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<td>Weiqing, Zhao; Umali, Celia L.</td>
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<tr>
<td>Citation</td>
<td>東南アジア研究年報, (41/42), pp.1-12; 2001</td>
</tr>
<tr>
<td>Issue Date</td>
<td>2001-03-25</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://hdl.handle.net/10069/26566">http://hdl.handle.net/10069/26566</a></td>
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Investment Mechanisms in Agricultural Infrastructure in Japan, China and the Philippines

Zhao Weiqing* and Celia L. Umali

Abstract:

This paper examines the investment mechanisms in agricultural infrastructure in Japan, China and the Philippines where the provision of agricultural infrastructure is deemed important for the agricultural sector. In China many institutions are involved in agricultural investments and the farmer household and the collective are the main investors. Credit is the most important source of funds for investment in China. In Japan and the Philippines, investments in agricultural infrastructure are primarily undertaken by the government using government funds. The investment policies of the three countries are likewise analyzed and the options for investment in agricultural infrastructure are presented.

Introduction

The adequacy of agricultural infrastructure affects the profitability and productivity of agriculture, and subsequently the development of the agricultural and rural economies. Rural roads are important to link geographically dispersed areas, and facilitate the flow of the factors of production and products. Modern irrigation systems can reduce the dependence on nature, and result in higher yields. Agricultural infrastructure includes many aspects, but we can not study all of them in entirety. The study will only deal with the direct productive infrastructures which include irrigation systems, agricultural machines, rural roads and so on.

Economic development levels in Japan, China and the Philippines are different. So are the conditions of agricultural production. Great differences also exist

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in investment mechanisms in agricultural infrastructure. These are reflected in terms of guiding ideas, fundamental policies and main investment bodies, etc. There might not be too many common grounds to base the comparison on, but some similarities can be found such as the small scale management of agriculture and the presence of various channels of investments. Moreover as we move towards the next century, countries have some common concerns, such as to construct adequate agricultural infrastructure, increase agricultural productivity, guarantee steady supply of foods, and give full play to the multiple functions of agriculture.

The purpose of this paper is to study the investment mechanisms in Japan, China and the Philippines, particularly to compare the investment bodies and the forms of investment in agricultural infrastructure. We will also analyze and summarize the investment policies in agricultural infrastructure. It is hoped that this research can be helpful for policy making, and serve as a good reference for future investment policies in agricultural infrastructure.

Main Investment Bodies

In this paper, investment bodies refer to the institutions involved in agricultural infrastructure investments, directly or indirectly. The main investment bodies in China, Japan and the Philippines are presented in Table 1.

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<thead>
<tr>
<th>China</th>
<th>Japan</th>
<th>Philippines</th>
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<tbody>
<tr>
<td>Nation</td>
<td>Nation</td>
<td>Nation</td>
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<tr>
<td>Local government</td>
<td>Prefecture</td>
<td>Local government</td>
</tr>
<tr>
<td>Farmer household</td>
<td>Region (Farmer household,</td>
<td>Farmers association</td>
</tr>
<tr>
<td>Village collective</td>
<td>village, town and city)</td>
<td>Government banks</td>
</tr>
<tr>
<td>Bank</td>
<td>Government and private</td>
<td>International donor / lending</td>
</tr>
<tr>
<td>Local enterprise and</td>
<td>lending organization</td>
<td>agencies</td>
</tr>
<tr>
<td>individual</td>
<td></td>
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<tr>
<td>Foreign investor</td>
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</table>

In China, the nation through sectors associated with agriculture allocates funds for agricultural infrastructure and is mainly responsible for large projects
which are related to the overall situation, for example, water conservation projects of large rivers and land conservation oriented large forestry projects. The national government also provides funds to support the construction of agricultural infrastructure in areas where national commercial grain bases are located. Chinese local governments which also invest in agricultural infrastructure refer to township, county, city and province. Local government sees to the construction of important agricultural infrastructure, for example, renovation projects of large machines, and water conservation projects in its region.

At present family accumulations of Chinese farmers have become the main source of rural accumulations. Investments of farmer households play a key role in the construction of agricultural infrastructure. Farmer households are independent producers of certain commodities and are actively involved in making strategic decision for investment in agricultural infrastructure like water irrigation projects. Village collectives on the one hand invest their accumulations in the construction of agricultural infrastructure, for example, larger village machines and roads. Others organize the labor force to invest their labor into the construction of agricultural infrastructure.

Banks are indirect investment bodies which provide some necessary advice to the borrower which can help them make strategic investment decision. The banks supply corresponding funds in the form of credit farmers. In China, the credit organization involved in investments in agricultural infrastructure is mainly the agricultural bank.

In Japan, the nation, prefecture and region including the farmer household, village, town and city are in-charge of the construction of agricultural infrastructure. The national government invests funds into projects such as irrigation and drainage, repair of main water conservation facilities, comprehensive equipment for land improvement, and construction of rural roads, etc. For the smooth implementation of the projects, the Ministry of Agriculture, Forestry and Fisheries draws up a detailed long term plan which stipulates the equipment items, construction standards, investment ratio, etc..

The prefecture is an important main investment body at the regional level.
It provides funds for the construction of agricultural infrastructure, bears a proportion of the investments in irrigation and drainage, repair of main water conservation facilities, farm equipment, equipment for land improvement and construction of rural roads in accordance with the long term plan.

According to the Philippine national development plan, the central government still is involved in the construction of farm-to-market roads and irrigation and drainage in coordination with the Department of Agriculture and the National Irrigation Authority with the involvement of the Department of Public Works and Highways.

Since 1991 the Local Government Code was enforced devolving many responsibilities to the local government units (LGUs). LGUs refer to the provincial, municipal and barangay (township) governments. This devolution has institutionally given LGUs the power to raise funds and initiate agricultural infrastructure projects such as farm-to-market roads and irrigation system as they see necessary. Farmers associations also invest in irrigation systems and agricultural equipment. In addition, international lending / donor agencies (e.g. Asian Development Bank and the Japan Bank for International Cooperation) are indirectly involved in the development of rural roads and major irrigation projects through the loans and grants, at the present time, channeled through the national government.

**Investment Forms**

Given these investment bodies, investments in agricultural infrastructure take various forms as shown in Table 2.

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<tr>
<td>Government financing</td>
<td>Government financing</td>
<td>Government financing</td>
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<tr>
<td>Independent investment</td>
<td>Farmer household</td>
<td>Farmers fees</td>
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<tr>
<td>Stocks</td>
<td>Credit</td>
<td>Credit</td>
</tr>
<tr>
<td>Bonds</td>
<td></td>
<td>Foreign grants / loans</td>
</tr>
<tr>
<td>Credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract / rental</td>
<td></td>
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<tr>
<td>Labor accumulation</td>
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</table>
According to the demands of agricultural development, Chinese national and local governments invest funds into the construction of agricultural infrastructure (direct productive infrastructure) which constitute only a small portion of the total investment in agricultural infrastructure. Social groups and individuals also independently invest a lot of funds in agricultural infrastructure, use their profits to pay back investments and get earnings. Credit is an important form of investment in agricultural infrastructure, and now is mainly provided by commercial banks. A government lending organization (e.g. agricultural developmental bank) can only provide a small portion of funds.

Stock system is an effective means to realize investment in agricultural infrastructure from various channels. It can also broaden the investment channels, and realize reasonable composition of essential factors of production. The other investment forms include bond, contract and rental, and labor accumulation.

In Japan, government financing is the main form of investment in agricultural infrastructure. In order to support the construction of agricultural infrastructure, national and regional governments allocate definite financial resources for investment in agricultural infrastructure. Besides the investment of the nation and prefecture, city and town and village also provide some subsidiary investment.

Farmer households provide two forms of investment. They either provide supplementary investment for public projects and group projects, or independently invest funds in agricultural infrastructure. Credit is also an important source for investment in agricultural infrastructure. The government directly provides support for credit. These funds are basically a fiscal allocation and loaned out for the construction of agricultural infrastructure at low or zero interest.

In the case of the Philippines, the government has funds at the national level for the development of the basic agricultural infrastructure and provides financing to the LGUs through the internal revenue allocation (IRA) which is distributed uniformly according to population and land area. This IRA funds can be supplemented by the LGUs concerned by collecting taxes, issuing local bonds and acquiring loans from the national government and other financial institutions. The LGUs can also have direct access to donors for overseas development assistance to
fund the local agricultural development projects.

Fees collected from the members of the farmers association for the use of the irrigation systems are invested back for their repair and maintenance. Government banks like the Land Bank and the Development Bank of the Philippines provide fixed asset financing at subsidized rates to farmers cooperatives for irrigation and agricultural machineries and equipment. Lastly international grants and loans are likewise used in much needed agricultural infrastructure projects throughout the country.

**Fundamental Policies for Investment in Agricultural Infrastructure**

The basic policies regarding investments in agricultural infrastructure in China, Japan and the Philippines are different. In China, the government takes a series of measures in terms of policies and funds to attract the investment of farmer households and social groups. In Japan, the government is the main source of funds for investment in agricultural infrastructure, and farmer households provide supplementary funds. The Philippines is a developing country, and has limited funds. At present there are many priority sectors like education and health which need financial investment, hence, funds for agricultural infrastructure projects are restricted by the fiscal budget. For this reason the government has to turn to other sources as well as to international funding and donor agencies for the construction and maintenance of agricultural infrastructure.

**Basic policies of China for investment in agricultural infrastructure**

1. Farmer household and collective as main investor

   Financial resources of governments are limited, so it is impossible to supply sufficient funds for the construction of agricultural infrastructure. Hence it is the government’s policies to make full use of the funds of farmer households and collectives to strengthen agricultural infrastructure. Therefore, the government uses some funds and related policies to attract investments of farmer households and collectives, and raises more funds to invest in the construction of agricultural infrastructure.
2. Credit investment as the main part, government investment as the subsidiary part

China is a big agricultural nation, and needs a lot of funds to invest in agricultural infrastructure. Because the country's economic development is relatively backward, the financial investment capacity of the government is limited. Therefore, it is very important to enforce the policy, making credit investment as the main part and government investment as the subsidiary part, and at the same time give full play to the function of the rural banking sector in raising and investing funds.

3. Stock system and stock cooperative system as means to guide farmer's investment and attract social funds

Stock system and stock cooperative system are effective ways to realize investments in agricultural infrastructure using many channels. With this form, initiatives can be greatly aroused, and each main investment body can get corresponding benefits and at the same time must take corresponding risks according to the amount of investment.

4. Structure combining fund investment with labor investment

In China, rural funds are in short supply, but labor forces are in surplus. Combining fund investment with labor investment can increase efficiency for the utilization of funds. In practice, labor investments have made up a certain proportion of the total investment in agricultural infrastructure. Local governments have also drawn up some feasible policies to guarantee labor investments.

Basic policies of Japan for investment in agricultural infrastructure

1. National investment as main part and local investment as subordinate part

Investments in agricultural infrastructure are mainly undertaken by the national government. National investment takes about one half of the total investment, and is determined in the form of legislation. In order to carry forward the enforcement of the policies for investment in agricultural infrastructure, every year the Ministry of Agriculture, Forestry and Fishery works out a plan for the main projects, stipulating in detail the various subsidiary projects, and at the same time every prefecture works out the detailed equipment plan and invests the corresponding funds in agricultural infrastructure. The city, town and village also undertake a part of the investment according to the financial investment of the nation.
and prefecture as well as the local conditions.

2. Farmer household investment as supplementary and policy on lending as guaranteed source of funds

   Besides the investment of the government, farmer households undertake supplemental investment according to the benefits expected from the projects, and at the same time the appropriate policy provides strong support for credit investments in agricultural infrastructure. The policy on lending provides for the funds for lending that include agricultural modernization funds, agricultural improvement funds and so on at low or zero interest rate.

**Basic policies of the Philippines for investment in agricultural infrastructure**

1. Government as main source of financing

   In accordance with the Agriculture and Fisheries Modernization Act, priority is given to farm-to-market roads to give access to the agricultural areas. Funds invested in agricultural infrastructure projects by the national and local governments come mainly from the central government. Although in certain cases like for instance irrigation systems the farmer-beneficiaries amortize the direct construction costs and pay for their operations and maintenance. There are however no sufficient measures to encourage farmer households to invest in agricultural infrastructure. The government therefore seeks foreign loans and grants and also authorizes the LGUs to resort to other sources of financing such as bonds and loans from private institutions.

2. Increasing role of the LGUs

   The LGUs take the initiative to determine high-priority projects and serve as the lead implementor of rural infrastructure projects in their areas since the devolution of the many responsibilities of the central government to the local government units in 1991. Although the national government provides policy guidance and technical advice to the LGUs the devolution was enforced because of the difficulties in the provision and maintenance of these infrastructures by the national government. Hence we see an evidently increasing role of the LGUs in the years ahead.
Investment Mechanisms in Agricultural Infrastructure in Japan, China and the Philippines

Guiding Principles for Investment in Agricultural Infrastructure

China, Japan and the Philippines have different guiding principles for investment in agricultural infrastructure. China pays more attention to the economic relations and benefits. Japan puts emphasis on the social supports and comprehensive benefits. In the Philippines the government is committed to intervene as necessary in the provision of the basic infrastructure and at the same time solicit private sector involvement.

Chinese guiding principles for investment in agricultural infrastructure

1. Adjusting economic relations and increasing investment in agricultural infrastructure in various ways

Because financial resources of governments are limited, therefore, governments must mobilize all active factors, adjust economic relations, and raise construction funds from many sources. For this purpose, the government has to make best use of guiding function of finance and credit funds, and at the same time draw up relevant policies to mobilize the enthusiasm of farmer investment and attract social funds to invest in the construction of agricultural infrastructure. The government also encourages farmers to use the stock system and stock cooperative system, labor accumulation and so on to strengthen investment in agricultural infrastructure.

2. High priority on economic benefits

China is a developing country, and the protection system for agricultural products is not perfect. The government does not have sufficient funds to vigorously enforce subsidiary policy. Hence farmers must make full use of the regional distinguishing features and make the resource superiority be changed into economic superiority. In order to invigorate the rural economy and increase farmer's income, it is important to strengthen investment in agricultural infrastructure, carry forward agricultural industrialization, and develop high quality agriculture with good benefits. For this reason, various levels of governments take this matter seriously and equipped with corresponding finance and credit funds support the investments in agricultural infrastructure, and create the conditions for the development of agricultural industrialization as well as high quality and profitable agriculture.
Japanese guiding principles for investment in agricultural infrastructure

1. Support for agriculture by society

Japan is a highly developed country, and enforces a policy that highly subsidizes agriculture. In order to guarantee a safe supply of food and improve production, the government solidly ensures the fundamental equipment of agricultural production according to the Basic Bill of Food and Agriculture and Countryside. For this reason, the nation provides financial support, and moreover gives credit support for the construction of agricultural infrastructure by means of fiscal investment and lending. The local governments also provide the necessary supports of funds according to the agricultural administration and land improvement plan.

2. More attention to comprehensive benefits

Japan pays more attention to environmental protection. In accordance with the requirement of the Basic Bill of Food and Agriculture and Countryside, Japan must give full play to the function of agriculture as they relate to the natural cycle, strengthen countermeasures to solve the environmental problems in agriculture, at the same time carry forward equipment conditions at the countryside in a planned way, and give full play to the various function of agriculture. Therefore, the nation provides support for funds for projects like water protection, equipment projects for farmland protection, projects to prevent environmental pollution and so on.

Philippines guiding principles for investment in agricultural infrastructure

1. Mobilization of the private sector

Farmers think that the provision of agricultural infrastructure is a matter of government responsibility. These expectations however can not be completely met due to the financial constraints the government is faced with. Although the government vows to increase agricultural productivity, reduce poverty and promote rural development through investments in infrastructure and yet meet the objectives of ecological balance and environmental preservation. To this effect, the private sector is called upon to get involved so as to lessen the fiscal burden on the government by drawing up some viable schemes like the build-operate-transfer (BOT) and also by strengthening the participation of the farmers associations in the planning, implementation and maintenance of irrigation systems.
2. Capacity building for the LGUs

The decentralization of power has given the LGUs increased responsibilities. But many of the LGUs do not have the capacity to fulfill them. Their skills in planning and drawing up of budgets as well as administration and institution building are inadequate. For the LGUs to maximize the benefits of the devolution and to effectively exercise the powers vested upon them, the government sees the need to assist the local government units to improve their skills. In this regard, capacity building efforts are directed towards local planning, coordination and implementation of development projects including that of agricultural infrastructure.

Conclusion

From the above discussions we can have a better understanding of the investment mechanisms in agricultural infrastructure in Japan, China and Philippines, and draw some conclusions:

1. The investment in agricultural infrastructure can be considered as important and in the long-run run, needed to improve agricultural production and satisfy the demand for foods, give full play to the various functions of agriculture, and at the same time pay more attention to environmental protection.

2. The nation can stipulate the investment system, investment direction, and investment form and so on in the form of legislation.

3. The government can systematically program the construction of agricultural infrastructure and provide corresponding funds in a planned way according to the developmental requirement of agricultural industrialization, scale management agriculture and environmental protection.

4. The government can strengthen public finance and credit investment for the construction of agricultural infrastructure, adjust economic relations, and attract investment of farmers and the private sector by means of the guiding function of finance and credit funds as well as coordinating policies and measures.

5. Countries can make best use of stock and stock cooperative forms to mobilize the enthusiasm for investment and utilize and administer funds; to realize reasonable composition of land, funds, labor force, technology and other productive factors; and to strengthen the investment in agricultural infrastructure, and promote agricultural industrialization.
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