maps are available from www.unescap.org/pdd/publications/survey2011/additional/index.asp.

15 United Nations Conference on Trade and Development, 2002.

16 See Freire, 2011 for details on the calculation of the productive capacity index.

17 United Nations, Economic and Social Commission for Asia and the Pacific, 2010b, figure 61.

18 See Bairoch, 1993; Chang, 2002; Wade, 2003.

19 Hausmann and Hidalgo, 2010; Weitzman, 1998; Kauffman, 1993; Beinhocker, 2007.

20 Reinert, 2007.

21 Rodrik, 2004; Hausmann and Rodrik, 2006.

22 Roelofsen, 1999.

23 United Nations, Economic and Social Commission for Asia and the Pacific, 2010i.

24 For examples see Bairoch, 1993; Wade, 2003; Akyüz, 2005; Chang, 2002; and Reinert, 2007.

25 See Kumar, 2002 for a discussion on quality of FDI and their distribution.

26 United Nations, 2010b.

27 United Nations Conference on Trade and Development, 2010c.

28 World Trade Organization, 2010a; United Nations Conference on Trade and Development, 2010b, pp. 60-61; United Nations, 2010b.

29 United Nations, 2010b.

30 Kumar, 2009.