

# **Effects of the reform of the direct payment program of rice in Korea**

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**Abstract:** The Direct Payment Policy on the Rice Acreage played an important role in ensuring the stable production of rice. However, it was pointed out that the policy causes an oversupply of rice has been continuously raised. In addition, a problem was raised that the policy worked in favor of large scale farmers. Accordingly, the government introduced a new public-benefit direct payment system in 2020, which was designed so that the direct payment system was not linked to cultivation, and the payment unit price was also designed to decrease as the area increased. As a result of comparing the effects of the reorganization of the direct payment system, the proportion of direct payments paid to the dry field in the past was only 16.2%, but increased to 28.3% in 2020. Thus, the rice-oriented support structure was improved. On the other hand, the ratio of mean to median (RHS), fell from around 2.17 to 1.69, confirming that the gap between farm households improved significantly. In addition, the Gini coefficient was also lowered to 0.463 from 0.623, indicating that the distribution equity was improved.

**Keywords:** Public-benefit direct payment, Rice policy, Food policy, Inequality

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## **1. INTRODUCTION**

In 2005, the Korean government implemented rice policy reform with the aim of enhancing the competitiveness of the rice industry and strengthening food security. The core axis of the reform was to abolish the government purchase program and introduce a public reserve program to prepare for disasters and emergencies, and the supply and demand of rice could be managed by the market mechanism. In order to stabilize the income of rice farmers during the implementation process, the "Direct Payment Program for Preserving Rice Income" was introduced, which integrated and strengthened the existing rice-related direct payment system

The Direct Payment Program for Preserving Rice Income is a combination of the rice income preservation program in the form of fixed direct payments introduced in 2001 and the rice income preservation program in the form of variable direct payments linked to the target price introduced in 2003. The fixed direct payment unit price is increased by more than two times. In addition, the preservation rate for variable direct payments also increased from 80% to 85% compared to the target price. However, Ahn (2015) pointed out that there is a production incentive effect due to the aspect of paying direct payment on the premise of producing rice and the effect of preserving income compared to other crops.

On the other hand, Korean people's consumption of rice is gradually decreasing due to the influence of increasing income and pursuing various food cultures. The current consumption of rice is 59.2kg in 2019, which is less than half of that in the early 1980s. As a result, there were slight fluctuations every year depending on the crop conditions, but the oversupply trend of rice, which is more supply than demand, is continuing.

In addition, Park (2016) summarized the main issues raised over the Direct Payment Program for Preserving Rice Income as follows. First, there is a lack of equity between agricultural products due to the support focused on rice. Second, there is an inequality problem in terms of income redistribution where large farmers receive too much support compared to small farmers, since the payment is calculated in direct proportion to the area size.

In order to solve the problem of the lack of equity between agricultural products due to the rice-focused direct payment system, and the concentration of support on large farms with a unit price system proportional to the area, In 2020, the Public-benefit direct payment program was introduced. The program complies with matters for environmental and ecological protection, such as maintaining the shape and function of farmland and complying with standards for pesticides and chemical fertilizers, direct payment was made regardless of whether a specific item was cultivated or not. Through this, the support policy centered on rice, which was pointed out as a problem of the existing direct payment system was improved, and the new program was designed not to promote rice production.

In addition, the unit price of direct payment is designed in a structure in which the unit price decreases as the area increases, while small farmers who cultivate less than 0.5ha of farmland that meet the payment requirements are paid for small farmer's grants (1.2 million won) regardless of size of the area. Through this, it was intended to improve the problem of inequality in terms of income redistribution caused by direct payment.

## 2. EVALUATION OF REFORM OF DIRECT PAYMENT PROGRAM ON THE RICE

### 2.1 Structural Model

In order to analyze the effect of the reorganization of the direct payment program, the original data on the direct payment in 2019 before the reorganization and the original data on the public-benefit direct payment in 2020 were compared. The effect of the reorganization of the program was measured in two aspects. First, in order to verify whether the rice farming-oriented support was improved, it was divided into the amount of support for paddy fields and dry fields, and analyzed how the amount of payment between paddy fields and dry fields and the proportion of the total direct payment changed.

In this process, past direct payments in 2019 can be counted because direct payments to rice fields and dry fields are separated, but small farmer's grants under the public-benefit direct payment program, reorganized in 2020, are paid a certain amount money (1.2 million won) when the total cultivation area is 0.5ha or less. There is a problem that the payment amount is not divided into paddy fields and dry fields technically. In order to classify this, it was assumed that farms subject to small farmer's grants were divided and paid as much as the ratio of paddy fields and dry fields among the total area owned by the individual farmer.

Second, in order to check whether the support centered on large farms has improved, the distributional equity of direct payments is determined by using Gini coefficient, interdecile ratio, and ratio of mean to median (RHS) indicators. Although the Gini coefficient and the interdecile ratio are widely used as indicators to measure the equity of distribution, according to OECD (2018), the median value represents the most typical case in the sample, so that the comparison between mean and median is being also often conducted lately. So, if there is a large difference between the mean value and the median value, it means that there is an equity problem in the sample.

$$Payment_{pd} = 120 * \emptyset_{pd} (1)$$

Where, Payment denotes sum of direct payment paid to paddy fields and dry fields respectively, p denotes paddy field, d denotes dry fields,  $\emptyset$  denotes the ratio of paddy fields and dry fields to the total area.

$$RHS = \frac{Mean_i}{Median_i} (2)$$

Where, RHS denotes ratio of mean to median,  $Mean_i$  mean of direct payment for each farmer,  $Median_i$  is median of direct payment for each farmer.

### 2.2 Results

We compared the 2019's actual amount paid with 2020's payment to see if the reorganization of the program has improved the support structure which was centered on rice agriculture. In 2019, the average of the total amount of direct payment (the sum of direct payment for of rice, direct payment for fixed dry field, and direct payment for less favored areas) was 1.236 trillion won, of which the amount paid to paddy fields was 1.036 trillion won. The amount paid to the dry field was KRW 200 billion. In 2020, the total amount paid is 2.275 trillion won, of which paddy fields are 1.632 trillion won and fields are 644 billion won.

The share of the total amount paid to the paddy fields decreased from 83.8% in 2019 to 71.7% after the reorganization of the direct payment system, and the share of the total amount paid to the dry fields increased from 16.2% in the past to 28.3%. In terms of absolute payment, the total amount increased by 84.2% after the reorganization compared to 2019, and the total amount paid paddy rice fields and fields also increased by 57.5% and 222.5%, respectively.

If we look at whether the reorganization of the direct payment system has improved the equity of distribution, we can see that the Gini coefficient, the decile ratio, and the ratio of mean to median (RHS) all have improved equity. The Gini coefficient was 0.623 in 2019 but improved significantly to 0.463 after the reorganization. The interdecile ratio also 22.7 before the reorganization, but decreased to 8.5 levels after the reorganization, indicating that the deviation between the upper and lower groups has decreased. Lastly, the RHS index was 2.17 before the reorganization, but it fell to 1.69 due to the reorganization, and the average and median value of the total direct payment were closer, indicating that the gap between farms in terms of the amount of direct payment received significantly decreased.

**Table1.** Comparison of inequality in direct payment.

Unit: billion won, %

| Year      | 2019         | 2020         | rate of change |
|-----------|--------------|--------------|----------------|
| Sum       | 1,236(100%)  | 2,275(100%)  | 84.2%          |
| Paddy     | 1,036(83.8%) | 1,632(71.7%) | 57.5%          |
| Dry       | 200(16.2%)   | 644(28.3)    | 222.5%         |
| ~ 0.5ha   | 131          | 509          | 289.7%         |
| 0.5 ~ 2ha | 464          | 804          | 73.3%          |
| 2 ~ 6ha   | 399          | 616          | 54.3%          |
| 6ha ~     | 241          | 346          | 43.2%          |

Notes: The total amount of direct payment in 2019 includes all amounts received through the rice direct payment program, the dry field direct payment program, and the direct payment program of disadvantaged areas.

Source:Agrix.

### 3. CONCLUSION

In order to examine the effect of the reorganization of the Direct Payment Program for Preserving Rice Income, we compared the actual payment paid in 2019 before the reorganization and the 2020 after the reorganization.

According to the results of a comparative analysis before and after the reorganization of the direct payment program, the amount of support for dry field increased by 222.5% in absolute terms (compared to the total payment in 2019 and the payment in 2020), and the proportion of direct payments paid to the dry fields in 2019 year, it was only 14.5%, but in 2020 it rose to 28.3%. As such, it was confirmed that the rice-oriented support structure was improved by the reorganization of Direct Payment Program for Preserving Rice Income.

Meanwhile, in the process of restructuring the direct payment systems small farmer's grants were paid to farmers of a certain size, and the unit price system was reorganized in such a way that the payment unit decreased as the area increased. Comparing the reorganization by the payment in 2019 and 2020, the amount of payments improved in terms of various measures of equity (Gini coefficient, interdecile ratio, mean and median comparison). Representatively, the RHS (Ratio of mean to median) index, which is an index obtained by dividing the average amount of direct payments by the average amount received by the median farmers, fell from around 2.2 to 1.69, confirming that the gap in the amount of direct payment received between farms was greatly improved. The Gini coefficient of the amount received was also lowered to 0.463 from 0.623, indicating that the equity of distribution was improved.

As mentioned earlier, it was confirmed that the reorganization of the public direct payment system resulted in significant achievements in the aspect of escaping the rice-centered support structure originally targeted by the government and improving the support structure concentrated on large farms.

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