# AN ANALYSIS OF PRODUCTION EFFICIENCY BY TYPE OF TENURE

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## I. Introduction

Current land law in korea originates from the land Reform Act which established "a land to tiller's principle" in 1949. Legally, the maximum acreage of cultivated land per farm is limited to 3 hectare and tenancy is prohibited. Despite of the prohibition of tenancy by the Land Reform Act, the rented land amounts to 30.5(653,920ha) percent of total farmland in 1985. The number of tenant farms has also become an increasing trend, about 64.7 percent of total farms were identified as full or partial tenant farms.

Therefore, the formal land tenure laws can not meet the new tenure problems as economic growth and institutional changes take place. In light of the future economic development, the existing land tenure system must be improved in near future. Thus, the purpose of this study is to 1) improve the farmland leasing practices prohibited by the Land Reform Act through a characteristic analysis of tenancy, management–economic analysis of three tenure classes(owner–operators, owner–tenants and full–tenants) and 2) compare production efficiency by type of farmland ownerships.

The major contents of this study include:1) to analyze the characteristics of present tenure practices and how these affect(a) the use of land, (b) the incentives for effort, and (c) the efficient use of other factor inputs, 2) to describe the forms of tenancy and types of leasing arrangements now emerging and the characteristics of these leasing arrangement, 3) to evaluate efficiency in the use of resources by type of land ownership, using Cobb–Douglas production function, 4)to test the hypothesis whether or not there is great difference between the value of marginal product and opportunity costs employed in the production historically in farming.

The methods and approaches used in the present study are described as the actual work proceeded. Having identified the significant

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problems and issues in land system and tenure polices, the investingation of the facts was preceded by correcting information on the problems. Through the analysis of the 1974–1985 Farm Household Economy Survey Data, which was conducted by the Ministry of Agriculture and Fisheries, an analysis was made of production efficiency among different types of land ownership and different farm sizes. The methods applied are both the traditional production efficiency measurements and the Cobb–Douglas type analysis.

For both characteristic of tenancy and management–economic analysis of different tenure classes, a countrywide Farmland Status Survey was also conducted using the aforementioned MAF Farm Household Economy Survey sample in gathering complicated tenure information and farmland usage data. In the survey, information on farmland inheritance, farm income, farm surplus, farm debts, farmland values, and etc were also collected. Some of these case studies were made for use to minimize the social disturbance in the rural community which is currently concerned about farmland law related to land reform.

## II. Characteristical Analysis of Tenancy

As of the end of 1985, 30.5 percent of the total farm land is under the tenant farming system, amounting to 653,920ha, the tenant farming has also become an increasing trend, about 64.7 percent of total farms were identified as full or partial tenant farms.

Most farmlands are leased mainly due to family labor shortage. Tenancy practices can also be created when amount of land supplied by migrating farmers cannot be purchased by farmers who remain in rural area. In addition, some urban non–farmers want to keep their land under tenancy because land is not only the property on which they can rely in the event of retire in urban living, but also for the speculative purpose in short period.

Among the current tenant farmland amounting to about 653,920ha, what is the ratio of the peasant rented land versus the non–peasant rented land? In order to figure out this ratio, a survey was carried out among 4,439 plot rented land cultivated by those farm households which are the object of Farm Household Economy Survey.

If the result presented in Table 1 is applied to the nationwide level, 390,390ha farmland which makes up 59.7 percent of 653,920ha rented land is the non–farmer tenant land. The state and public owned rented land amounts to 34,658ha, 5.3% of the total rented land. The farmer owned 228,872ha rented land, 35.0% of the total rented land. When we examine the ownership of the non–peasant tenant land in detail, we can arrange the

TABLE 1 **Tenant Land Owned by Occupation**

| Classification | Owner | No. of Plot | Total Area | Owner's Average | |
|---|---|---|---|---|---|
| | | | | No. of Plot | Area |
| | | | Pyung | | Pyung |
| Farmer | 956 (37.1) | 1,538 (34.6) | 776,703 (35.0) | 1.6 | 812 |
| National-Public | 157 (6.1) | 211 (4.8) | 117,622 (5.3) | 1.3 | 749 |
| Non-Farmer | 1,461 (56.8) | 2,690 (60.6) | 1,326,859 (59.7) | 1.8 | 908 |
| O Government Officer | 225 (8.7) | 435 (9.8) | 238,717 (10.7) | 1.9 | 1,061 |
| O Salary Earner | 167 (6.5) | 298 (6.7) | 155,430 (7.0) | 1.8 | 931 |
| O Laborers | 97 (3.8) | 173 (3.9) | 81,199 (3.6) | 1.8 | 837 |
| O Merchants-Industry | 477 (18.5) | 867 (19.5) | 447,356 (20.1) | 1.8 | 938 |
| O Unemployed | 138 (5.4) | 273 (6.2) | 151,012 (6.8) | 2.0 | 1,094 |
| O Organization | 40 (1.6) | 53 (1.2) | 25,635 (1.2) | 1.3 | 641 |
| O Clan | 317 (12.3) | 591 (13.3) | 227,510 (10.2) | 1.9 | 718 |
| Total Average | 2,574 (100.0) | 4,439 (100.0) | 2,221,184 (100.0) | 1.7 | 863 |

Note:Parenthesis was composed of rate (%).
Source:Derived from 1984 MAF Survey Data.

jobs of the owners in a raw according to the size of the owned land as follows:merchants and businessmen account for 20.1%(131,438ha), the public office holders 10.7%(69,969ha), clan 10.2%(66,700ha), the salary earners 7.0%(45,774ha), the employed 6.8%(44,467ha), the laborer 3.6%(23,541ha), and the organization including Land Improvement Association, schools and religious group 1.2%(7,847ha).

This survey was carried out for 1,206 farm households selected from 200 rural communities across the nation(less than 6 farm households per each community);it is the nationwide survey based on the information provided by the monitors residing in the rural community. The results from the survey seem to present the general picture.

In relation to the classification of jobs, it can be guessed that the merchants and businessmen possess the rented land for the purpose of speculation, while the rest landowners possess the rented land as a way to earn income. However, we cannot make any hasty conclusion, when we are reminded of the fact that there is not a great difference in the size of rented land per each owner. All told, it is true that this 390,390ha non-farmer tenant land is the key factor to complicate the current state of land tenure system.

Along with this survey, we also examined the background for the acquisition of the rented land. As a result of MAF Farm Household Economy Survey in 1985, Table 2 presents ratio of the motivation for acquisition of rented land by occupation.

TABLE 2 **Acquisition Motive of Tenant Land by Occupation**

Unit:%

| By owned land | Total owned land by occupation | Acquisition motive of leased-out land | | | |
|---|---|---|---|---|---|
| | | Inheritance | Presentation | Purchase | Sub-total |
| National-public | 2.6 | - | - | - | - |
| Farmer | 36.9 | 65.5 | 4.9 | 29.6 | 100.0 |
| Non-farmer | 60.5 | 58.7 | 8.8 | 32.5 | 100.0 |
| ○ Government officer | 9.2 | 64.0 | 1.0 | 35.0 | 100.0 |
| ○ Salary earners | 11.1 | 69.9 | 3.2 | 26.9 | 100.0 |
| ○ Wage laborer | 2.9 | 65.2 | 0.8 | 34.0 | 100.0 |
| ○ Commerce-industries | 19.9 | 61.3 | 4.1 | 34.6 | 100.0 |
| ○ Manufacturing-industries | 1.6 | 51.6 | - | 48.4 | 100.0 |
| ○ Social organization (school, regions, etc.) | 15.8 | 36.6 | 37.7 | 25.7 | 100.0 |
| Total average | 100.0 | 61.1 | 7.4 | 31.5 | 100.0 |

According to Table 2, 31.5% of the leased–out land is acquired by means of purchase and 7.4% of the tenant land is of presentation and the rest 61.1% is owned through the inheritance. The farmer tenant land does not give rise to a problem. All that matters is the non–farmer tentant land.

In case of the non–farmer tenant land, the ratio of purhcase versus transfer of an estate including presentation and inheritance is 32.5% versus 67.5%, being tilted toward the latter. And the high component ratio of purchase in case of the merchants and industrialists seems to represent the strong speculative purpose.

The acquisition of farm land by non–farmer through purcase is illegal and violates Article 19 Clause 2 of the Land Reform Act. On the other hand, the acquisition of farm land by non–farmer through the presentation and inheritance is legal in the context of an inheritance tax and a presentation tax.

It is quite understandable that the acquisition of farm land by non-farmer through the transfer of an estate is not possible provided the Land Reform Act had been more strict and the illegal acquisition of farm land by non-farmer had been thoroughly prohibited. In this context, it is impossible to stick to land to tiller's principle in the practical sense without

establishing a kind of farm land act which regulates the transfer of farm-land ownership.

Table 3 reclassifies the landowners according to their farm size. According to it, the landowners with less than 500 pyung rented land account for 41.3% of the total owners of rented land. The landowners with less than 1,000 pyung(avout 0.333ha) rented land make up 71.9%, the landowners with less than 2,000 pyung 91.6%, the landowner with less than 3,000 pyng(1ha)97.0%. Therefore the landowners with more than 3,000 pyung rented land constitute 3.0%, and the landowners with more than 4,000 pyung rented land only 1.1%.

The scale of non–farmer tenancy is smaller than that of farmer tenancy. The farmer landowner with more than 3,000 pyung is 3.5%, while the non–farmer landowner is 2.5%. Speaking of the occupational classifica-tion, the extremely small number of merchants and industrialists, organiza-tion, and clan possess more than 4,000 pyung rented land. And most of the other occupational groups possess less than 4,000 pyung rented land. In this respect, we can draw a conclusion that most of the non–farmer tenant land is possessed by the small–sized landowners. Meanwhile, the 84.8% of the total tenant land belongs to the landowners with less than 1ha(about 3,000 pyung) and at the same time it accounts for 93.3% of non–farmer tenant land. So most of the non–farmer tenant land is relatively small–sized compared with the tenant land owned by farmer, state and public. Furth-

TABLE 3 **Tenant Land Owned by Farm Size and Occupation**

Unit:Person

| By farm size | Total | Farmer | Naitonal-public | Non-farmer | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Sub-total | Govem officer | Salary earners | Wage laborer | Commerce-industries | Unemployed | Organi-zation | Clan |
| Pyung | | | | | | | | | | | |
| Less than 500 | 1,063 | 387 | 63 | 613 | 70 | 61 | 33 | 221 | 40 | 12 | 176 |
| | (41.3) | (40.5) | (40.1) | (42.0) | (31.1) | (36.5) | (34.0) | (46.5) | (29.4) | (30.0) | (55.2) |
| 501-1,000 | 788 | 297 | 45 | 446 | 87 | 56 | 38 | 130 | 41 | 13 | 81 |
| | (30.6) | (31.0) | (28.7) | (30.6) | (38.7) | (33.5) | (39.2) | (27.3) | (30.2) | (32.5) | (25.4) |
| 1,001-2,000 | 505 | 183 | 34 | 288 | 51 | 36 | 20 | 92 | 38 | 6 | 45 |
| | (19.7) | (19.1) | (21.7) | (19.7) | (22.7) | (21.6) | (20.6) | (19.3) | (28.0) | (15.0) | (14.1) |
| 2,001-3,000 | 139 | 56 | 7 | 76 | 13 | 8 | 6 | 19 | 12 | 7 | 11 |
| | (5.4) | (5.9) | (4.4) | (5.2) | (5.8) | (4.8) | (6.2) | (4.0) | (8.8) | (17.5) | (3.4) |
| 3,001-4,000 | 50 | 23 | 2 | 25 | 6 | 6 | - | 11 | 4 | - | 1 |
| | (1.9) | (2.4) | (1.3) | (1.7) | (1.3) | (3.6) | | (2.3) | (2.9) | | (0.3) |
| 4,001-5,000 | 16 | 7 | 3 | 6 | 1 | - | - | 1 | - | - | 4 |
| | (0.6) | (0.7) | (1.9) | (0.4) | (0.4) | | | (0.2) | | | (1.3) |
| More than 5001 | 13 | 4 | 3 | 6 | - | - | - | 2 | 1 | 2 | 1 |
| | (0.5) | (0.4) | (1.9) | (0.4) | | | | (0.4) | (0.7) | (5.0) | (0.3) |
| Total | 2,574 | 957 | 157 | 1,460 | 225 | 167 | 97 | 476 | 136 | 40 | 319 |
| | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) |

Note: Parenthesis was composed of rate (%),

Source: Derived from 1984 MAF Survey Data.

ermore, among the landowners with more than 3,000 pyung rented land, the percentage of non-farmer is low.

In case of the landowners with more than 5,000 pyung tenant land, the average size of tenant land is 6,959 pyung, more than 2ha. Only 0.5% of the total landowners and only 4% of the total farm land falls into this exceptional category. Despite its relatively large scale, its tenant farmrents is not sufficient for one household to make a living.

To sum up, the owners of tenant land are characterized by the small-sized landowner in terms of the size distribution of ownership as well as the size of the tenant land. Accordingly, they cannot be treated as the landlords under the old tenant farming system.

## 1. Current Rental Rate of Tenant Land

Taking into account the mobility of farm land which is inevitable due to the farm management, the social characteristics of the tenant landowner, the channel of acquiring the tenant land and the present farm scale of landowner, it is simply unreasonable to interpret the present tenant farming system as the revival of the feudalistic tenant farming system. Speaking of tenant farm–rents, what is the reality? The rental rates presented in the Farm Household Economy Survey is calculated by the total receipt which is estimated by the spot price of the agricultural products per plot, and by the actual price of cash or kind paid to the landowner as rents.

TABLE 4 **Current Rental Rate of Tenant Land**

|  | Classification | Paddy | Upland |
|---|---|---|---|
|  |  | 37.3 % | 18.6 % |
|  | Single crop case | 37.3 | 18.6 |
|  | Double crop case | 33.1 | 15.8 |
|  |  | No. of Plot(%) | No. of Plot(%) |
|  | Less than 10% | 95(6.9) | 772(41.2) |
|  | 10 - 20 | 93(6.8) | 418(22.3) |
| Survey plot | 20 - 30 | 194(14.1) | 251(13.4) |
| variation by | 30 - 40 | 309(22.5) | 164(8.8) |
| rental rate | 40 - 50 | 591(43.1) | 122(6.5) |
|  | 50 - 60 | 63(4.6) | 38(2.0) |
|  | 60 - 70 | 11(0.8) | 17(0.9) |
|  | More than 70% | 16(1.0) | 91(4.9) |
|  | Total | 1,372(100.0) | 1,873(100.0) |

Source:Derived from 1984 MAF Survey Data.

Even in case of the identical farm land and the identical rental payment, there is difference in tenant farm–rents between single crop cultivation and double crop cultivation, which is showed in Table 4.

According to Table 4, the rental rates in case of single crop cultiva-

tion is 37.3% for rice paddy and 18.6% for uplands, and it is relatively high compared with the rental rates in case of double crop cultivation, which is 33.1% for rice paddy and 15.8% for uplands. The rental rates of double crop cultivation is relatively low because the special rental rate is not imposed on the second crop. At present, the legal ceiling of rental rate under japanese Standerd Rental Rate System is 25% of the harvest crop in the rice paddy and 15% of the harvest crop in the uplands. Considering this,there is no great gap in rental rate of double crop cultivation between korea and Japan.

The rental rate in the truest sense is that of single crop cultivation although the rental rate of double crop cultivation is deeply related with the fact that a farm household makes the additional use of its farm land. The fact that the rental rate of single cultivation for rice paddy reaches 37.3%, it goes without saying the high rates of tenant farm–rents under the old tenant farming system.

## 2. Tenancy Arrangement

The current survey does no include the sufficient study on the form of tenancy. Only the period of tenancy and the form of contract are investigated. Table 5 shows the result in relation to each occupation.

TABLE 5 **Tenant Arrangements by Occupation**

| Classification | Contract period | Tenant arrangement | |
|---|---|---|---|
| | | Oral lease contracts | Document |
| | months | case(%) | case(%) |
| Farmer | 24 | 1,513(98.4) | 25(1.6) |
| National and public | 31 | 73(34.6) | 138(65.4) |
| Government officer | 32 | 424(97.5) | 11(2.5) |
| Salary earner | 29 | 285(95.6) | 13(4.4) |
| Laborer | 22 | 168(97.1) | 5(2.9) |
| Unemployed | 28 | 268(98.2) | 95(11.0) |
| Commerce-industries | 25 | 772(89.0) | 14(26.4) |
| Organization | 23 | 39(73.6) | 101(17.1) |
| Clan | 36 | 490(82.9) | |
| Total Average | 27 | 4,032(90.8) | 407(9.2) |

Note:Parenthesis was composed of rate(%).
Source:Derived from 1984 MAF Survey Data.

As showed in the Table 5, the average period of tenancy is 2 year 3 month. In case of tenant land hold by state, public, public officer, and clan, the period of contract tends to be a little bit longer. Generally, the period of contract is known to be one year. Practically, however, it is customary to continue .the tenancy without the period of contract in mind.

As for the type of contract, the oral lease contracts account for more

than 30% of the total lease contracts, and the written lease contracts less than 10%. In case of the tenant land possessed by state, public, organization and clan, the ratio of the written lease contract is realtively high.

It is true that the tenancy arrangement is still old–fashioned, which in turn cannot be the reason why the high rates of tenant farm–rents still exist. Therefore it is an essential task for us to identify the reason for the high rates of tenant farm–rents. More importnatly, it is necessary to estimate how profitable the rental income to landowner in the light of capital productivity.

## 3. The Rental Income and the Interest Rate for the Land Capital

The interest rate for the land capital is calculated by making the rental income by the price of land. Table 6 presents the interest rate for the transformed capital, which is calculated by making the rental income per each ownership size of tenant land divided by the average price of farm land.

The interest rate in the class of less than 500 pyung is 4.9% and increases in accordance with the growth in the size of land, and reaches the highest rate of 6.7% in the class of 2,000–3,000 pyung. And beyond this class, the interest rate decreases steadily and becomes 5.4% in class of more than 5,000 pyung. The average interest rate is 6.2%, and even the highest interest rate 6.7% is under the level of bank interest rate which is about 12%. Consequently, to possess the tenant land is less profitable than to put money in the bank account.

TABLE 6 **Rent Income of Tenant Owner by Farm Size**

| By farm size | Average area | No. of owner | Rent income | Interest rate to land price |
|---|---|---|---|---|
| pyung | pyung | person(%) | Won | % |
| - 500 | 254 | 1,063(41.3) | 59,238 | 4.9 |
| 500 - 1,000 | 723 | 788(30.6) | 222,151 | 6.4 |
| 1,000 - 2,000 | 1,397 | 505(19.7) | 440,925 | 6.6 |
| 2,000 - 3,000 | 2,425 | 139(5.4) | 780,718 | 6.7 |
| 3,000 - 4,000 | 3,515 | 50(1.9) | 1,008,194 | 6.0 |
| 4,000 - 5,000 | 4,566 | 16(0.6) | 1,223,505 | 5.6 |
| 5,000 - | 6,959 | 13(0.5) | 1,783,515 | 5.4 |
| Average | 863 | 2,574(100.0) | 255,952 | 6.2 |

Note:Average land price for paddy and upland is 4,785 won per pyung.

Unless it is speculative purpose expecting a rise in the price of land, no investment will be made in the farm land at the risk of the illegal purchase. In other words, the acquisition of farm land by non–farmer at the expense of a great amount of money is aimed not at the rental income but at the preservation of money value against the inflation and at the specula-

tion expecting a high price of land in the future. In this respect, the reason why the high rates of tenant farm–rents still exist today can be explained not only from the past of landowners but from the part of tenants who are obliged to agree the high rates of tenant farm-rents.

## 4. Management–Economic Duality of the Current Tenant Farming System

In 1983, a survey on the reason for the lease–out and lease–in farming was carried out among 472 farm household which were actually engaged in the tenant farming. According to the answers given by 289 farm households, 73.1% of the reason for lease land to others was the lack of family labor force while 58.7% of the reason for the lease–in farming is the shortage of farm land and 30.8% of the reason for the lease–in farming is the transfer of rice paddy and upland by the farm household outmigrated to other area. This fact indicates that the extra farm land belonging to A farm household is leased to B farm household which is short of farm land. At the same time, this phenomenon clearly indicates the mobility of farmland.

The Report of Farm Household Economy Survey includes only operated land and lease–in farm land and excludes lease–out farm land. In



FIGURE 1  Trend in Tenant Farms
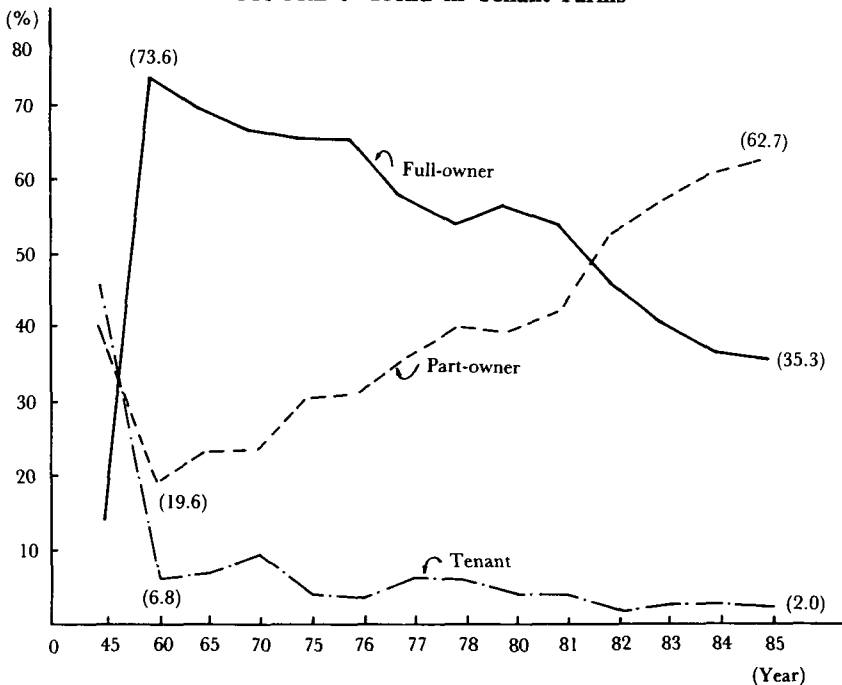
order to understand the actual state of farm land ownership, the concept of the management size and the ownership size must be examined in the same context. In short, the management size is the owner–operated land plus lease–in farm land while the ownership size is the owner–operated land plus lease–out farm land.

According to Figure 1, the percentage of owner–operated farm decreased almost by half from 68.4% to 35.3% during the period from 1974 to 1985. On the other hand, the percentage of owner–tenant farm almost doubled from 28.0% to 62.7% during the same period. The size of tenant land increased from 290,000ha(13.2% of the total farm land) to 653,920ha(30.5% of the total farm land).

TABLE 7. **Comparison of No. of Family and Farm Size between Owner-Operator and Owner-Tenant, 1985**

|  | Classification | Average | Less than 0.5 ha | 0.5- 1.0 | 1.0- 1.5 | 1.5- 2.0 | 2.0- 2.5 | 2.5- 3.0 | More than 3.0 ha |
|---|---|---|---|---|---|---|---|---|---|
| Owner-operator | A) Family size (person) | 4.52 | 4.14 | 4.40 | 4.65 | 5.03 | 4.95 | 5.21 | 5.00 |
|  | B) Owned area (pyung) | 3,015 | 905 | 2,176 | 3,713 | 5,209 | 6,607 | 8,218 | 11,264 |
| Owner-tenant | a) Family size (person) | 4.79 | 4.06 | 4.61 | 4.85 | 5.09 | 5.26 | 5.68 | 6.40 |
|  | b) Owned area (pyung) | 2,104 | 528 | 1,331 | 2,245 | 2,921 | 3,933 | 4,146 | 6,856 |
|  | c) Tenant land (pyung) | 1,556 | 458 | 976 | 1,526 | 2,242 | 2,789 | 4,224 | 5,873 |
|  | d) Operating Area(pyung) | 3,660 | 986 | 2,307 | 3,771 | 5,163 | 6,722 | 8,370 | 12,729 |
| Difference | Family size (a - A) | 0.27 | -0.08 | 0.21 | 0.20 | 0.06 | 0.31 | 0.47 | 1.40 |
|  | Owned area (b - B) | -911 | -377 | -845 | -1,468 | -2,288 | -2,674 | -4,072 | -4,408 |
|  | Operating area (d - B) | 645 | 81 | 131 | 58 | -46 | 115 | 152 | 1,465 |

Source: Derived from 1985 MAF Survey Data.

The transformation of owner–operated farm into the owner tenant farm can be attributed not to the change of the existing owner–operated land into the tenant land but to the addition of tenant land to the existing owner–operated land. The general trend can be described as "the larger the management size, the smaller the ratio of rented land." It is more than evident that the enlargement of management size is attributable to the increase of the rented land, large or small. In this respect, the current trend of tenant farming system is constructive and positive.

It can be assumed that the current family structure has exerted a tremendous influence on the enlargement of management size under the present circumstances where the management size still depends on the

family size. In this sense, the relationship between the family size and the management size is examined in connection with the size of farm land as well as the two types of farming system, that is, owner–operated farm and owner–tenant farm. Table 7 shows the result.

In case of owner–operated farm, up to the size of 2.5ha the increase of family size is accompanied by the increase of management size. Above the size of 2.5ha, the family size decreases. In case of owner–tenant farm, however, the management size which is the owned land plus the rented land increases on a scale in proportion to the increase of family size.

Especially when we compare the family size of the owner–operated farm and that of the owner–tenant farm, the latter is larger than the former throughout the entire classes of the farm land size. Judging from this, there is a structural difference between the owner–operated farm and the owner–tenant farm that the ownership size of the owner–tenant farm is smaller than that of the owner–operated farm even though the family size of the owner–tenant farm is larger than that of the owner–operated farm. In case of the owner–tenant farm, the fundamental purpose of securing the rented land is not in enlarging the management size but in the best use of the underemployed labor force in the household and maintainging the management level of the owner–operated land.

Anyway, the reason why the high rates of tenant farm–rents actually exist at present is not in the non–economical enforcement on the part of landowner but in the extremely small scale of the owner–tenant farm securing the rented land. The farmers on the small scale owner–tenant farms which stand the high rates of tenant farm rents are willing to abandon their job of farming only if they are provided with non–farming job opportunities which compensate thier real wage as farmers.

In fact, the owner–tenant farms with more than 3ha farm land also stand the high rates of tenant farm–rents which impose much burden on the agricultural management. Nevertheless, the very existence of the lease–out and lease–in type large scale farm, though its number is small, makes us assume that the efficient application of farming machinery to the enlarged farmland resulting from the acquisition of rented land can relieve the burden of high rates of tenant farm–rents to some degree.

In Japan and Taiwan, this trend is considered as a desirable path leading to the large scale farming management. In korea, the current state of management of owner–tenant farms includes the two opposite factors, which are the extremely small scale that gives rise to the high rates of tenant farm rents and the trend toward the large scale farming management. The former factor is connected with the negative side of the old farming system, while the latter factor is future–oriented in the positive sense. These two factors are the dual characteristics of current owner and tenant farm in light of management–economic.

## Ⅲ. Management–Economic Analysis of Three Tenure Classes

Based on the MAF farm record data, some essential characteristics of the three types of tenure are presented in Table 8 for description purposes. In general, the owner–operated farms revealed realtively abundant resources and a complete capital structure. There is a marked difference between owner–operated and tenants. Some of noticeable difference are discussed in the following Table 8.

In terms of *tanbo*(10 a) per farm, part–owners have an advantage of larger farm size, 12.20 *tanbo* per farm, compared with those of owner–operated and full–tenant, 10.05 *tanbo* and 9.62 *tanbo* per farm, respectively. The total farms are, on the average, 11.54 *tanbo*.

Labor is certainly the most important factor affecting productivity in general. The labor input hour per farm is compared by type of tenure in

TABLE 8 **Characteristics of Farm Units between Three Tenure Classes, 1985**

| Characteristics | Owner-operated | Part-owner | Full-tenant | Total or average |
|---|---|---|---|---|
| Number of sample farms | 535(32.5) | 1,072(65.1) | 39(2.4) | 1,646(100.0) |
| Number of family | 4.52(96.2) | 4.79(101.9) | 4.51(96.0) | 4.70(100.0) |
| Land holding(tanbo per farm) | 10.05(87.1) | 12.20(105.7) | 9.62(83.4) | 11.54(100.0) |
| Labor inputs(person per farm) | 2.40(96.4) | 2.54(102.0) | 2.21(88.8) | 2.49(100.0) |
| Labor inputs(person per 1ha) | 2.39(106.7) | 2.08(92.9) | 2.30(102.7) | 2.24(100.0) |
| Employed labor inputs (person per farm) | 0.01 | - | - | 0.01 |
| Labor hours of farming (input hour per 10a) | 179.87(96.9) | 178.43(96.1) | 200.84(108.2) | 185.65(100.0) |
| Farm household income (1,000 won in unit) | 6,252.6(107.9) | 5,598.7(96.6) | 4,827.6(83.3) | 5,793.0(100.0) |
| Agricultural income per farm (1,000 won in unit) | 3,968.6(102.8) | 3,835.0(99.7) | 3,056.3(79.2) | 3,860.0(100.0) |
| Non-agricultural income rate (%) | 36.5 | 31.5 | 36.7 | 33.4 |
| Agricultural capital per Farm(1,000 won in unit) | 7,505.2(102.6) | 7,255.2(99.2) | 6,391.6(87.4) | 7,316.0(100.0) |
| Labor productivity(won/hour) | 2,195(119.6) | 1,762(96.0) | 1,581(86.2) | 1,835(100.0) |
| Land productivity (1,000 won 10a) | 398.2(115.9) | 317.0(92.3) | 320.2(93.2) | 343.6(100.0) |
| Capital productivity (won/wno) | 0.53(103.9) | 0.53(103.9) | 0.48(94.1) | 0.51(100.0) |
| Agr. management expenditures (1,000 won in unit) | 1,423.3(86.3) | 1,729.9(104.9) | 2,530.6(153.4) | 1,649.2(100.0) |
| Living expenses (1,000 won in unit) | 4,262.1(96.6) | 4,372.5(101.2) | 3,754.4(86.9) | 4,322.0(100.0) |
| Farm household economy surplus (1,000 won in unit) | 1,013.4(107.5) | 914.3(97.0) | 697.8(74.0) | 942.3(100.0) |
| Farm household liabilities (1,000 won in unit) | 1,709.1(85.6) | 2,124.4(106.4) | 2,430.3(121.7) | 1,996.7(100.0) |

(   ) = percent (%),
Source:Derived from 1985 MAF Survey Data.

TABLE 9 **Labor Input by Land Tenure Classes(Per Farm Household)**

Unit:hour(%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|---------------|--------------|-------------|---------|
| 1974 | 1,713.52 (97.5) | 1,906.18 (108.5) | 1,425.93 (81.1) | 1,757.22 (100.0) |
| 1975 | 1,838.40 (98.0) | 2,001.98 (106.7) | 1,552.10 (82.7) | 1,876.42 (100.0) |
| 1976 | 1,915.74 (96.7) | 2,165.24 (109.3) | 1,603.74 (81.0) | 1,980.88 (100.0) |
| 1977 | 1,932.42 (99.1) | 2,051.97 (105.2) | 1,552.29 (79.6) | 1,950.42 (100.0) |
| 1978 | 1,533.48 (101.0) | 1,590.29 (104.7) | 949.79 (62.5) | 1,518.74 (100.0) |
| 1979 | 1,665.67 (95.3) | 1,914.79 (109.5) | 1,329.25 (76.0) | 1,748.35 (100.0) |
| 1980 | 1,677.06 (94.6) | 1,948.02 (109.9) | 1,303.97 (73.6) | 1,772.52 (100.0) |
| 1981 | 1,730.86 (93.9) | 2,024.69 (109.9) | 1,303.58 (70.8) | 1,842.40 (100.0) |
| 1982 | 1,625.73 (92.3) | 1,884.52 (107.0) | 1,342.32 (76.2) | 1,761.29 (100.0) |
| 1983 | 1,846.37 (92.5) | 2,092.45 (104.8) | 2,048.70 (102.6) | 1,996.86 (100.0) |
| 1984 | 1,851.25 (91.3) | 2,125.58 (104.8) | 2,013.82 (99.3) | 2,028.02 (100.0) |
| 1985 | 1,807.73 (88.1) | 2,176.88 (106.1) | 1,932.79 (94.2) | 2,051.11 (100.0) |

Source:MAF, clculated by the *Report Data on the Results Household Economic Survey*, 1974-85.

TABLE 10 **Number of Family between Three Tenure Classes(per Farm)**

Unit:person(%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|---------------|--------------|-------------|---------|
| 1974 | 5.61 (98.4) | 5.93 (104.0) | 5.54 (97.2) | 5.70 (100.0) |
| 1975 | 5.64 (99.6) | 5.71 (100.9) | 5.54 (97.9) | 5.66 (100.0) |
| 1976 | 5.56 (100.0) | 5.59 (100.5) | 5.28 (95.0) | 5.56 (100.0) |
| 1977 | 5.65 (100.7) | 5.67 (101.1) | 5.01 (89.3) | 5.61 (100.0) |
| 1978 | 5.47 (99.8) | 5.60 (102.2) | 4.84 (88.3) | 5.48 (100.0) |
| 1979 | 5.20 (98.3) | 5.50 (104.0) | 4.67 (88.3) | 5.29 (100.0) |
| 1980 | 5.12 (97.5) | 5.46 (104.0) | 4.81 (91.6) | 5.25 (100.0) |
| 1981 | 5.03 (98.6) | 5.24 (102.7) | 4.56 (89.4) | 5.10 (100.0) |
| 1982 | 4.97 (98.2) | 5.15 (101.8) | 4.47 (88.3) | 5.06 (100.0) |
| 1983 | 4.96 (97.4) | 5.21 (102.4) | 4.40 (86.4) | 5.09 (100.0) |
| 1984 | 4.71 (97.7) | 4.91 (101.9) | 4.35 (90.2) | 4.82 (100.0) |
| 1985 | 4.52 (96.2) | 4.79 (101.9) | 4.51 (96.0) | 4.70 (100.0) |

Source:MAF, calculated by the *Report Data on the Results Farm Household Economic Survey*, 1974-85.

Table 9. On the average, the part–owner farms used a large amount of labor than the owner–operated farms and the tenant farms. Including hired labor as shown in table 7, the average labor input rate(%) from 1974 to 1985 for the part–owner farms was relatively higher than the owner–operated and the full–tenants per farm household.

This implies that the part–owner farms had more labor force including hired labor than the owner–operated and the full–tenant farms(Table 10 and 11).

TABLE 11 **Number of Hired Labor between Three Tenure Classes(per Farm)**

Unit:person(%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 0.03 (100.0) | 0.02 (66.7) | 0.01 (33.3) | 0.03 (100.0) |
| 1975 | 0.04 (133.3) | 0.02 (66.7) | - | 0.03 (100.0) |
| 1976 | 0.04 (100.0) | 0.03 (75.0) | - | 0.04 (100.0) |
| 1977 | 0.03 (150.0) | 0.02 (100.0) | 0.01 (50.0) | 0.02 (100.0) |
| 1978 | 0.03 (150.0) | 0.01 (50.0) | - | 0.02 (100.0) |
| 1979 | 0.02 (100.0) | 0.01 (50.0) | 0.01 (50.0) | 0.02 (100.0) |
| 1980 | 0.02 (100.0) | 0.01 (50.0) | 0.02 (100.0) | 0.02 (100.0) |
| 1981 | 0.01 (100.0) | 0.01 (100.0) | 0.01 (100.0) | 0.01 (100.0) |
| 1982 | 0.01 (100.0) | 0.01 (100.0) | - | 0.01 (100.0) |
| 1983 | 0.01 (250.0) | - | - | 0.004 (100.0) |
| 1984 | 0.01 (333.3) | - | - | 0.003 (100.0) |
| 1985 | 0.01 (333.3) | - | - | 0.003 (100.0) |

Source:MAF, calculated by the *Report Data on the Results Farm Household Economic Survey*, 1974-85.

Comparing by the labor input hour per 10a, as shown in Table 12, the tenant farms used a large amount of labor than the owner–operated and the full–tenant farms.

This implies that the full–tenant farms had more labor force than the owner–operated and the part–owner farms(Table 13), while reason why the owner–operated and the part–owner farms had less labor force than the full–tenant farms per 10 a because these farms subtitute labor force for farm machine. In recent years, the shortage of labor availability caused most farmers to substitute farm machine.

TABLE 12   Labor Input Hours between Three Tenure Classes(per 10a)

Unit:hour(%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 183.85 (98.6) | 185.97 (99.8) | 190.21 (102.0) | 186.41 (100.0) |
| 1975 | 199.24 (99.5) | 199.40 (99.6) | 202.45 (101.1) | 200.22 (100.0) |
| 1976 | 208.53 (104.9) | 203.50 (102.3) | 183.01 (92.0) | 198.84 (100.0) |
| 1977 | 194.73 (99.7) | 194.13 (99.4) | 197.49 (101.1) | 195.27 (100.0) |
| 1978 | 152.03 (107.7) | 148.67 (105.3) | 117.74 (83.4) | 141.20 (100.0) |
| 1979 | 168.76 (98.0) | 172.09 (99.9) | 176.68 (102.6) | 172.15 (100.0) |
| 1980 | 173.91 (101.2) | 167.26 (97.3) | 176.45 (102.7) | 171.86 (100.0) |
| 1981 | 178.07 (103.1) | 167.33 (96.9) | 174.28 (100.9) | 172.67 (100.0) |
| 1982 | 162.63 (107.1) | 163.02 (107.3) | 124.06 (81.7) | 151.88 (100.0) |
| 1983 | 187.20 (94.9) | 179.71 (91.1) | 231.75 (117.4) | 197.35 (100.0) |
| 1984 | 182.33 (97.5) | 179.12 (95.8) | 201.05 (107.5) | 186.99 (100.0) |
| 1985 | 179.87 (96.9) | 178.43 (96.1) | 200.84 (108.2) | 185.65 (100.0) |

Source:MAF, calculated by the *Report Data on the Results Farm Household Economic Survey*, 1974-85.

FIGURE 2   Labor Input Hours by Land Tenure Classes (per 10a)
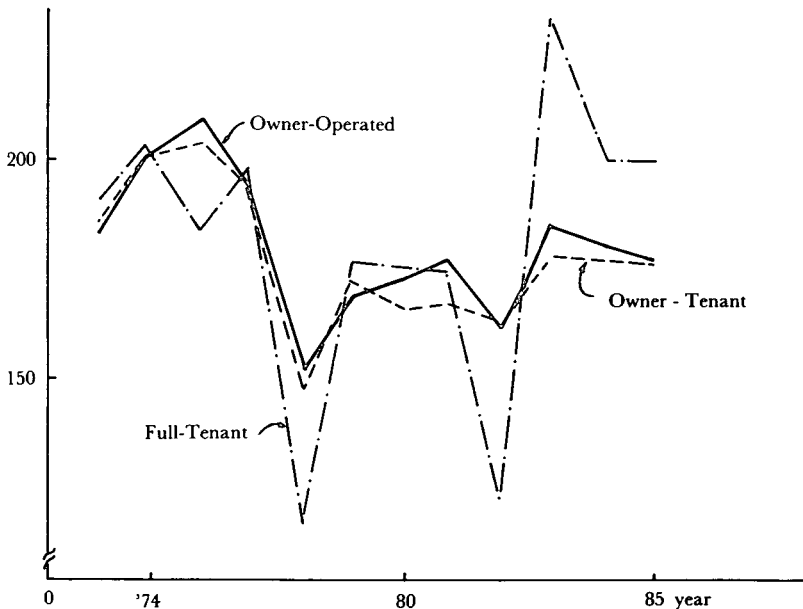


Source: MAF, *Report on the Results Farm Household Economic Survey*, 1974–85.

TABLE 13 **Emplyed Labor Force between Three Tenure Classes(per 10a)**

Unit:person(%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 3.05(98.1) | 2.87(92.3) | 3.51(112.9) | 3.11(100.0) |
| 1975 | 3.07(98.7) | 2.86(92.0) | 3.47(111.6) | 3.11(100.0) |
| 1976 | 3.05(104.8) | 2.71(93.1) | 2.99(102.7) | 2.91(100.0) |
| 1977 | 2.82(97.2) | 2.68(92.4) | 3.30(113.8) | 2.90(100.0) |
| 1978 | 2.65(96.0) | 2.60(94.2) | 3.12(113.0) | 2.76(100.0) |
| 1979 | 2.65(96.7) | 2.44(89.1) | 3.31(120.8) | 2.74(100.0) |
| 1980 | 2.65(99.6) | 2.26(85.0) | 3.30(124.1) | 2.66(100.0) |
| 1981 | 2.59(103.6) | 2.11(84.4) | 3.02(120.8) | 2.50(100.0) |
| 1982 | ˎ2.51(101.2) | 2.25(90.7) | 2.76(111.3) | 2.48(100.0) |
| 1983 | 2.59(104.9) | 2.26(91.5) | 2.62(106.1) | 2.47(100.0) |
| 1984 | 2.40(108.6) | 2.13(96.4) | 2.12(95.9) | 2.21(100.0) |
| 1985 | 2.39(106.7) | 2.08(92.9) | 2.30(102.7) | 2.24(100.0) |

Source:MAF, calculated by the *Report Data on the Results Farm Household Economic Survey,* 1974-85.

TABLE 14 **Land Productivity between Three Land Tenure Classes(per 10a)**

Unit:won/10a

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 56,662.05(111.3) | 50,574.99(99.3) | 44,210.16(86.8) | 50,908.11(100.0) |
| 1975 | 70,814.58(112.0) | 62,871.54(99.4) | 54,600.10(86.3) | 63,238.13(100.0) |
| 1976 | 86,228.37(114.6) | 77,146.91(102.5) | 61,413.75(81.6) | 75,242.52(100.0) |
| 1977 | 111,315.25(116.9) | 98,624.38(103.6) | 70,384.61(73.9) | 95,237.52(100.0) |
| 1978 | 119,963.21(116.3) | 107,570.52(104.2) | 76,408.23(74.0) | 103,190.11(100.0) |
| 1979 | 188,681.79(112.9) | 165,942.91(99.3) | 140,320.51(84.0) | 167,053.25(100.0) |
| 1980 | 200,057.09(111.1) | 171,676.11(95.3) | 167,517.24(93.0) | 180,147.28(100.0) |
| 1981 | 265,082.47(114.8) | 225,525.49(97.6) | 195,495.18(84.6) | 230,982.12(100.0) |
| 1982 | 330,630.61(113.8) | 292,614.93(100.7) | 240,256.47(82.7) | 290,468.35(100.0) |
| 1983 | 361,668.61(118.6) | 297,620.07(97.6) | 251,196.76(82.4) | 304,914.12(100.0) |
| 1984 | 368,507.61(118.1) | 310,378.08(99.5) | 256,444.49(82.2) | 311,937.97(100.0) |
| 1985 | 398,217.13(115.9) | 316,951.07(92.3) | 320,193.40(93.2) | 343,554.06(100.0) |

(　　) = percent (%),

Source:Derived from MAF Survey Data, 1974-85.

The current land lease and tenant farming system includes on more problem, namely, the low land productivity. Not only in 1985 but also throughout the years, the owner–operated farm tends to enjoy the high land productivity per 10 a(Table 14).

No one can deny the fact that land productivity increases only when a farmer cultivates this own land with a great care. As shown in Figure 3, in case of the owner–operated and the part–owner farm, the land productivity of both type increases until 1981, but the interval between the owner–operated and the part–owner farm has been getting larger since 1981.

Especially, land productivity is the highest in case of the smallest

FIGURE 3 **Land Productivity between Three Tenure Classes (per 10a)**

thousand won
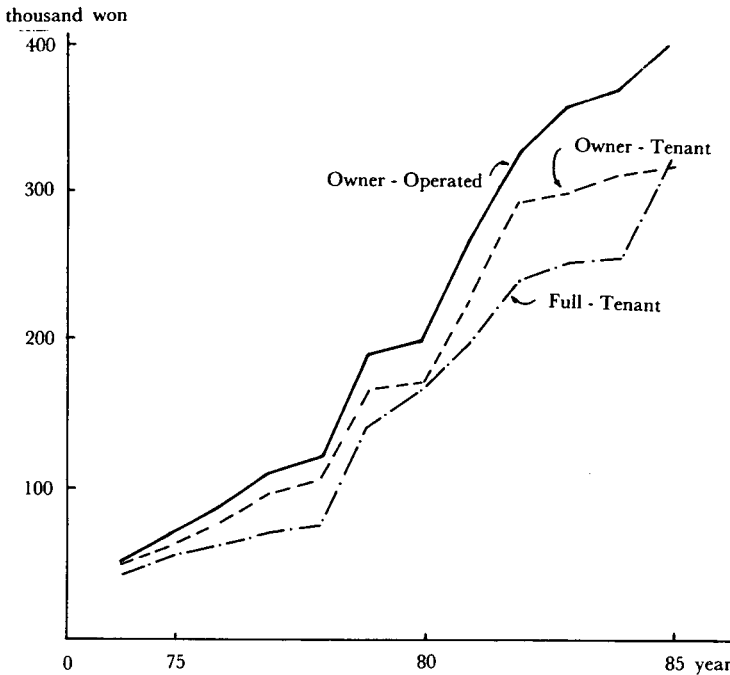


Source: MAF, *Report on the Results Farm Household Economic Survey,* 1974-85.

farm size, namely, less than 0.5ha. Throughout the years, the small size farm tends to enjoy the high land productivity. Needless to way, land productivity is an important factor. Yet the enlargement of management scale per each farm household is aimed at the improvement of labor productivity rather than land productivity. Without the improvement of labor productivity, the improvement of land productivity alone cannot guarantee a kind of profit or gain to the farm household.

In the past, it was taken for granted that the increase in land productivity can promise a profit to the farm household. And it was a true story at the time when the rural labor force was excessively sufficient. Today, however, rural community is in short of labor force. Accordingly, the wisest policy for the farm management under this circumstances is to improve labor productivity rather than land productivity. Figure 4 illustrates the difference between three tenure classes in terms of labor productivity.

As shown in Figure 4, the labor productivity of the owner–operated as well as the owner–tenant and full–tenant farm increases evenly toward 1986. Since 1982, the interval between the labor productivity of the own-

FIGURE 4 Labor Productivity between Three Tenure Classes

won / hours
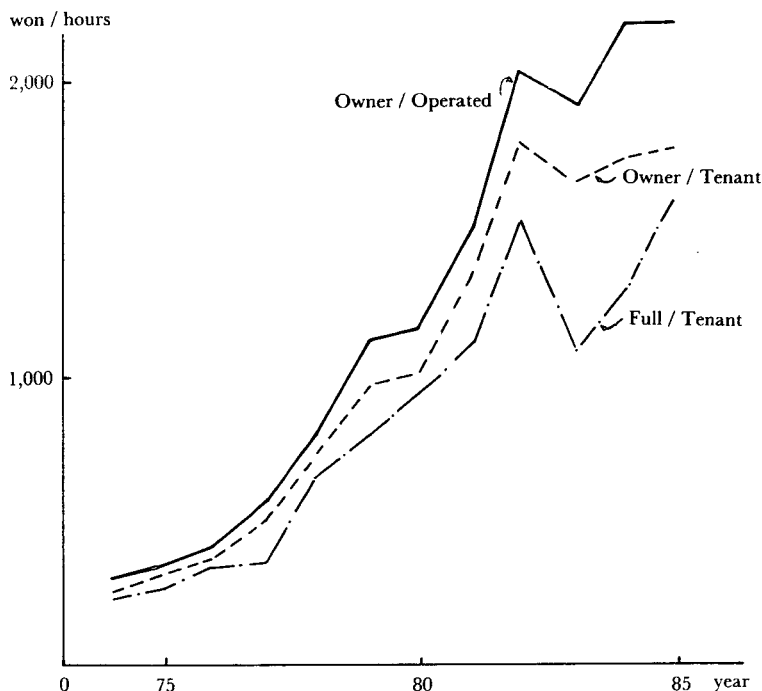


Source: MAF, *Report on the Results Farm Household Economic Survey,* 1974-85.

er–operated and full–tenant farm has been getting larger(Table 15). This fact implies that the difference in both types can be explained with two reason;the one is the introduction of farm mechanization, the other is the farming input hour and farm income per farm household. Namely, the owner–operated farm utilizes more farm machine than the full–tenant. As for the farming input hour in 1983, the farming input hour per 10 a is 187.20 hour in case of the owner–operated farm, while it is 231.75 hour in case of full–tenant farm(Table 16).

As presented Table 15, the labor productivity of full–tenant farm equals to 56% of labor productivity of owner–operated farm. In case of farm income, compared with average income(=100) of farm, the owner–operated farm is 118.6%, the owner–tenant and full–tenant are 97.6%, 82.4% respectively(Table 17).

And this fact would be attributed to the low farm income and long working hours. While the gap in farm income is due to the rental payment, the longer working hour of full–tenant farm is due to the bigger management size and abundant family labor.

TABLE 15 **Labor Productivity between Three Tenure Classes**

Unit:won/hours

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 305.66 (112.9) | 269.69 (99.6) | 230.47 (85.1) | 270.82 (100.0) |
| 1975 | 352.52 (112.5) | 312.72 (99.8) | 267.51 (85.4) | 313.28 (100.0) |
| 1976 | 410.13 (109.3) | 375.98 (100.2) | 332.81 (88.7) | 375.31 (100.0) |
| 1977 | 566.86 (117.2) | 503.69 (104.1) | 353.47 (73.1) | 483.62 (100.0) |
| 1978 | 782.58 (108.0) | 717.57 (99.0) | 643.68 (88.8) | 724.81 (100.0) |
| 1979 | 1,108.89 (115.2) | 956.29 (99.4) | 787.54 (81.8) | 962.37 (100.0) |
| 1980 | 1,141.02 (109.8) | 1,017.87 (97.9) | 941.39 (90.6) | 1,039.54 (100.0) |
| 1981 | 1,476.45 (111.3) | 1,336.64 (100.7) | 1,112.66 (83.9) | 1,326.76 (100.0) |
| 1982 | 2,016.17 (113.0) | 1,780.31 (99.8) | 1,507.08 (84.4) | 1,783.75 (100.0) |
| 1983 | 1,916.39 (125.0) | 1,642.15 (107.1) | 1,074.76 (70.1) | 1,532.58 (100.0) |
| 1984 | 2,004.62 (121.2) | 1,718.48 (109.8) | 1,265.18 (76.5) | 1,654.52 (100.0) |
| 1985 | 2,195.37 (119.6) | 1,761.70 (96.0) | 1,581.30 (86.2) | 1,834.93 (100.0) |

Source:Derived from MAF Survey Data, 1974-85.

TABLE 16 **Farming Input Hour between Three Tenure Classes(per 10a)**

Unit:hour (%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 183.85 (98.6) | 185.97 (99.8) | 190.21 (102.0) | 186.41 (100.0) |
| 1975 | 199.25 (99.5) | 199.40 (99.6) | 202.45 (101.1) | 200.22 (100.0) |
| 1976 | 208.53 (104.9) | 203.50 (102.3) | 183.01 (92.0) | 198.84 (100.0) |
| 1977 | 194.73 (99.7) | 194.13 (99.4) | 197.49 (101.1) | 195.27 (100.0) |
| 1978 | 152.03 (107.7) | 148.67 (105.3) | 117.74 (83.4) | 141.20 (100.0) |
| 1979 | 168.76 (98.0) | 172.09 (99.9) | 176.68 (102.6) | 172.15 (100.0) |
| 1980 | 173.91 (101.2) | 167.26 (97.3) | 176.45 (102.7) | 171.86 (100.0) |
| 1981 | 178.07 (103.1) | 167.33 (96.9) | 174.28 (100.9) | 172.67 (100.0) |
| 1982 | 162.63 (107.1) | 163.02 (107.3) | 124.06 (81.7) | 151.88 (100.0) |
| 1983 | 187.20 (94.9) | 179.71 (91.1) | 231.75 (117.4) | 197.35 (100.0) |
| 1984 | 182.33 (97.5) | 179.12 (95.8) | 201.05 (107.5) | 186.99 (100.0) |
| 1985 | 179.87 (96.9) | 178.43 (96.1) | 200.84 (108.2) | 185.65 (100.0) |

Source:Derived from MAF Survey Data, 1974-85.

TABLE 17  Farm Income between Three Tenure Classes(per 1ha)

Unit:1,000 won(%)

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|---------------|--------------|-------------|---------|
| 1974 | 562.0 (111.3) | 501.5 (99.3) | 438.4 (86.8) | 504.9 (100.0) |
| 1975 | 702.4 (114.8) | 623.6 (101.9) | 541.6 (88.5) | 612.1 (100.0) |
| 1976 | 855.3 (114.6) | 765.1 (102.5) | 609.1 (81.6) | 746.3 (100.0) |
| 1977 | 1,103.9 (116.9) | 977.8 (103.5) | 698.1 (73.9) | 944.4 (100.0) |
| 1978 | 1,189.7 (116.2) | 1,066.8 (104.2) | 757.9 (74.1) | 1,023.4 (100.0) |
| 1979 | 1,871.4 (113.0) | 1,645.7 (99.3) | 1,391.5 (84.0) | 1,656.8 (100.0) |
| 1980 | 1,984.3 (111.1) | 1,702.5 (95.3) | 1,661.1 (93.0) | 1,786.6 (100.0) |
| 1981 | 2,629.1 (114.8) | 2,236.6 (97.6) | 1,939.1 (84.6) | 2,290.0 (100.0) |
| 1982 | 3,278.8 (113.8) | 2,902.3 (100.7) | 2,382.8 (82.7) | 2,880.8 (100.0) |
| 1983 | 3,587.4 (118.6) | 2,951.1 (97.6) | 2,490.8 (82.4) | 3,024.5 (100.0) |
| 1984 | 3,655.0 (118.1) | 3,078.2 (99.4) | 2,543.6 (82.2) | 3,093.9 (100.0) |
| 1985 | 3,948.9 (115.9) | 3,143.5 (92.3) | 3,176.0 (93.2) | 3,407.3 (100.0) |

Source:Derived from MAF Survey Data, 1974-85.

FIGURE 5  Agricultural Capital between Three Tenure Classes (per 10a)
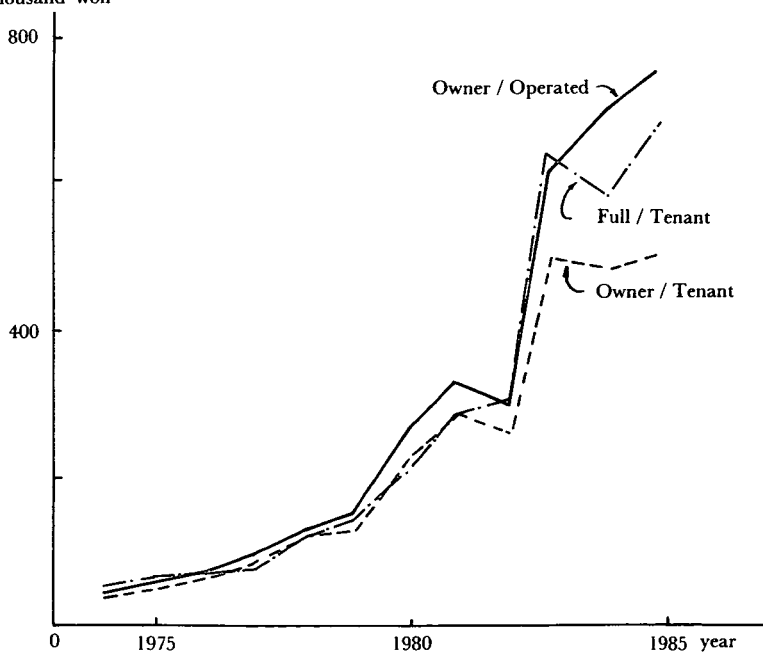


Source: MAF, *Report on the Results Farm Household Economic Survey*, 1974-85.

the farming hour is closely connected with capital component ratio(
=farm capital/farming hour). The longer the farming hour, the lower the
capital component ratio.

And the larger the agricultural capital, the higher the capital compo-
nent ratio. In short, the labor productivity increases as the capital compr-

TABLE 18  **Capital Productivity between Three Classes**

Agri. Income/Agri. Capit

| Year | Owner-operated | Owner-tenant | Full-tenant | Average |
|------|----------------|--------------|-------------|---------|
| 1974 | 1.40(112.9) | 1.34(108.1) | 0.95(76.6) | 1.24(100.0) |
| 1975 | 1.33(111.8) | 1.29(108.4) | 0.92(77.3) | 1.19(100.0) |
| 1976 | 1.24(108.8) | 1.21(106.1) | 0.94(82.5) | 1.14(100.0) |
| 1977 | 1.15(109.5) | 1.11(105.7) | 0.82(78.1) | 1.05(100.0) |
| 1978 | 0.97(112.8) | 0.91(105.8) | 0.64(74.4) | 0.86(100.0) |
| 1979 | 1.25(108.7) | 1.24(107.8) | 0.92(80.0) | 1.15(100.0) |
| 1980 | 0.74(98.7) | 0.75(100.0) | 0.76(101.3) | 0.75(100.0) |
| 1981 | 0.81(105.2) | 0.78(101.3) | 0.68(88.3) | 0.77(100.0) |
| 1982 | 1.13(109.7) | 1.13(109.7) | 0.80(77.7) | 1.03(100.0) |
| 1983 | 0.59(111.3) | 0.59(111.3) | 0.40(75.5) | 0.53(100.0) |
| 1984 | 0.53(103.9) | 0.54(105.9) | 0.44(86.3) | 0.51(100.0) |
| 1985 | 0.53(103.9) | 0.53(103.9) | 0.48(94.1) | 0.51(100.0) |

Source: Derived from MAF Survey Data, 1974-85.

FIGURE 6  **Capital Productivity between Land Tenure Type**
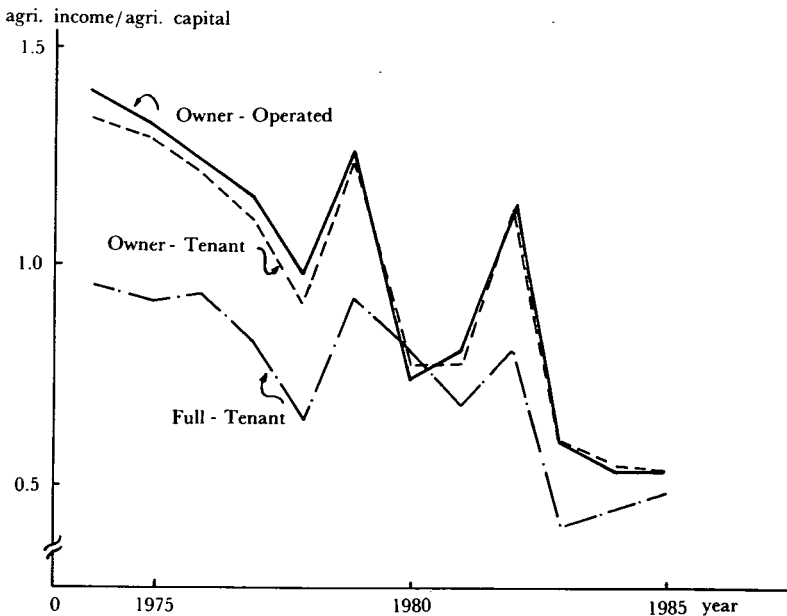


Source: MAF, *Report on the Results Farm Household Economic Survey*, 1974-85.

nent ratio increases. Figure 5 illustrates agricultural capital between three tenure classes per 10 a.

In case of owner-operated farm, agricultural capital increases proportionally up to 1982 year as well as the owner-tenant and full-tenant, but agricultural capital of the owner-operated along with two types increases greately since 1982.

Especially, agricultural capital of owner–operated farm increases more than owner–tenant and full–tenant since 1983. This fact indicates that both types of full–tenant and owner–tenant farm in capital productivity are lower than that of the owner–operated farm(Table 18 and Figure 6).

## Ⅳ. Comparative Production Efficiency by Type of Tenure

Figure 7 presents conventional measures of production efficiency for each of tenure classes. Such traditional production efficiency indicators are the yield of rice per 10a, production cost per 10a, agricultural income per farm household, and etc. In rice production, owner-operated farm

FIGURE 7  **Rice Yields by Type of Tenure (per 10a)**
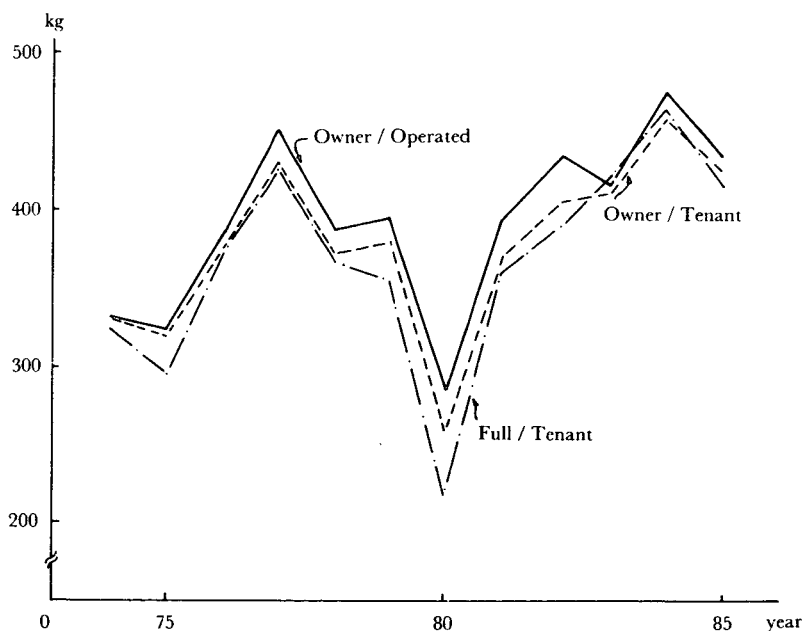


Source: Derived from 1985 MAF Survey Data.

revealed the highest yields as compared to the other two tenure classes. The second highest yields were achieved by the owner–tenant classes, while the full–tenant class showed the lowest yield of rice except 1984.

Although the lowest yields in rice on the full–tenants, it is revealed that there is no significant differences between owner–operators and owner–tenants.

TABLE 19 **Rice Yields by Type of Tenure (per 10a)**

Unit: kg

| Year | Owner-operated | Owner-tenant | Full-tenant |
|------|----------------|--------------|-------------|
| 1974 | 332(100.0) | 332(100.0) | 324(97.6) |
| 1975 | 324(100.0) | 321(99.1) | 296(91.4) |
| 1976 | 387(100.0) | 378(97.7) | 377(97.4) |
| 1977 | 450(100.0) | 429(95.3) | 427(94.9) |
| 1978 | 384(100.0) | 373(97.1) | 368(95.8) |
| 1979 | 393(100.0) | 382(97.2) | 357(90.8) |
| 1980 | 284(100.0) | 258(90.8) | 218(76.8) |
| 1981 | 390(100.0) | 371(95.1) | 361(92.6) |
| 1982 | 431(100.0) | 406(94.2) | 390(90.5) |
| 1983 | 419(100.0) | 411(98.1) | 420(100.2) |
| 1984 | 470(100.0) | 457(97.2) | 463(98.5) |
| 1985 | 432(100.0) | 425(98.4) | 415(96.1) |

Source:Derived from MAF Survey Data, 1974-85.

FIGURE 8 **Rice Production Cost by Type of Tenure (per 10a)**
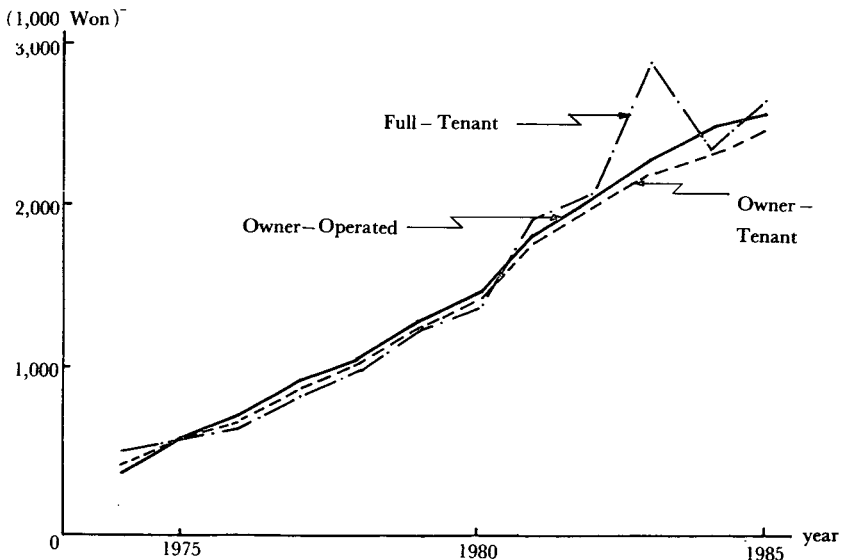


Source: Derived from 1985 MAF Survey Data.

The rice production cost per 10 a, the owner–operated and the owner–tenant farms used more inputs than that of the full–tenant farm up to 1980. Since 1981, rice production cost per 10 a of the full–tenant farm used more inputs as compared with those of the owner–operated and the owner–tenant farm(Figure 8).

It is concluded that the owner–operated and the owner–tenant groups possess more resources and attain the most efficiencies in farm production as compared with the full–tenant farm.

The result of empirical study based on Cobb–Douglas production function is discussed. From the foregoing analysis of the traditional production efficiency measures, the owner-operated and the owner-tenant farms proved to be the type of tenure which enjoyed consistant advantage over other types of tenure. In pursuing this point further, a Cobb-Douglas type analysis of the effectiveness of resource allocation between the three tenure classes is compared with the foregoing analysis based on the conventional efficiency measures.

A production function of Cobb–Douglas type can be postulated as follows:

(1)    $Y = A_o L^\alpha N^\beta F^\gamma K^\delta$ .

where    $Y$ is quantity of output in physical term of kg.

$L$ is land inputs expressed in pyong.

$N$ is actual labor hours, inclusive of family and hired labor.

$F$ is fertilizer inputs expressed in Won.

$K$ is capital input expressed in Won, inclusive of variable costs and fixed costs.

$A_o$ is a constant.

The model can be rewritten as logarithm form:

$$\log = \log A_o + \alpha \log L + \beta \log N + \gamma \log F + \delta \log K$$

where parameters( $\alpha$ $\beta$ $\gamma$ $\delta$ )are the coefficients relate to the estimated elasticities. The constant $A_o$ and the elasticities of production per each resource input are derived from least squares method. The data used in this estimates are 1985 MAF data.

The analysis is made to measure the production efficiency among three tenure classes in terms of marginal costs and productivities.

The solution of equation (1) gives the following elasticities of output with respect to the four input factors. This elasticity is defined as the percentage change in output if the input of a given factor of production is increased by one percent. The sum of $\alpha, \beta, \gamma$ and $\delta$ indicates the returns to scale. If the sum is less than unity, the production function reveals decreasing returns to scale, whereas if the sum is greater than unity,

increasing returns to scale are indicated. Of course, in the where the sum is equal to unity, there exists constant returns to scale.

The marginal productivities can be easily derived by rearranging variables. The marginal value productivity of a given input is computed by multiplying the elasticity coefficient of the input factor by a ratio of the geometic means of output to the geometric mean of the input under question.

The estimated parameters for equation (1) are presented in Table 20 for rice production. In rice production, the fact that the coefficients of correlation on the owner-operated and tenant farms were higher than those of the owner-tenant farm implies that capital availability and scale of farming operations could be two of the most important sources for further explanation of the production behavior of the owner-tenant classes.

TABLE 20. **Result of Regression Coefficients(Elasticities in Rice Production by Type of Tenure)**

| Description | Owner-operated | Owner-tenant | Tenants |
|---|---|---|---|
| Number of farm-size | 574 | 541 | 131 |
| Elasticities | | | |
| Land(L) | 0.8787*(17.735) | 0.9223*(16.350) | 0.8128*(9.777) |
| Labor(N) | 0.0890*(2.373) | 0.0650(1.372) | 0.0524(0.869) |
| Fertilizers(F) | 0.1956*(7.063) | 0.1256*(3.624) | 0.0623(1.198) |
| Capital service(K) | 0.0122(0.551) | 0.0463**(1.801) | 0.0506(1.412) |
| Constant(A) | 6.1982 | 6.1369 | 6.8886 |
| Coefficient of correlation($R_2$) | 0.929 | 0.8801 | 0.9082 |
| D.W. | 1.002 | 1.034 | 1.872 |
| F-Value | 1,076.39 | 675,242 | 311,556 |

    * Significance at the 1% level.
   ** Significance at the 5% level.
      Number in parentheses are t-ratio.
Source: Computed from 1985 MAF Data.

In all tenure classes, the highest coefficients were for land, indicating that elasticity of output with respect to the land was much higher as compared with the other three factors. In terms of elasticities, the next high input factor was labor, fertilizers and the least one was capital.

As stated earlier, the phenomena of the total returns to scale can be judged by the sum of coefficients in Table 20. In rice production, the two tenure classes of the owner-operated and owner-tenant farm showed increasing return to scale, and only the tenant farm indicated a constant return to scale. The marginal productivities for the four factors of production are computed at their geometric mean value, assuming other inputs were also at their mean values. The computation results are shown in

TABLE 21. **Marginal Productivities of Factor in Owner-Operated Farm**

| Variable | Geometric means | Marginal revenue (A) | Opportunity costs* (B) | Marginal return to opportunity cost ratio (B/A) |
|---|---|---|---|---|
| | Won | Won | Won | % |
| Outputs | 2,448,961 | - | - | - |
| Land | 2,009 Pyung | 1,071 | 878 | 0.82 |
| Labor | 590 Hours | 415 | 1,040 | 39.9 |
| Fertilizer | 104,672 Won | 10.4 | - | - |
| Capital | 75,425 | 0.4 | - | - |

* The opportunity costs of land and labor are derived as follows:as for land, the interest rate of bank(12%) is applied;farm wage rates are based on the average of man & woman basis in the end of 1985 data, which is obtained from the Agricultural Yearbook (1986), NACF.

Source: Derived from Statistics shown in Table 20.

TABLE 22. **Marginal Productivities of Factor in Owner-Tenants Farm**

| Variable | Geometric means | Marginal revenue (A) | Opportunity costs* (B) | Marginal return to opportunity cost ratio (B/A) |
|---|---|---|---|---|
| | Won | Won | Won | % |
| Outputs | 2,798,686 | - | - | - |
| Land | 2,312 Pyung | 1,116 | 878 | 0.79 |
| Labor | 693 Hours | 262 | 1,040 | 3.97 |
| Fertilizer | 117,370 Won | 3.0 | - | - |
| Capital | 81,032 | 1.6 | - | - |

* The opportunity costs of land and labor are derived as follows:as for land, the interest rate of bank(12%) is applied;farm wage rates are based on the average of man & woman basis in the end of 1985 data, which is obtained from the Agricultural Yearbook (1986), NACF.

Source: Derived from Statistics shown in Table 20.

TABLE 23. **Marginal Productivities of Factor in Tenants**

| Variable | Geometric means | Marginal revenue (A) | Opportunity costs* (B) | Marginal return to opportunity cost ratio (B/A) |
|---|---|---|---|---|
| | Won | Won | Won | % |
| Outputs | 2,438,942 | - | - | - |
| Land | 2,052 Pyung | 966 | 878 | 0.91 |
| Labor | 613 Hours | 208 | 1,040 | 5.0 |
| Fertilizer | 103,239 Won | 1.5 | - | - |
| Capital | 69,978 | 1.8 | - | - |

Notes: See the above Table 20.

Source: Same the Table 20.

Table 21, 22 and 23, with the estimated opportunity costs of the corresponding factors.

Comparing the marginal productivities of the two input factors and their corresponding opportunity costs, the land productivity of tenant farm in rice production are slightly closer to an economic optimum in resource allocation than other tenure classes. The marginal productivity of labor was in general much lower, as anticipated on nearly all the tenure classes.

According to this result of the estimates, it may be concluded that owner-operated and owner-tenant farm should use less labor, while the tenant farm invest more labor.

## V. Summary and Conclusions

Despite of the prohibition of tenancy by the "Land Reform Act" formulated in 1949, current rented land amounts to 30.5 percent of the total farmland. The tenant farming has also become an increasing trend, about 64.7 percent of total farms were identified as full or partial tenant farms. The occurence of this rusult can be explained on various reason, but the aim of this study, through the results of characteristical analysis of tenancy, management–economic analysis and economic efficiency by different type of tenure, is to improve current land law in korea.

As for improvement of current land law, the following were analyzed. At first, in case of characteristical analysis of tenancy, a survey about the occupation of the landowner, an aquisition motive of tenant land by occupation, the actual state of tenant farm–rents and tenant arrangement by occupation and rent imcome of tenant owner, etc. was carried out among 4,439 plot rented land cultivated by those farm households which are the object of Farm Household Economy Survey.

Second, in management–economic analysis by type of tenure, the owner–operated farms revealed relatively abundant resources and complete capital structure in general. There is a marked difference between owner–operators and tenants.

Net income is most appropriate for comparing the economic well-being between tenure classes. The highest income per farm in 1985 was for the owner–operators, amounting to 2,545,300 Won. Next, net income was 2,105,100 Won for the owner–tenants and 525,700 Won for tenants.

In case of the 1985 off-farm income by type of tenure from MAF data, it was found that the part-owner farms earned relatively lower off-farm income compared with owner-operators or tenants. In case of input per 10a by type of tenure, on the average, the part-owner farms used a large amount of labor than the owner-operated and the tenant farms. Especially, the part-owner farms had more labor force including hired labor than the owner-operated and the full-tenant farms.

In case of land productivity by type of tenure, during the 10 years

since 1974 the owner–operated and part–owner farms are higher than that of the tenants. Throughout the years, the small scale farm tends to enjoy the high land productivity.The labor productivity of the owner–operated as well as the owner–tenant and full–tenant farms increases evenly toward since 1974, but the interval between the owner-operated and full-tenants in labor productivity has been getting larger since 1982. This fact implies that the difference in both types is due to the farm mechanization and the shortage of labor force. In case of owner-operated farm, agricultural capital increases proportionally up to 1982 year as well as the owner-operated farm increase more than the owner-tenant and the full-tenants since 1983. This fact indicates that both type of the full-tenants and owner-tenant farms in capital productivity are lower than that of the owner-operated farm.

Third, considering all the factors, it can be said that the production efficiency does not differ very much between the owner–operated farms and owner–tenant farms. However, the tenant farms showed significantly low level of production efficiency compared with other types of tenure;perhaps this could be attributed to the small scale of farm. From the Cobb–Douglas function analysis, this was also confirmed. The study revealed that the owner–operated and the owner–tenant farms proved to be the type of which enjoyed consistant advantage over other types of tenure.

In rice production, the fact that the coefficients of correlation on the owner–operated and tenant farms were higher than those of the owner–tenant farms implies that capital availability and scale of farming operation could be two of the most important sources.

In all tenure classes, the highest coefficients were for land, indicating that elasticity of output with respect to the land was much higher as compared with the other three factors. Meanwhile the two tenure classes of the owner–operated and the owner–tenant farm showed increasing return to scale, and only the tenant farm indicated a constant return to scale. Comparing the marginal productivities of the two input factors(land, labor) and their corresponding opportunity costs, the land productivity of tenant farm are slightly closer to an economic optimum in resource allocation in rice production than other two classes. According to this result of the estimates, it may be concluded that the owner-operated and the owner-tenant farm should use less labor, while the tenant farm invest more labor.

Through the above review, we can conclude that a more rational land tenure system and land policy of the major agricultural policy are among the most important motive forces in accelerating the transformation process from present land law to newly farmland law, including the mitigation of the prohibition of farm land leasing practices. The improvement of agricultural structure for enlargement of farm management scale must be drived under the newly land law;namely(1) to mitigate or do away with the land ceiling limited to 3 hectare, (2) to do away with the prohibition of

tenaney, and (3) to eliminate an institutional factor restricted to enlarge farm management scale.

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