CHAPTER 2

Evolution of Comparative Advantages and Improvement in Capacity for Opening Up

The capacity for opening up is a key factor determining a country's warranted and optimal openness. Improving this capacity requires not only the guidance of scientific concepts and the support of high-quality systems, but also the careful and efficient cultivation of resources available to be opened up. The improvement in a country's capacity for opening up depends, to a large extent, on comparative advantages of its resources available to be opened up; while the evolution space and opportunities for a country's comparative advantages benefit from international cooperation on opening up.

I. Comparative Advantages Have a Profound Impact on a Country's Capacity for Opening Up

The modern world economy is based on division of labor and specialization among individuals, businesses, and countries.[1] From the division of labor perspective, national comparative advantages have a bearing on a country's capacity for opening up, which can be understood through two mechanisms: the country's capability to engage in cross-border production, distribution, circulation, consumption, investment, and finance, etc., and support from the country's systems, institutions, and mechanisms, etc., for the former capcity for opening up.

1. Comparative advantage determines the basis of capacities for opening up

A country's opening up is all-round, with opening up in the economic fields, including cross-border production, trade, investment, consumption, and finance, etc., being the most important

1 Findlay, R., "Comparative advantage," in Eatwell, J., Milgate, M., and Newman, P., eds., *The World of Economics. The New Palgrave*. (London: Palgrave Macmillan, 1991).

form of opening up, which are mostly reflected by flow and transaction of such factors as goods, services, personnel, capital, technology, and data. Whether the flow and transaction behavior will occur depends on whether the country has a comparative advantage in terms of those factors.[2]

A country's comparative advantage can be either exogenous based on factors such as natural resource endowments, or endogenous based on factors such as produced resources or/and human resource (see box 2.1). In reality, a country's comparative advantage can be a combination of multiple sources of advantages. The evolution of a country's comparative advantage can be roughly divided into the following stages: stage mainly based on natural resources, stage mainly based on produced resources, stage mainly based on human resources or human capital, and stage mainly based on knowledge capital.[3]

The national comparative advantage will increase or decrease over time. A country's development is based on specific comparative advantages, and cross-stage sustainable development is based on the dynamic transformation and upgrading of different comparative advantages. Otherwise, it will be locked in specific comparative advantages, falling into the "comparative-advantage trap," and the country's development will stagnate and even step backward.

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2 In economics, comparative advantage is one that a specific decision-maker has as he or she, compared with other decision-makers, has a lower opportunity cost when rationally choosing a specific option. A country's comparative advantage is one that producers within this country have as they boast a lower opportunity cost of producing specific goods than their competitors in other countries.

3 There are many methods to divide a country's development stages, and the typical ones are as follows: First, economic growth can be divided into six stages: traditional society, preconditions for take-off, taking-off, driving to maturity, age of mass-consumption, and search for quality. See Rostow, W. W., "The Five Stages of Growth: A Summary," in *The Stages of Economic Growth: A Non-Communist Manifesto* (Cambridge: Cambridge University Press, 1960), pp. 4–16; Rostow, W. W., *Politics and the Stages of Growth* (Cambridge University Press, 1971). Second, economic development can be divided into the following four stages: initial stage, high investment stage, middle-income stage, and independent innovation stage. See Fan Gang, "Comparative Advantage and Late Mover Advantage," *Management World*, no. 2 (2023): pp.13–21, 37.

Box 2.1 Theories on Comparative advantage

As early as in ancient times of various civilizations, people have discovered the benefits of specialization. For example, China's Huainanzi-Sima Qian Theorem has advocated "trading what you have for what you don't," "trading what you are rich in for what you lack," and "trading what you are good at for what you are bad at," which reveals the secret of cross-border division of labor and its benefits.[4]

Since the 18th century, economists have proposed the theories on absolute advantage and comparative advantage. The specific forms of the latter include theories on factor endowment, on economy of scale, on division of labor, and on institution, which have combined to deepen humankind's understanding of division of labor, especially economic division of labor, and to clarify sources of national comparative advantages from multiple perspectives:

- **Theory on absolute advantage.** Adam Smith believed that if the production cost of a certain product in a specific country is absolutely low, that country will have an "absolute advantage." If the country produces that product through specialization and export it, it will be able to import products for which it has an absolute disadvantage in terms of production cost, and then it would gain an absolute advantage. Absolute advantage is an extreme case of comparative advantage.
- **Theory on technological comparative advantage.** David Ricardo held that if a specific country specializes in the production of products for which its production costs are relatively much lower, and trade the products in international market for products for which its own production costs are relatively higher, then it can gain a comparative advantage.
- **Theory on factor-endowment comparative advantage.** Eli Hecksher and Bertil Ohlin argue that when production technologies are the same (globalization leads to the diffusion and convergence of international technologies), a specific country has a comparative advantage in the production of products that intensively relies on the country's relatively abundant and cheap factors. That country can gain a comparative advantage through specialized production and export of the above-mentioned products and import of products whose production intensively uses domestically scarce factors.
- **Theory on comparative advantage of economies of scale.** Paul Krugman and Elhanan Helpman argue that when there is an effect of increasing returns to scale in the production of a specific product in a specific country, as the production scale expands, the cost of unit product decreases and a cost advantage is obtained; and that country can gain a comparative advantage through specialized production and export of the above-mentioned products.

4 The book *Huainanzi* was written by Liu An (179–122 BC), ruler of Huainan in the Western Han Dynasty (206 BC–AD 24), and his disciples. Sima Qian (145/135 BC–?) is a great historian, writer and thinker during the Western Han Dynasty in China. *Shiji*, or *Historical Records*, was his most important work. See Zhang Yuyan, *The 40th Anniversary of China's Opening Up to the Outside World* (Beijing: Economy and Management Publishing House, 2019).

- **Theory on comparative advantage of division of labor.** Yang Xiaokai argues that through division of labor and professional learning, or technological innovation and experience accumulation, a specific country can accumulate human capital and knowledge, thereby increasing productivity, promoting the country's sustained trade and economic development, leading to a comparative advantage.
- **Theory on institutional comparative advantage.** Because the quality of institutions inherently determines productivity, specific institutions in a specific country may have varying impacts on technological progress in different industries. In the short term, institutions influence industry productivity through mechanisms such as the supply and demand of intermediate inputs, the level of division of labor, and the choice of production process and technology. In the long run, institutions determine the trajectory of technological progress through a series of more complex mechanisms to form comparative advantages.

2. Expanding opening up can effectively enhance comparative advantages

The unleashing and dynamic evolution of a country's comparative advantages require some prerequisites, such as the continuous provision of new sources of advantages, adaptation to new environment, perfect market competition, free and convenient transactions, and diverse and symbiotic markets.[5] These conditions need to be formed, acquired and accelerated in cross-border opening up.[6]

To give full play to their national comparative advantages, countries must not only build a unified domestic market, but also adhere to the policy to open up to the outside world, expand the international market, and form a more inclusive world market; they should also implement international free trade policies, fully diversify market supply and demand, and make their goods and services different from those of other countries.

By expanding opening up, countries can identify and cultivate their own specific comparative advantages, further deepen the division of labor and collaboration based on the country's overall development, and expand the international division of labor among different industries, within specific industries, among different products, and among the various production processes of specific products. So long as the markets connected by relevant countries through opening up are large enough and their opening up is wide enough, the diversity would be greater, and the international division of labor will be more refined.

5 Deardorff, A. V., "How Robust Is Comparative Advantage," Research Seminar in International Economics, The University of Michigan, *Discussion Paper*, no. 537 (2005).

6 Fan, G., "Comparative Advantage and Late-Comer Advantage," *Management World* (In Chinese), no. 2 (2023): pp. 13–21.

II. Accelerating Evolution of Comparative Advantages Using Resources Available

National opening up capacities include philosophy and systems or institution on opening up as well as resources available to be opened up. The impact of resources available to be opened up on the evolution of comparative advantages exceeds the other two. According to WB estimates, 117 countries had a total of $1,122 trillion worth (constant 2018 $) of resources available to be opened up in 2018, an increase of 29.7 percent over 2008 (see fig. 2.1).

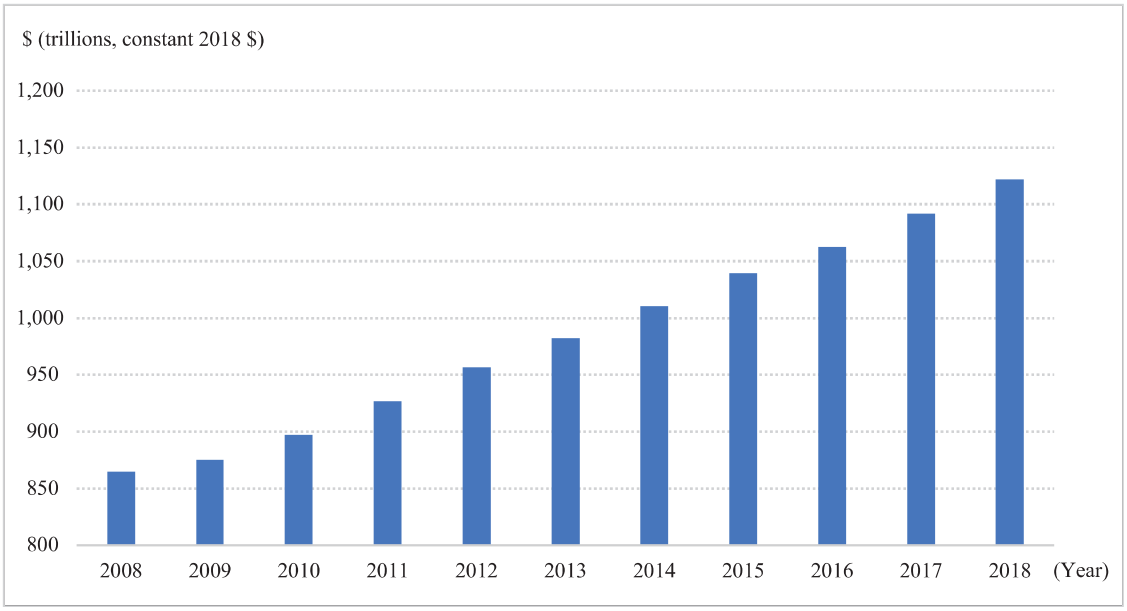

Figure 2.1 Resources of the world available to be opened up: 2008–2018

Source: Data from the WB database on wealth accounts.

A country's resources available to be opened up include human resources, produced resources, natural resources and net external assets. From 2008 to 2018, among the total resources of the world available to be opened up, human resources accounted for the highest proportion, accounting for about two-thirds; produced resources accounted for about 30 percent, equivalent to half of human resources (see table 2.1).

Table 2.1 Components of resource of the world available to be opened up, selected years between 2008 and 2018

Unit: percent

	2008	2012	2015	2016	2017	2018
Total resources	100.0	100.0	100.0	100.0	100.0	100.0
Of which: Human resource	62.1	62.3	63.2	63.6	63.9	64.1
Produced resource	31.3	31.2	31.1	31.3	31.3	31.4
Natural resource	7.0	7.2	6.2	5.6	5.2	5.0
Net foreign assets	–0.4	–0.6	–0.5	–0.4	–0.4	–0.5

Source: Calculated based on WB data on wealth account.

1. Human resources playing a decisive role

In 2018, among the 117 sample countries, 88 countries saw their human resources accounting for more than 50 percent of their respective resources available to be opened up. The figure was 73.2 percent for China and 71.2 percent for the United States. Their ratios are not only the highest among major countries, but also among the highest among all sample countries. Therefore, China and the United States stood out in terms of comparative advantage of human resource (see fig. 2.2).

Human resources refer to the quantity and quality of the population. The quality and quantity of a country's human resources determine the scope of production activities that country can undertake and its ability to integrate into the mid- and high-end sections of global industrial chains, supply chains, and value chains. The openness of human resources is generally measured by the level of cross-border population mobility. The inflow of high-quality overseas populations can not only influence the total amount of human resources in the incoming country, but also help optimize the quality of that country's human resources, thereby having a positive bearing on the country's comparative advantage. For example, the number of international students as carriers of cross-border knowledge flow increased significantly in during the period 2008–2023, which made the World Openness Index on inbound students growing by 49.1 percent, increasing the quantity and improving the quality of human resources in relevant countries.

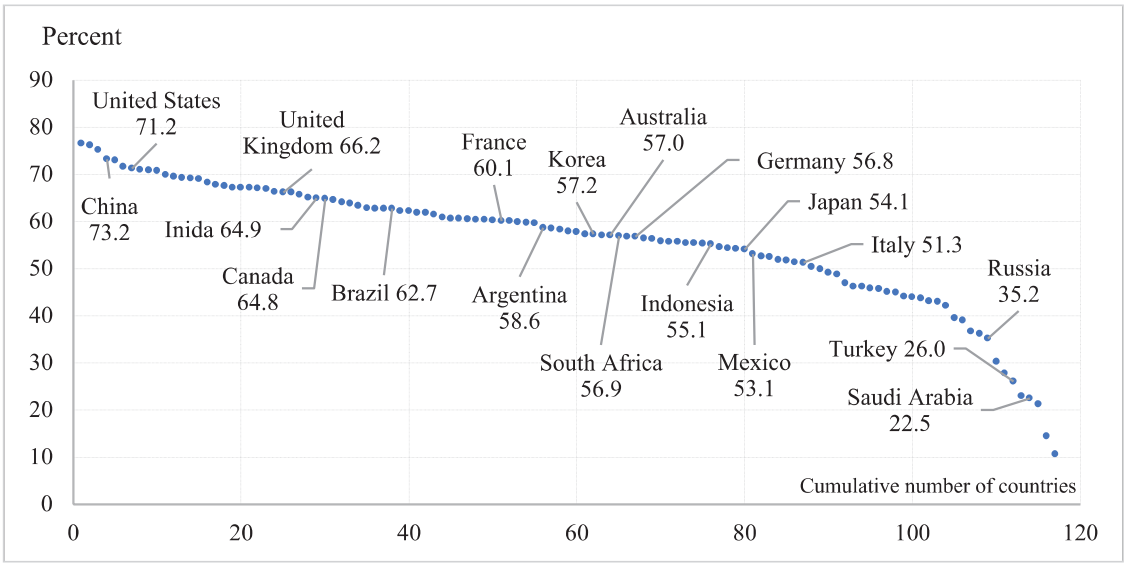

Figure 2.2 Share of human resources in national resources available to be opened up (selected countries): 2018

Source: Calculated based on WB data on wealth account.

2. Produced resources acting as an important force

In 2018, among 117 countries, the produced resources of 30 countries, such as Turkey, Italy, Russia and Mexico, accounted for more than 40 percent of their respective total resources available to be opened up, and the share exceeded 50 percent in 10 of those countries (Turkey is the only G20 member) (see fig. 2.3). As a result, those countries have had relatively obvious comparative advantages in terms of regional industrial division of labor and in some specific fields.

Produced resources include tangible resources, such as machinery, buildings, equipment, urban land (for residential and non-residential use), among others, as well as intangible resources, such as intellectual and financial resources (education, research and development [R&D], among others). The formation and accumulation of those resources not only determine the basic conditions for the formation of a country's comparative advantages, but also determine the ability of the country's market entities to participate in local, regional and global industrial chains, supply chains, and value chains.

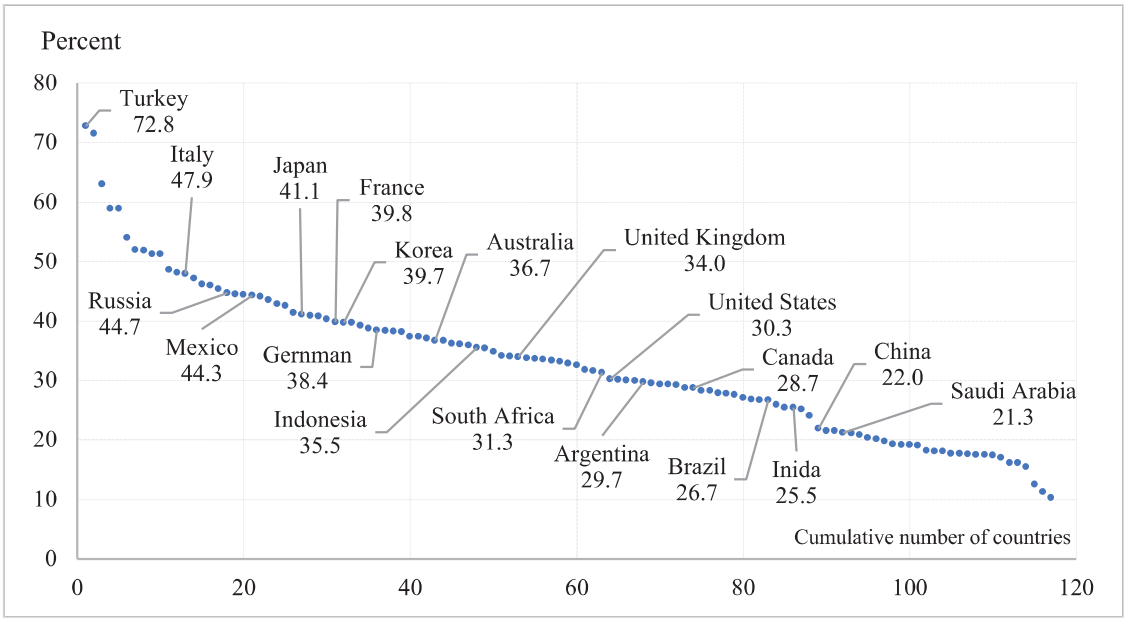

Figure 2.3 Share of produced resources in national resources available to be opened up (selected countries): 2018

Source: Calculated based on WB data on wealth account.

3. Natural resources being a necessary support

In 2018, among 117 countries, only 4 countries' natural resources accounted for more than 50 percent of their respective resources available to be opened up; 10 countries accounted for more than 40 percent, and 17 countries accounted for more than 30 percent (see fig. 2.4). As a result, the comparative advantages of those countries are relatively weak and have not been transformed into sufficient international division of labor and industrial advantages.

Natural resources include renewable natural resources and non-renewable natural resources, reflecting a country's ability to support and sustain population and economy of a specific scale. The development, acquisition and utilization of natural resources are a necessary prerequisite for national wealth accumulation and an important part of a country's opening up capacity; it can play a role in the country's comparative advantage, but its durability and influence are mostly limited. Especially with the advancement of science and technology and the global allocation of resources, the impact of natural resources on the evolution of comparative advantages will gradually weaken.

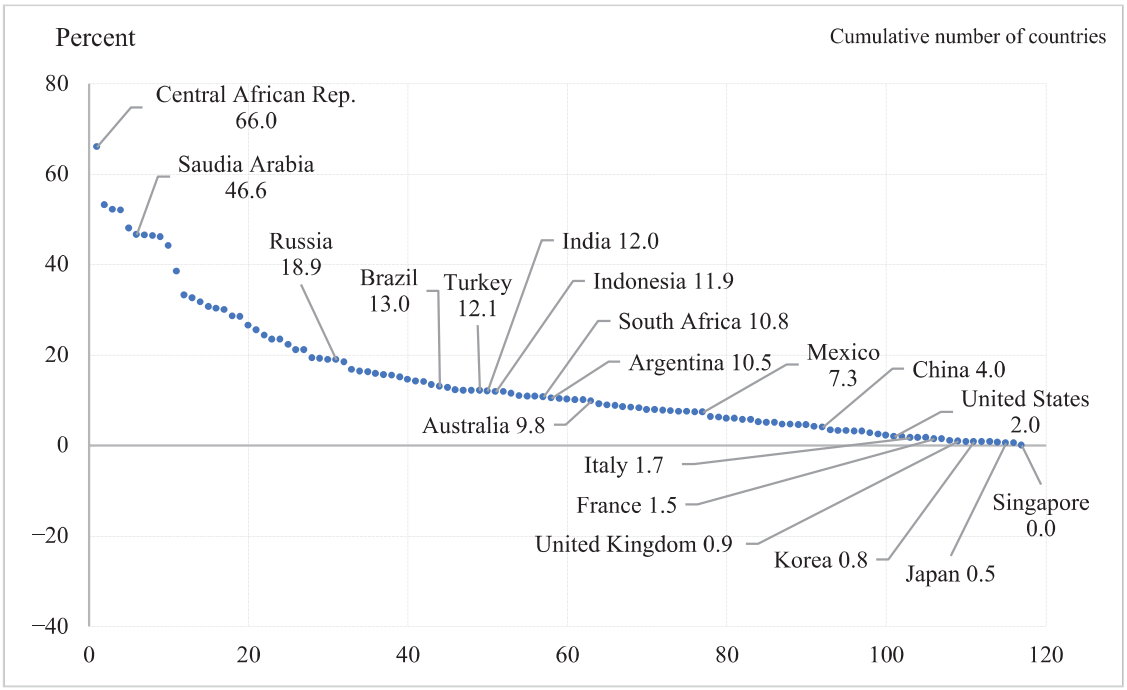

Figure 2.4 Share of natural resources in national resources available to be opened up: (selected countries): 2018

Source: Calculated based on WB data on wealth account.

4. Optimizing the allocation of resources available to be opened up

Optimizing allocation of human resource. Opening up of education should be promoted. Two-way cross-border opening up of education at all levels, especially higher education, should be encouraged. Cross-border flow of professionals should be promoted. Global recruitment should be carried out to select professionals with international vision and cross-cultural communication skills. Flexible employment mechanisms for remote working and project cooperation should be established. Labor training, including labor discipline training, should be strengthened to nurture a workforce that adapts to the requirements of modern production.

Optimizing allocation of produced resource. The potential of existing produced resources should be fully tapped and international trade and direct investment should be increased. The efficiency of utilizing produced resources should be improved and industrial upgrading and restructuring should be promoted. Intellectual property protection should be strengthened and capability of indigenous innovation should be cultivated. Professional skills and innovation ca-

pabilities should be improved and various knowledge spillovers from multinational corporations and international organizations should be absorbed in an efficient manner.

Optimizing allocation of natural resources. Cross-border development and utilization of natural resources should be carried out and cooperation mechanisms that are influential in international affairs should be improved. Location as one kind of resource should be effectively utilized to promote international connectivity. Appropriate ways should be adopted to allocate globally resources in an orderly manner and promote the shift of the country's main driving force for its development from natural resources to produced resources, finally to human resources, ultimately leading to the dynamic evolution of comparative advantages.

III. Enhance Capacity for Opening Up amid Expanding International Cooperation

National opening up is an integral part of world opening up. The national philosophy and systems on opening up and resources available to be opened up together constitute the global system of opening up. The evolution of comparative advantages will interact with this system. Countries need to improve their capacities while expanding international cooperation and achieve warranted openness even optimal openness.

1. Expanding international cooperation with a more open mindset

The law of dynamic evolution of national comparative advantages reveals that in the medium to long term, international opening up is mainly based on international cooperation rather than international competition, and national capacities for opening up need to be improved in international cooperation. Compared with a closed and exclusive small clique, a world system of opening up composed of all countries has obvious advantages. In a world where international connectedness is ever increasing, there are often differences among different countries in terms of areas of opening up, content of exchanges or transactions, and subjects of cooperation, but countries can learn from each other's strengths and complement each other based on their respective advantages.

Concerned parties need to maintain an open mindset, expand international cooperation in politics, economy, science and technology, education, culture, humanities, among others, build consensus on opening up, form a synergy for opening up, enhance capacities for opening up, and achieve diverse development goals by opening up. Some countries that lead in terms of capacities for opening up, even if they have reached or even passed their warranted openness, or are temporarily at a disadvantage in the distribution of opening up profit and loss, should still make full use of their strong opening up capacities to improve dynamic equilibrium of world opening up and, together with other countries, achieve their respective optimal openness, so that

they can, at a higher level of openness, help promote the building of a community with a shared future for humankind.

2. Working together to build an open, fair, equal, inclusive, and mutual benefits-based world

The trend toward a more open world will not change. Also the rend of shared destiny in the international community will not change. The rapid development of modern technology and the universal aspiration of humanity for a better life provide a solid foundation for global opening up from both the supply and demand sides. In recent years, economic globalization has encountered some setbacks, but it continues to move forward. An open world must be built through consultation, collaboration, and shared benefits among all countries. The world is composed of the people of all nations, and building an open world through consultation, collaboration, and shared benefits is not only the right of the people of all countries but also their expectation.

To build an open world together, it is essential to have the right philosophy on opening up. Both history and reality have proved that only being fair and equal, inclusive and beneficial to all, and based on cooperation and mutual benefit can create a favorable international order for opening up of all countries and effectively build a global opening up system and cultivate resources available to be opened up. International organizations will play an irreplaceable role in this process. It is necessary to accelerate efforts to establish and improve relevant mechanisms, optimize the balancing and sharing of globalization benefits, help developing countries enhance their comparative advantages, and enhancing their capacity for opening up.