

AN IMPLICATION OF THE CODE OF LIBERALISATION OF CAPITAL MOVEMENTS OF THE OECD ON KOREAN AGRICULTURE*

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I. Introduction

In March 1995, the Korean government applied for an admission to the Organization for Economic Cooperation and Development(OECD). To join the OECD, the government should be ready to assume the obligations as a member country, which are imposed by the OECD. One of the obligations is to accept the code of liberalisation of capital movements of the OECD.

The liberalisation of capital movements is believed to bring broad impacts on the Korean economy including its agricultural sector through changes in macroeconomic variables such as money supply, general price level, foreign exchange rate, balance of payments, and so on. However, this paper focuses on the direct investment by non-residents of the Code on Korean agriculture because of a broad coverage of the Code.

The direct investment by non-residents can bring a positive effect on Korean agriculture in terms of an introduction of new and advanced technologies and management methods with an inflow of foreign capital. On the other hand, the investment can have a negative effect such as breakdown of small-scaled farmers and market participants. Therefore, the scope of study regarding the direct investment must be very broad due to the fact that capital is related to

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almost all of the economic activities of agriculture. In this sense, there are many limits in this paper.

One of the limits is that the effect of the liberalisation of direct investment on the Korean agriculture is briefly reviewed partly due to a wide range of effects caused by direct investment and a relative shortage of data concerned. The second limit is the assumption that agricultural sector includes only activities directly related to agricultural production and marketing even though agricultural sector is very broad in a real world. The third limit is that only one sector over numerous agricultural sectors according to the Korean Standard Industrial Classification is reviewed for the effect of direct investment by non-residents.

This paper has attempted to review possible effects of liberalisation of direct investment by non-residents, which is one of the items contained in the Code of Liberalisation of Capital Movements of OECD, on the Korean agriculture.

I. Code of Liberalisation of Capital Movements of the OECD

The Code of Liberalisation of Capital Movements of the OECD (hereinafter referred to as "the Code") was first established in 1961, and revised in 1964, 1973 and 1989. The characteristics of the revision of the Code is said to be "the broadening the scope of liberalisation obligations" and "strengthening their application." The Code is said to be the only multilateral instrument promoting the liberalisation of capital movements, except for the Directive of the European Communities. It is noteworthy that the members of the European Communities are also member countries of the OECD.

As the acceptance of liberalisation obligations of the Code has become more general, the Code has become more important. That is, new members who joined the OECD have adhered to the Code, and the existing members have gradually given up their special arrangements allowing them to derogate from most of the obligations of the Code.

The Code says in the Article 1, General Undertakings, that members shall progressively abolish between one another, in accordance with the provisions of Article 2, restrictions on movements for capital to the extent necessary for effective economic co-operation. Thus, the purpose of the Code lies in the efficient

allocation of limited resources (or capital) over the world by facilitating or promoting capital movements across countries. Of course, the capital movements across countries have played an important role in the growth of world economy. However, the recent financial crisis in Mexico would be considered as another side of the liberalisation of capital movements.

The first step to finding a possible effect(s) of capital movements on the Korean agriculture is to review the contents contained in the Code of Liberalisation of Capital Movements. The Code of Liberalisation of Capital Movements, revised in 1989, is consisted of 16 items classified by the Roman letters as follows, and of 91 sub-items which are not listed up in this paper. It is easily understood that the Code covers a broad and wide range of business activities. Therefore, it is said that the acceptance of the Code will bring broad and wide impacts on the Korean economy.

I. Direct Investment

A. In the country concerned by non-residents by means of:

1. Creation or extension of a wholly-owned enterprise, subsidiary or branch, acquisition of full ownership of an existing enterprise;
2. Participation in a new or existing enterprise;
3. A loan of five years or longer.

B. Abroad by residents by means of:

1. Creation or extension of a wholly-owned enterprise, subsidiary or branch, acquisition of full ownership of an existing enterprise;
2. Participation in a new or existing enterprise;
3. A loan of five years or longer.

II. Liquidation of Direct Investment

A. Abroad by residents

B. In the country concerned by non-residents

III. Operations in real estate

A. Operations in the country concerned by non-residents:

B. Operations abroad by residents

IV. Operations in securities on capital markets

V. Operations on money markets

VI. Other operations in negotiable instruments and non-secured claims

VII. Operations in collective investment securities

- VIII. Credits directly linked with international commercial transactions or with the rendering of international services
- IX. Financial credits and loans
- X. Sureties, guarantees and financial back-up facilities
- XI. Operation of deposit accounts
- XII. Operations in foreign exchange
- XIII. Life assurance
- XIV. Personal capital movements
- XV. Physical movement of capital assets
- XVI. Disposal of non-resident-owned blocked funds

Items by the Roman letters from IV to XVI seem to have relatively low relations with agriculture. That is, items which have a close and direct relation with the agricultural sector are 3, providing that the agricultural sector is confined to the agricultural production and marketing activities. They are direct investment, liquidation of direct investment, and operation in real estate.

In reality, the agricultural sector is very broad. For example, agricultural marketing includes activities related to finance, insurance, transportation, and others. Agricultural production is also closely related to agricultural financing. There is an indication that acceptance of the liberalisation obligations of the Code can bring a broad effect on the agricultural sector through credit, financial and other activities.

However, it is assumed here that the agricultural sector in a narrow sense includes only activities directly related to agricultural production and marketing. This is based on the assumption that the agricultural production includes only production activity, and that agricultural marketing includes only commodity transaction activity. Therefore, the effect of capital movements on the Korean agriculture is also assumed to be confined to the agriculture production and marketing in this paper. With respect to this view, the three items of the Code (direct investment, liquidation of direct investment, and operation of real estate) are assumed to bring effects on the Korean agriculture.

III. Liberalisation Schedule of Foreign Direct Investment in Korean Agriculture

Direct investment projects by non-residents to the agricultural sector

TABLE 1 Foreign Investment by Sector

Unit: US \$ 1,000

Period	Agriculture	Manufacturing	Service	Total
1962-71	2,096(0.8)	231,753(87.1)	32,821(12.1)	266,031(100)
1972-81	12,712(0.8)	1,164,301(72.7)	423,060(26.5)	1,600,074(100)
1982-86	2,611(0.2)	935,187(52.9)	829,931(46.9)	1,767,729(100)
1987-92	6,755(0.1)	4,553,680(69.7)	1,970,035(30.2)	6,530,470(100)
1993	127(0.0)	526,817(50.5)	517,330(49.5)	1,044,274(100)
94. 1-7	-	214,532(27.2)	573,947(72.8)	788,479(100)
sector total	24,401(0.2)	7,626,271(63.6)	4,346,485(36.2)	11,997,057(100)

Note : The figures in parentheses indicate percentage over total.

Source: Ministry of Finance, Finance and Monetary Statistics, Jul.-Aug., 1994.

had been actually prohibited in Korea until 1993 when the liberalisation schedule of direct investment by non-residents was announced. That is, only US\$ 24 million of foreign capital has been invested into the Korean agriculture over the period of 1962 to July 1994. Moreover, the investment was made to the agro-processing and food industry. Thus, no foreign direct investments have been made to the sector of agricultural production and marketing.

One of the main reasons to prohibit foreign investments in the agricultural sector lies in the fact that the agricultural sector is operated in a very small-scale by a numerous farmers and market participants. An average farm size in terms of farmland was about 1.3 hectares in 1993, even though it is in an increasing trend. In addition, there had been a 3-hectare ceiling in farmland ownership, implying that no farmer could legally own more than a 3-hectare farmland. The restriction on land ownership is based on the agricultural policy to maintain an owner-operated farming system. Another restriction was that farmland must be owned by tillers. These restrictions prevent urban capitals from purchasing a farmland. In other words, farmland policy had focused on the concentration of farmland to owner-operated farmers, preventing urban capitals from participating in a farming activity. Under this circumstance, farm size could not be expanded enough to achieve a scale economy, even though it should

be expanded to modernize the Korean agriculture.

Obviously, farmers with the farm size cannot compete with urban capitals which intend to manage their farming activities based on the economic efficiency and competition. Moreover, it is believed that most farmers will give up their farming activity if direct investments by non-residents with larger capitals than the domestic urban business firms were to be made in the agricultural sector. This kind of argument prevents foreign capital from participating in the agricultural production activity.

Market participants in agricultural marketing also manage their business activities in a small scale in terms of trading volume or trading amount. That is, consignors in rural area, wholesalers and retail stores in urban area working in the channel of transacting agricultural commodities are small in their business scale. For example, the number of rice retailers in Seoul is 9,126 as of 1993, and rice consumption per day in Seoul is estimated to be about 40,000 bags of 80 kilograms. Therefore, an average trading volume of rice retailers is less than 150 bags per month and an average trading amount is less than Won 18 million (in Korean currency) when 1 bag of 80 kilograms is equal to Won 120,000. This is a typical evidence that market participants in the rice industry is small-scaled. Most of market participants in agricultural marketing manage their business in a small scale with a relatively small amount of capital. Therefore, the participants cannot compete with urban-based business firms. Moreover, they cannot compete with foreign capitals with an advanced management skill and a world-wide information network system.

A small-scaled operation of agricultural production and marketing protects farmers and market participants from urban-based business firms and foreign capitals. That is, an institutional entry barrier into the agricultural sector provides it a shelter not to compete with capital of non-farm sectors. However, the industry of agricultural production and marketing cannot follow the growth of non-farm sectors due partly to a shortage of capital. Therefore, the industry remains as a declining sector during the period of rapid growth of the Korean economy.

The rapid growth of the Korean economy brings a wave of liberalisation of the national economy, and the agricultural sector

could not be an exception from the wave. That is, the domestic agricultural market began to be opened from late 1970s. The Uruguay Round negotiation was a turning point in the Korean agriculture, in a sense that the final agreement brought a partial opening of rice market through the so-called minimum market access.

In addition, a plan of liberalisation of direct investments by non-residents for the period of 1993 to 1997 was published in June 1993. The revision of the plan, announced in June 1994, expanded and accelerated the degree of liberalisation. Of course, many sub-sectors of agriculture were included in the plan. That is, foreign capitals can be directly invested to agricultural sector, except the 7 sub-sectors. The 7 sub-sectors are growing of cereal grains, farming of cattle, wholesale of grain, wholesale of meats, retail sale of grain, husking of cereals, manufacture of starches and starch products.

The criteria of selecting the sub-sectors in the liberalisation plan included an investment possibility by non-residents, effect of investments on agriculture, degree of contribution to agriculture development, etc. The investment possibility means that the sectors with a lower possibility of direct investment were firstly chosen. The investment effect indicates that the sectors with less effect from foreign investment were selected. The sectors which foreign direct investment can contribute much to agricultural development were also chosen.

The exception of "growing of cereal grains" can be easily understood to see that the sector includes the growing of rice. The exclusion of "wholesale of grain," "retail sale of grain" and "husking of cereals" can be understood in the same sense of exception of "growing of cereal grains." That is, no foreign direct investment can be made in the rice-related sectors. This is based on the judgement that the rice-related sectors should be in the hands of a government and domestic capitals to smooth demand for and supply of rice and strengthen the function of food security.

The exclusion of "farming of cattle" from foreign direct investment is due to the importance of beef cattle (so-called Hanwoo) industry. The production amount of beef cattle over agricultural output is about 6 percent, and accounts for more than a quarter over livestock industry. In addition, feeders of beef cattle is really small in terms of number of beef cattle. About 98 percent over 570 thousand

feeders raise less than 20 cattle and more than 60 percent feed one or two cattles. That is, even though the beef cattle industry is one of the important sectors in agriculture in terms of production amount and farm household income, the industry is less competitive. In this sense the industry cannot be opened to foreign capitals.

The "wholesale of meat" sector is also excluded to protect the beef cattle industry, due to the judgement that the opening of business by foreign marketing distributors with big capitals would bring a series of collapse of domestic wholesalers, and domestic marketing channel would be controlled by the foreign capitals in the end. The control of wholesale sector by foreign capitals would bring the same effect of opening the domestic beef market totally. Therefore, a

TABLE 2 Liberalisation Schedule of Direct Investment by Non-Residents

Period	Liberlisation Sector	Remarks
1993. 7	Raising of bees, production of silkworm cocoons	2
1994. 1	Farming of horses, sheep and goats, other animal production n.e.c., horticultural services, crop growing services n.e.c., wholesale of agricultural medicines, retail sale of vegetables,	7
1995. 1	Growing of nursery products(flowers), growing of fruit, wholesale of seed, wholesale of fruits and vegetables, retail sale of fruits, veterinary activities	6
1996. 1	Growing of horticultural specialties, growing of beverage and spice crops, raising of other poultry, slaughtering of livestock, slaughtering of poultry, wholesale of fertilizers, growing of nursery products, retail sale of meat, retail sale of grain, milling of cereals	10
1997. 1	Growing of other crops n.e.c., growing of vegetables, growing of melons and other herbaceous fruit, growing of crops under special frames, dairy farming, breeding of pigs, raising of chickens, growing of crops combined with farming of animals(mixed farming), horticultural services	9

Source: Ministry of Finance.

possibility that the liberalisation of wholesale sector of meat would have the same effect of liberalisation of production sector of beef cattle excluded the "wholesale of meat" sector from the liberalization plan.

The exclusion of "manufacture of starches and starch products" sector may be due to a consideration of small scale operation of starch industry and protection of income source of potato (and sweet potato) growers. And the importance of starches may also be considered in terms of diversity of the use of starches.

Except the above 7 sectors in agriculture, direct investments by non-residents are and will be allowed from 1993 to 1997. The plan of liberalisation of direct investments by non-residents which was revised in June 1994 is shown in Table 2.

IV. The Effects of Liberalisation of Capital Movements on Korean Agriculture

The effects of liberalisation of capital movements can be analyzed by dividing the agricultural market into two markets, output market and factor market. Output market effect used to be focused on "What happens to production" and factor market effect on a change in factor price and factor-use.

First, let us consider the output market effect of liberalisation of capital movements. Economic theory considers interregional factor movements as an exogenous change in factor endowments in a region or in a country. The effects of factor movements on sectoral products can be explained by Rybczynski theorem: In a two-good, two-factor model, an exogenous increase in one factor endowments leads to increased production of a good which is intensive in the factor, and reduced production of the other good which is intensive in the other factor.

In order to analyze the effects of increased supply of one factor on output in a three-factor, two-good model, however, we need to extend Rybczynski theorem using Figure 1. Suppose that there are 2 sectors, land intensive agriculture (A) and labor intensive non-agriculture (N), produced by three factors, land (T), capital (K) and labor (L). This means that land and labor are two extreme factors while capital is the middle factor so that the slope of V_T is the highest

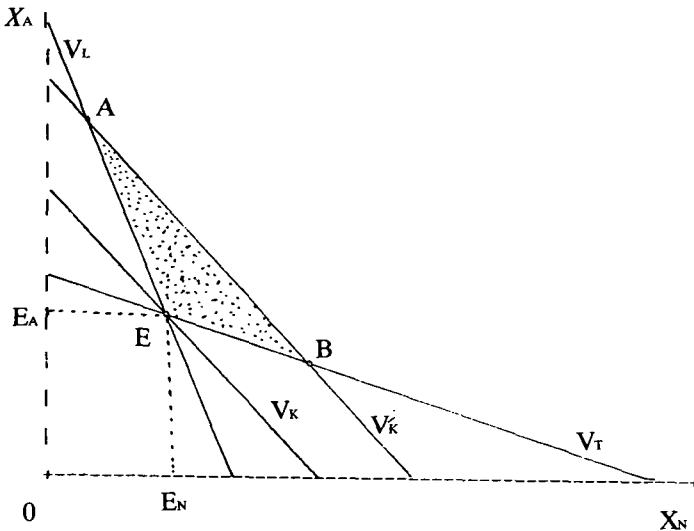
and that of V_L is the lowest in Figure 1, where V_T , V_K and V_L implies factor endowments of land, capital and labor, respectively. The economy is at an equilibrium point E , where all factors are fully employed, and production of both goods are OE_A and OE_N .

Now let the endowment of the middle factor, capital, increase exogenously. This can be represented by a shift of V_K to V'_K . In such a case of an increase in the middle factor, Rybczynski theorem is no longer held. There are three possibilities of change in output: increase in each sector and both sectors according to the location of the new equilibrium within the shaded triangle ABE in Figure 1.

However, if one of the extreme factors increases, then the Rybczynski theorem holds: output of agriculture which is land intensive will increase and that of non-agriculture which is labor intensive will decrease, if endowment of land increases exogenously. The reverse holds true if labor increases exogenously.

Thus, if capital is an extreme factor and agriculture is capital intensive, then the liberalisation of capital movements will lead to an increased output of the agricultural sector. But, if capital is an extreme

FIGURE 1 Effects of Change in Factor Supply on Output



factor and agriculture is not capital intensive, then capital inflow will cause reduced output of the agricultural sector. However, if capital is a middle factor, then the direction of change in agricultural output corresponding to an increase in capital is indeterminate. It may increase alone or together with non-agricultural output, or decrease in some case.

Next is to review a factor market effect of liberalization of capital movements. Input coefficients in the 3-factor 2-good model can always be arrayed as follows;

$$\frac{a_{1N}}{a_{1A}} < \frac{a_{2N}}{a_{2A}} < \frac{a_{3N}}{a_{3A}} ,$$

where input coefficients a_{ij} imply the quantity of factor i necessary to produce one unit of good j . Subscripts A and N imply two sectors, agriculture and non-agriculture, respectively. Subscripts 1 and 3 denote extreme factors, while subscript 2 means the middle factor.

Ruffin derived the following theorem on the effects of changes in factor endowments;

“An exogenous increase in an extreme factor (say, factor 1) raises the price of the middle factor (factor 2) while it lowers the price of the other extreme factor (factor 3 in this example).”

That is, the effects of capital inflow on factor prices depend upon the rank of input coefficients and hence upon whether capital is a middle or extreme factor. If it is a middle factor, capital inflow will raise prices of labor and land. If it is an extreme factor and if labor is a middle factor, wage will increase while rent falls.

The Ruffin's study can be directly applied to an empirical analysis of factor movements in the Korean agriculture. That is, capital inflows from foreign countries may be considered as an exogenous increases in capital endowment in Korea. Estimation of input coefficients in agriculture relative to non-agriculture is necessary to identify whether capital is a middle factor or not.

Relative input coefficients of capital and labor can be calculated by using the time-series data of National Accounts. That is, capital coefficient is the sectoral consumption of fixed capital divided by sectoral GNP. Labor coefficient is derived from compensation of employees. Land coefficient for agricultural sector is equal to the

inverse of land productivity multiplied by the tax standard assessments while that for non-agricultural sector is estimated by the sum of residential area, factory and public land multiplied by the local tax standard assessments.

Relative capital coefficients in agriculture have been lower than that of labor until 1970's (see: Table 3). However, a factor intensity reversal was noted from 1980's as capital has rapidly substituted for labor in agriculture. With highest land coefficient in agriculture, capital has become the middle factor since then.

The effects of capital movements on factor prices in Korea can be more clearly explained by using Figure 1. Since 1980's, land coefficient is the highest while labor coefficient is the lowest in agriculture, and capital becomes a middle factor. Therefore, the rank of input coefficients is expressed as,

$$\frac{a_{TN}}{a_{TA}} < \frac{a_{KN}}{a_{KA}} < \frac{a_{LN}}{a_{LA}} ,$$

where a_{ij} implies factor i required to produce one unit of output j , for $i = T, L, K$, and $j = A$ and N .

Thus, land and labor are two extreme factors and capital is the middle factor so that the slope of V_T is the highest and that of V_L is the lowest in the two dimensional production possibility plane. At the autarky equilibrium point E , all factors are fully employed.

Suppose that capital moves in from foreign countries. This

TABLE 3 Relative input coefficients in agriculture

year	capital	labor	land	middle factor
1970	0.203	0.264	n.a.	
1975	0.205	0.223	n.a.	
1980	0.295	0.293	2.98	capital
1985	0.406	0.280	2.85	capital
1988	0.387	0.269	3.33	capital

Source: The Bank of Korea, *National Accounts*, 1990.

Ministry of Home Affairs, *Statistics of Land Registration*, various years.
 Ministry of Agriculture, Forestry and Fisheries, *Statistics on Agriculture, Forestry and Fisheries*, various years.

means an increase in capital endowment and can be represented by a shift of V_k to V'_k . In the short run, an excess demand in the factor market operates to recover a new equilibrium by letting factor prices change before factor substitution effects appear in the long run. An increase in the middle factor, capital, causes an excess demand for labor and land to reach a new equilibrium. Therefore, the price of both factors will rise while price of capital falls.

V. The Effect of Foreign Direct Investment on Dairy Farming : An Example

The dairy farming sector is reviewed over 33 sectors to be liberalized according to the plan of liberalisation of direct investment by non-residents. The reason for selecting the sector is that the possibility is believed to be relatively high for foreign capitals to be invested in the sector.

The dairy farming is considered as one of the growing sectors in the Korean agriculture. The number of dairy cattles has been increased from 275 thousands heads in 1983 to 557 thousands in September 1994, while the number of feeders decreased from 29.5 thousands to 26.6 thousands households during the same period. The number of feeders with more than 30 dairy cattles has been increased while the number of whom with less than 10 dairy cattles has been decreased. That is, the feeder size on average has been enlarged, showing an increasing trend of management. However, the feeder size is still in a small scale, compared with the size of advanced countries of dairy farming industry such as the United States, Australia, New Zealand, and others. The amount of milk production was 1.8 million tons in 1992, showing an increasing trend from 0.7 million tons in 1983. However, the production amount was only 3 per cent of that of the United States.

The dairy farming industry has been in adverse situations. For example, the industry has suffered from a shortage of grass field which is necessary for milk production. Moreover, it is not easy to expand the grass field partly due to a high land price. According to the experts in the dairy farming industry, the minimum grass field required per head of dairy cattle is about 0.1 hectare, even though 0.4

hectare is employed in the advanced countries of dairy farming. This means that at least 55 thousands hectares of grass field are necessary for the present number of dairy cattle. However, total area of grass field needed to feed beef cattles, dairy cattles, horse, and so on, is estimated to be about 76 thousand hectares as of this time. Moreover, 23 thousands hectares of them are located in Cheju Island. Therefore, the area of grass field for dairy farming is in shortage, compared with the number of heads of dairy cattles. In addition, production cost of hay is relatively high due to a high land price and wage rate. Therefore, a large amount of imported hay is used for dairy cattle.

The climate conditions with hot weather in summer and cold winter season are believed not to be fit for dairy farming. The changing conditions of rural labor market which are characterized by the rising wage rate and shortage of labor force have brought another difficulty in the development of dairy farming. Specially, a hard work with no holiday in dairy farming could not fully induce agricultural laborers into the industry.

The output market condition of dairy farming industry has been also unfavorable. That is, raw milk price per kilogram on the basis of class 4 in quality was raised from Won 266 to Won 394 during the period of 1980 to 1993, showing an increase of less than 50 percent, while producer price index of agricultural and fishery products increased about 120 percent. Even though per capita consumption of milk increased tremendously from 4.6 kilograms in 1975 to 45.03 kilograms in 1993, the depressed prices of raw milk could be maintained due to the fact that milk productions have also sharply increased as a result of an increase in the number of dairy cattles and that an import volume of intermediate inputs used for milk-processed products such as dried milk increased rapidly. That is, an increase in domestic supply of raw milk and in import volume of intermediate inputs could suppress a rising trend of raw milk price caused by an increase in demand.

In spite of the depressed price of raw milk, domestic price is believed to be 70 percent higher than that of the United States, implying a weakness of price competition. Moreover, it is expected that the opening of domestic market of milk-related products including cheese products from 1995 as a result of the Uruguay Round Negotiations would bring a decrease in demand for raw milk

used for processing purpose. In addition, in winter season which is a so-called out-of-season for beverage milk in Korea, raw milk was in surplus, resulting in a decline of price of raw milk.

The production and market conditions show that the dairy farming industry is at the cross road. Therefore, even if foreign direct investment in dairy farming industry is to be allowed from 1997, the possibility is said to be lower that the foreign capital will be directly invested in the industry.

However, the calculated rate of return on investment in milk production is 1.75 in Korea in 1993, 2.12 in the United States in 1992, and 0.83 in Japan in 1993. The rate of return is defined as the ratio of net revenue (which is equal to total revenue minus total cost) over user cost of capital. The user cost of capital for Korea is the sum of interest on borrowed capital, depreciation, and interest on fixed and liquid capitals, while the cost for Japan is the sum of depreciation, paid interest and interest of own capital. The cost for the United States consists of interest, capital replacement cost, general farm overhead, cost on operating capital, and cost on other non-land capital. This figure indicates a higher possibility that Japanese capital can be flowed into the dairy farming industry. However, the consideration of unfavorable production conditions, price level of raw milk and rising trend of wage rate will decrease the possibility of Japanese capital being invested.

An inflow of foreign capital even under this adverse condition of dairy farming industry will bring not only positive effects to the industry such as an introduction of advanced technology and the latest management skill, but also negative effects to cattle feeders by lowering price of raw milk as a result of an increase in production and raising the wage rate in the rural labor market. Obviously, the competition will be in a rapid progress in both price and quality of raw milk.

A measure should be taken in advance for continuous development of the dairy farming industry under the liberalisation plan of direct investment by non-residents. One way is to expand the number of dairy cattle per feeder and another to modernize various facilities of the industry. Optimum size of cattle feeding for full-time feeder with modern facilities is said to be about 50 heads, based on the operation or management of cattle feeding by feeder's own labor force. Therefore, an expansion of feeders' cattle feeding size and

modernization of the facilities should be set to lower production cost and improve quality so as to meet changing conditions.

Secondly, a cooperation among feeders by region is important to meet the need of regional markets. The demand tends to be diversified along with a changing pattern of diet. Therefore, feeders should have a supply system of providing high-quality milk in a small amount to regional markets, and should become a leading supplier in that region.

Thirdly, the dried milk industry should be activated specially for winter season which is an out-of-season for raw milk. About 30 percent of raw milk production is used for dried milk in winter season. That is, the development of dried milk industry is necessary to stabilize demand for and supply of raw milk during winter season.

VI. Summary and Conclusion

The Korean government applied for an admission to the Organization for Economic Cooperation and Development(OECD) in March 1995 in order to be a member in 1996. To join the OECD, the government should be ready to accept the Code of liberalisation of capital movements of the OECD.

The liberalisation of capital movements is believed to bring broad impacts on the Korean economy including the agricultural sector. Therefore, it is important to review possible effects of liberalisation of capital movements on the Korean agriculture. However, only the direct investment by non-residents is reviewed in this paper.

The direct investment by non-residents can bring a positive effect on the Korean agriculture in terms of introduction of new and advanced technologies and management methods with an inflow of foreign capital. On the other hand, the investment can have a negative effect such as breakdown of small-scaled farmers and market participants.

The cumulative amount of investment by non-residents to the Korean economy during the period of 1962 to July 1994 reached to US\$ 12 billion. Only 0.2% of the amount, about US\$ 24 million, have been invested to the agricultural sector. This can be a good evidence

of relatively low rate of return of agriculture, compared to the other sectors. However, there have been institutional barriers to prohibit foreign direct investment in agriculture through various kinds of regulations. But those regulations are supposed to be progressively abolished so that foreign investments to the agricultural sector is expected to increase as long as the rate of return is high enough.

A plan of liberalisation of direct investments by non-residents for the period of 1993 to 1997 was published in June 1993 and revised in June 1994. According to the plan, foreign capitals can be directly invested to the agricultural sector, except the 7 sub-sectors. The 7 sub-sectors are growing of cereal grains, farming of cattle, wholesale of grain, wholesale of meats, retail sale of grain, husking of cereals, manufacture of starches and starch products.

The exception of growing of cereal grains," "wholesale of grain," "retail sale of grain" and "husking of cereals" can be easily understood to see that the sectors include the growing of rice. That is, no foreign direct investment can be made in the rice-related sectors. The exclusion of "farming of cattle" and "wholesale of meats" may be based on the importance of beef cattle industry in terms of production amount and farm household income. The exclusion of "Manufacture of starches and starch products" sector may be due to a consideration of small scale operation of starch industry and protection of income source of potato (and sweet potato) growers.

Ruffin's study showed that an exogenous increase in an extreme factor (say, factor 1) raises the price of the middle factor (factor 2) while it lowers the price of the other extreme factor (factor 3). Relative input coefficients of capital and labor are calculated to identify whether capital is a middle factor or not. Relative capital coefficient in agriculture has been lower than that of labor until 1970's. However, a factor intensity reversal was noted from 1980's as capital has substituted the labor in agriculture. With highest land coefficient in agriculture, capital has become the middle factor since then. That is, an application of Ruffin's study to the Korean agriculture implies that prices of labor and land will rise while that of capital falls.

As an example, the dairy farming industry is selected to review possible effects of the liberalisation of direct investment by non-residents. The reason for selecting the sector is that the possibility is believed to be relatively high for foreign capitals to be invested in the sectors. Review of the industry also tells that the possibility is low

due to adverse conditions of the dairy farming industry. The dairy farming industry should expand management size and modernize various facilities of the industry to cope with the changing situations. Specially, a cooperation among feeders by region is important to meet the need of regional markets, and the development of dried milk industry is necessary to stabilize demand for and supply of raw milk during the winter season.

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