

Table 1. Growth Accounting of the Japanese Rice Production, 1984-99

	Region**							
	I	II	III	IV	V	VI	VII	VIII
TFP annual growth rate*	1.45%	1.40%	1.34%	0.43%	1.76%	0.69%	0.99%	0.68%
Contribution of quality in TFP	42.1%	36.6%	23.4%	63.5%	11.3%	45.5%	38.1%	56.3%
Annual growth rate of yield	-1.02%	-0.97%	-0.53%	0.17%	0.27%	-0.63%	-1.02%	-0.67%
Annual growth rate of quality of rice	0.61%	0.51%	0.31%	0.27%	0.20%	0.31%	0.38%	0.38%
Annual growth rate of area	1.81%	1.42%	1.76%	1.35%	1.43%	2.03%	1.04%	2.66%
Annual growth rate of factor use	0.59%	0.14%	0.87%	1.80%	0.08%	1.31%	0.13%	1.77%
Initial value of average cost (1984)	0.93	0.95	0.94	1.09	1.23	1.19	1.12	1.00
Initial value of yield (1984)	1.09	1.01	0.96	0.91	0.95	0.96	0.97	0.96
Initial value of quality of rice	0.97	1.12	1.01	0.98	0.99	0.97	0.98	0.98

*Adjusted by the quality changes.

**I: Tohoku, II: Hokuriku, III: Kanto, IV: Tokai, V: Kinki, VI: Chugoku, VII: Shikoku, VIII: Kyushu.

Table 2. Panel Data Analysis on the Quality Index

	Model			
	Fixed Effect		Random Effect	
Constant	n/a		1.0825	(46.896)
Yield	-0.0002	(-5.664)	-0.0002	(-6.202)
Trend	0.0038	(22.003)	0.0038	(22.157)

Note: The values in the parantheses show t-statistic computed by the heteroscedastic-robust standard errors.

Table 3. Effects of Output and Technical Change Bias in Factor Demand in Japanese Rice Production

	Labor		Land		Intermediate	Capital
Output Effects	0.0276	(0.739)	0.2220	(3.327)	-0.0132 (-0.334)	-0.1029
Quality Effects	-0.3115	(-0.914)	0.0221	(0.040)	0.2008 (0.457)	0.1952
Technical Change Bias	-0.0077	(-4.661)	0.0140	(3.276)	0.0022 (1.172)	0.0007

Note: t-statistics are in parentheses.

Economic Analysis of the Vegetable Price Stabilization Program

Toshitaka KATSUKI

The vegetable price stabilization program is formulated based on the Vegetable Production and Marketing Stabilization Act. The aim is to secure consistency of production in the subsequent year. In the event of price decrease in the preceding year, this will be achieved by producers making, under certain conditions, ex-post subsidy payments.

However, there is inadequacy in researching the significance of the role of the above-mentioned program. Therefore, a method has been developed during the research to evaluate and verify the vegetable price stabilization program, focusing on individual items, by applying the means of cost-benefit analysis.

First of all, DPAs (Designated Production Areas), which are approved areas for price supplement, were compared with non-DPAs in order to find the degree of effect on the production stability in the DPAs made by the price stabilization program.

Next, in order to evaluate the vegetable production business, based on the assumption

that the same measures apply to both DPAs and non-DPAs without the price stabilization program (i.e. the reduction of cropping acreage in both DPAs and non-DPAs in the following year due to the previous year's price decline), the impact on the trade value caused by shipment quantity and price fluctuation was estimated and compared with the expenditure incurred by the operation of the program.

Described below are the results, which have been reached through the evaluation, focusing particularly on cabbage, the item for which a large subsidy is granted (of high demand with extreme production fluctuation).

(1) Compared to the non-DPAs, certain measures are taken in the DPAs to sustain the consistency in the production (with minimum production fluctuation) of the following cropping season for which subsidy has already been granted (i.e. the price has fallen in the previous year). (Fig.1)

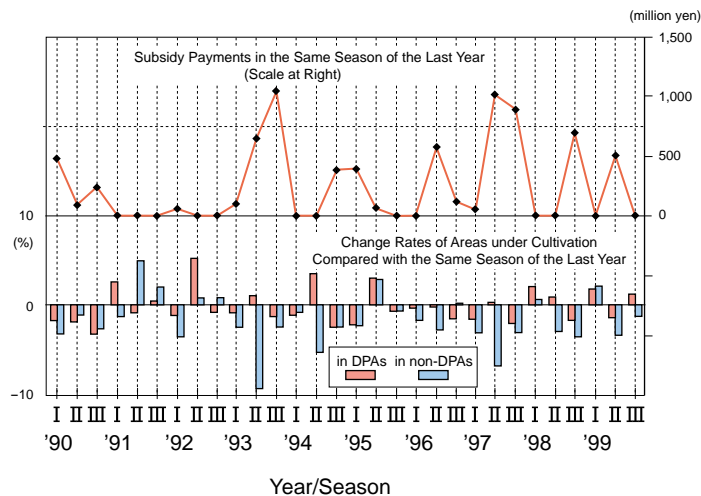


Fig.1. Change of Areas under CABBAGE Cultivation

Note: I :spring, II :summer and fall, III :winter.

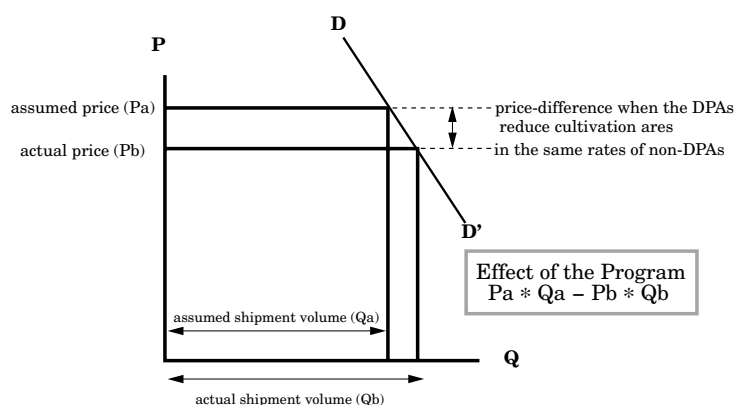


Fig.2. Effect of Price Stabilization Program

Note: DD' : Demand Curve.

(2) Having confirmed the above fact, if the cropping acreage is reduced in the DPAs for the following year as well as in the non-DPAs, the decrease in shipment quantity caused will increase the price (wholesale price). The effect of the price stabilization program can be calculated by applying the formula below. The effect is indicated with (B) in the formula and ($P_a \cdot Q_a$) is the assumed trade value; the assumed price multiplied by the assumed shipment quantity. The actual trade value is indicated with ($P_b \cdot Q_b$), which is subtracted from the assumed trade value.

$$B = P_a \cdot Q_a - P_b \cdot Q_b \text{ (Fig.2)}$$

(3) Meanwhile, the demand function of cabbage was measured in order to determine the price increase (elasticity) affected by the decrease of shipment quantity. The price elasticity of demand was -0.121 .

(4) Based on the result gained in (3), the annual and seasonal effect of the price stabilization program was also calculated. The cost (C) incurred by the operation of the program was defined as the amount of subsidy. The cost benefit brought by the program is therefore calculated (B/C) and by using this formula, the cost benefit brought by the program on the price of cabbage between 1991 and 1998 was calculated to be 13.0. Focusing on the annual and seasonal cost benefit, it was 2.7 for the winter of 1993 and 14.4 for the fall of 1997, when the subsidy payments in the same seasons of the preceding years exceeded one billion yen.

Research members

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Effects of Increasing Green Onions Import on the Domestic Production

Toshitaka KATSUKI

Over recent years, a rapid increase in the importation of vegetables has created considerable influence on Japan's domestic production. Especially, the decline in the price of green onions (*negi*) has been significant in line with the rapidly increased importation. Given these circumstances, in April 2001, the Japanese government initiated a provisional general safeguard measure against the importation of green onions.

This research was carried out with the intention of clarifying the influence of the rapidly increased importation of green onions over the domestic production.

(1) Firstly, in order to clarify the impact on the price of green onions created by increased imports, the demand function of green onions was calculated as shown below. The data applied covers 44-quarter terms between April 1990 and March 2001.

$$\begin{aligned} \ln Q = & -0.17533 \cdot \ln P + 0.12889 \cdot \ln C - 0.32849 \cdot D_1 \\ & (10.6922) \quad (0.9941) \quad (26.9262) \\ & -0.27921 \cdot D_2 + 0.45604 \cdot D_3 + 0.00155 \cdot T_1 \\ & (11.9380) \quad (21.4456) \quad (4.7147) \\ & -0.01768 \cdot T_2 + 0.10968 \cdot Z_1 + 0.0720 \cdot Z_2 \\ & (5.8048) \quad (3.7439) \quad (6.1204) \\ & +11.1075 \\ & (7.6222) \end{aligned}$$

() : T-statistic, adjusted R-squared:0.9928