REVIEW ON GREEN REVOLUTION IN INDIA AND ITS SIGNIFICANCE IN ECONOMIC DEVELOPMENT

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ABSTRACT

In recent years India is experiencing a rapid economic growth, especially after the 1990s when India started to liberalize its economy in a full scale. However, the author emphasizes the critical importance of the preceded 1980s when Indian agricultural sector registered a high growth rate. The Green Revolution in India started in the late 1960s and with its success India attained food self-sufficiency within a decade. However, this first „wave‟ of the Green Revolution was largely confined in wheat crop and in northern India such as Punjab, resulting in a limited contribution to overall economic development of the country. On the contrary, the agricultural growth in the 1980s (the second "wave" of the Green Revolution) involved almost all the crops including rice and covered the whole country, it enabled to raise rural income and alleviate rural poverty substantially. Such a rise of rural India as a "market" for non-agricultural products and services was an important pre-requisite for the rapid economic growth based on non-agricultural sectors‟ development in India after the 1990s.

KEYWORDS: Agricultural, Economic, Green Revolution

As one of the so-called BRICs, India is experiencing a rapid economic development and growth in recent years, especially after the 1990s when India started to liberalize its economy in a full scale. With no doubt, a series of economic liberalization policies implemented after 1991 in India largely contributed to the accelerated growth in the country until the present day. However, this paper will focus more on the role of the Indian agricultural sector in its history of overall economic development process. To mention at first the major conclusion of the paper, we consider that agricultural growth should be preceded the modern economic growth which is based on industrialization. As described later in detail, we emphasize the existence of domestic market for non-agricultural products and services as an important pre-requisite for the success of industrialization. By agricultural development through productivity growth such as the Green Revolution, rural income can be raised and rural poverty be alleviated. Therefore the Green Revolution can contribute to the overall economic development through creating a market in rural areas for non-agricultural products and services.

In the case of India, the Green Revolution at first started in the late 1960s. With the success of it, India attained food self-sufficiency within a decade by the end of the 1970s (the first "wave" of the Green Revolution). However, because it confined only to wheat crop and in northern India such as Punjab, it failed to raise income in the vast rural areas of the country. The second "wave" of the Green Revolution, however, reached India finally in the 1980s. Since it involved almost all the crops including rice (which is a very important staple food in eastern and southern India) and it covered the whole country, it was able to contribute to raise rural income and alleviate rural poverty in the whole country. Thus the second Green Revolution in the 1980s was essential for the history of Indian economic development.

THE GREEN REVOLUTIONS IN INDIA

Before focusing on the agricultural sector development in India, let us first look at briefly the overall economic development process of the country since independence in 1947 until the present day. Figure 1 illustrates the economic growth rates (three-year moving averages) of India in order to eliminate year to year fluctuations.

It is found from the figure that India suffered a relatively low economic growth rates around 3.5 percent per annum until the late 1970s, with a large fluctuations due to the influence of the agricultural sector growth which largely depended on the monsoon situation. Indian economy then experienced some improvement in the 1980s because of the government's liberalization policies (but not in a full-scale) under the Rajiv Gandhi regime and a relatively high growth rate attained by the agricultural sector in the decade. And finally, after the full-scale economic liberalization in 1991 the economic growth rates in India accelerated to a very high level (usually more than 6 percent, and even more than 8 percent after the mid-

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2000s) until recently. It is notable at the same time that the agricultural sector growth started to clearly lag behind the GDP growth since the 1990s, which indicates that the Indian economy was plunged into a new developmental stage after the 1990s where widening disparity between agricultural and non-agricultural (or between rural and urban) sectors is one of the major problems for the economy. Now let us look into the agricultural sector development in India by dividing the whole period from the independence to the present time into several periods.

It is well known that the agricultural sector of British colonial India, especially the crop sector, was totally stagnant or even a negative growth was recorded in the entire first half of the 20th century. This pattern, however, was reversed at the independence in 1947. The foodgrains (which is defined in India as cereals plus pulses) production registered a high growth in India at 4.13 percent during 1951-52 to 1960-61 on average (Kurosaki, 1999). Both the sown area expansion and the crop yield increase were contributed to the growth. However, as shown in Figure 1, the growth rate of the agricultural sector was decelerated during the period. The priority of the government's agricultural policy was primarily given to institutional reforms such as the land reform and the promotion of farmers‟ cooperatives. As a „socialist‟ nation India strongly promoted a heavy industrialization, especially after the second Five Year Plan (1956-57 to 1960-61), leaving the agricultural sector relatively neglected.

The serious economic and political crisis which India faced in the mid-1960s triggered the big conversion of agricultural policy of the government; i.e. it emphasized technological innovation and started to introduce new agricultural technologies from abroad. And it was a fortunate coincidence for India that the mid-1960s was the time when new seed-fertilizer technologies started to diffuse in the tropical developing world. In particular, it was luckily found that the wheat HYVs (Mexican semi-dwarf wheat varieties) developed in CIMMYT in Mexico were quite suitable for the climate conditions in the northern India such as Punjab 1 . And the most important factor which promoted the dissemination of the new technologies was the diffusion of private tube-wells which exploit groundwater.

Thus the new seed-fertilizer technologies, especially for the wheat crop, started to disseminate very rapidly in northern India and within a decade or so India attained food self-sufficiency except for some drought years. It can be called the first "wave" of the Green Revolution in India. However, Indian economy as a whole had to experience a bitter "lost decade" during the mid-1960s to the mid-1970s mainly due to the shortage of foreign exchange for the import-substituting industrial sectors. It was because India had to continue to import a large amount of food for several years and it also had to import chemical fertilizers (and agricultural machineries) for the development of agriculture. In sum, India had to pay a huge cost for the sake of the negligence of agriculture at the time until the mid-1960s, which is considered to be a typical case of the "Ricardian trap" in economic development.

ROLE OF THE GREEN REVOLUTIONS IN ECONOMIC DEVELOPMENT

Now let us summarize the role of the Green Revolution in India, especially the second Green Revolution during the 1980s, on overall economic development process of the country.

The most important lesson we learned is that agricultural growth should be preceded the modern economic growth based on industrialization. The reasons are as follows:

At the beginning of economic development the agricultural sector is "large". A large share of population depend their livelihood on agriculture and related activities. They are poor and the share of their household expenditures for food and beverages is usually very high; around 70 percent. Under such a situation, even if the government tries to promote industrialization (especially heavy industrialization) with neglecting the agricultural sector, it tends to fail because of the lack of the market for non-agricultural sectors. Note that export-oriented industrialization is more difficult and entrepreneurs should at first depend on the domestic market which is more familiar to them before going to exploit export market. In this sense, the existence of the domestic market for their products is essential when promoting industrialization. Because the majority of people live in rural areas at this stage of economic development, the key is how to raise income and alleviate poverty in widespread rural areas. Thus the development of agricultural sector, especially staple food sector, should come first because majority of rural population depend their livelihood on it. If raising income of rural population is the key, the agricultural growth should be led by productivity growth, rather than by "horizontal" expansion of farmland.

SUMMARY AND CONCLUSIONS

In recent years India is experiencing a rapid economic growth, especially after the 1990s when it started to liberalize its economy in a full scale. However, the author emphasizes the critical importance of the preceded 1980s when Indian agricultural sector registered a high growth rate. The Green Revolution in India started in the late 1960s and with its success India attained food self-sufficiency within a decade. However, this first wave of the Green Revolution was largely confined in wheat crop and in northern India, resulting in a limited contribution to overall economic development of the country. On the contrary, the agricultural growth in the 1980s involved almost all the crops including rice and covered the whole country, it enabled to raise rural income and alleviate rural poverty substantially. Such a rise of rural India as a market for non-agricultural products and services was an important pre-requisite for the rapid economic growth based on non-agricultural sectors‟ development in India after the 1990s. The 1980s was a critical decade for South Asia and Sub-Saharan Africa to make a great divergence in the economic development thereafter. The implication for Sub-Saharan Africa is that raising income in rural areas through productivity growth of agricultural sector, especially the staple food sector, is essential for the success of economic development through industrialization.

However, the actual situations which Sub-Saharan Africa faces at present are much more challenging, if various disadvantages are taken into consideration. Disadvantages of contemporary Sub-Saharan Africa include; diversified staple food in which rice and wheat has only a minor share, scarcity of irrigated land, labor shortage in rural areas, difference in staple food between rural and urban areas and so on.

The Green Revolution which India and other Asian countries experienced in the past is much needed in Sub-Saharan Africa now for the long term economic development. It is forecasted, however, that imports of rice and wheat will continue to be increased, especially in urban areas.

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