CHAPTER VI

AGRICULTURAL PRICE POLICY ANALYSIS

Agricultural policy reforms in recent years have significant influences on achievements of the rice sector in Vietnam. The prospects for Vietnam remaining as a rice exporter and making profit in world rice market rely on the opportunities for further productivity growth in the Mekong Delta which traditionally is a rice surplus area. Most current policies are in technology and rice infrastructure so as to get higher yield. However, under the market mechanism the decision making of farmers and consumers usually involve in particular market-determined price. Hence, high productivity is not necessarily accompanied by high level of income which is the utmost goal of farmers. Therefore, any policy instrument on rice production would take into account the response of farmers to economic incentives as well as the response of rice crop to changes in input utilization resulting from the farmers' response to that policy instrument.

Though, there is a wide selection of policy instruments to increase further rice productivity, and to improve farmers' income such as rural credit, marketing, agricultural extension, irrigation infrastructure, technology research, etc., the purpose of this chapter is only to analyze input and output price policies as they relate to levels of input utilization and rice supply. In order to investigate the net impact of the price changes, the price subsidy is assumed.

In this study, fifteen alternatives of price subsidy policies will be examined conceptually: four deal with price of rice, pesticide, fertilizer, wage

rate, and they are denoted single-instrument policy; six are two-instrument policies which combine two different single-instrument policies; four are three-instrument policies; and one alternative will put all four single-instrument policies together. The level of price to be subsidized may depend on many factors. In the following analysis we consider the cost-effectiveness of 10 percent increase in rice price (output subsidy) and 10 percent reduction input prices (input subsidy) of all alternatives to the small and large farmers.

6.1 Changes in Inputs Utilization and Rice Supply to Alternative Price Policies on Winter-Spring Rice Production.

Based on the elasticities estimated in the previous chapter, the effects of selected price policies on the percentage change in input use and rice production of the small and large farms are calculated and presented in Tables 40 and 41.

All changes in input utilization and rice output of alternative policies are greater in small farms than those in large farms. Among four single-instrument policies, alternative 4 with 10 percent increase in rice price would bring about as much as 9.7 per cent and 7.3 per cent changes in rice output in small and large farms, respectively , Which are the highest changes.

Alternatives 15 (for small and large farms) which subsidize all inputs and output prices result in the highest percentage changes in output supply,

of course, and require large additional amounts of labor, fertilizer and pesticide to be used per acre since they are combinations of changes of four single-instrument alternatives. If the government subsidizes all input and output prices, the percentage change in the use of these inputs would be large which are 30 per cent for labor, 20 per cent for fertilizer and 23 percent for pesticide in small farms; and 24 per cent for labor, 17 per cent for fertilizer, and 21 per cent for pesticide in large farms.

Table 40. Effects of Selected Policies on Winter-Spring Rice Production of Small Farms in the Mekong Delta of Vietnam.

Policy Alternatives	Farmers' response (Percentage effect on inputs and output)			
	Use of Labor	Use of Fertilize	Use of Pesticide	Rice output
1. 10% ↓ in lab. price	14.527	0.936	1.251	4.165
2. 10% ↓ in fert. price	0.588	9.580	0.783	1.658
3. 10% ↓ in pest. price	0.519	0.516	9.452	1.371
4. 10% ↑ in rice price	14.457	9.159	11.486	9.748
5. (1)+(2)	15.115	10.516	2.034	5.823
6. (1)+(3)	15.046	1.452	10.703	5.536
7. (1)+(4)	28.984	10.095	12.737	13.913
8. (2)+(3)	1.107	10.096	10.235	3.029
9. (2)+(4)	15.045	18.739	12.269	11.406
10. (3)+(4)	14.976	9.675	20.938	11.119
11. (1)+(2)+(3)	15.634	11.032	11.486	7.194
12. (1)+(2)+(4)	29.572	19.675	13.520	15.571
13. (1)+(3)+(4)	29.503	10.611	22.189	15.284
14. (2)+(3)+(4)	15.564	19.255	21.721	12.777
15. (1)+(2)+(3)+(4)	30.091	20.191	22.792	16.942

Source: Computed

Table 41. Effects of Selected Policies on Winter-Spring Rice Production of Large Farms in the Mekong Delta of Vietnam.

Policy Alternatives	Farmers' response (Percentage effect on inputs and output)			
	Use of Labor	Use of Fertilize	Use of Pesticide	Rice output
1. 10% ↓ in lab. price	11.120	0.710	1.637	3.342
2. 10% ↓ in fert. price	0.450	7.216	0.990	1.475
3. 10% ↓ in pest. price	0.518	0.497	7.968	0.928
4. 10% ↑ in rice price	12.038	8.423	10.600	7.299
5. (1)+(2)	11.570	7.926	2.627	4.817
6. (1)+(3)	11.638	1.207	9.605	4.270
7. (1)+(4)	23.158	9.133	12.237	10.641
8. (2)+(3)	0.968	7.713	8.958	2.403
9. (2)+(4)	12.488	15.639	11.590	8.774
10. (3)+(4)	12.556	8.920	18.568	8.227
11. (1)+(2)+(3)	12.088	8.423	10.595	5.745
12. (1)+(2)+(4)	23.608	16.349	13.227	12.116
13. (1)+(3)+(4)	23.676	9.630	20.205	11.596
14. (2)+(3)+(4)	13.006	16.136	19.558	9.702
15. (1)+(2)+(3)+(4)	24.126	16.846	21.195	13.044

Source: Computed

6.2 Cost-Effectiveness of Alternative Price Policies on Winter-Spring Rice Production

Given the current amount used, prices of input and output, and yield showed in Table 42, the absolute changes in inputs use and output are calculated, and then converted these quantities to cost and value of policies per acre basis (see Tables A3 and A4 in Appendix).

Table 42. Base-Line Data Used for Calculating Costs and Benefits of Alternative Inputs and Output Price Policies (per acre basis)

	Labor	Fertilizer	Pesticide	Rice Output
Quantity	(manday)	(kg NPK)	(kg a.i.)	(kg)
Small farms	9.50	17.40	0.50	630
Large farms	7.90	15.40	0.38	600
Prices	.....VN dong/unit.....			
Small farms	12,380	4,453	90,260	0,962
Large farms	12,480	4,455	95,600	0,963

Source: Computed

Table 43. Cost-Effectiveness of Alternative Policies for Rice Production of Small Farms in 1992 dry season.

Policy Alternatives	Net benefit to farmers VN dong/acre	Government subsidy VN dong/acre	Net impact of policy VN dong/ac.	Cost effective-ness (%)
1. 10% ↓ in lab. price	20,357	12,654	7,703	60.9
2. 10% ↓ in fert. price	10,075	8,040	2,035	25.3
3. 10% ↓ in pest. price	7,979	4,617	3,362	72.8
4. 10% ↑ in rice price	96,397	65,239	31,157	47.7
5. (1)+(2)	27,980	20,694	7,287	35.2
6. (1)+(3)	26,201	17,271	8,930	51.7
7. (1)+(4)	109,145	77,893	31,252	40.1
8. (2)+(3)	16,884	12,657	4,228	33.4
9. (2)+(4)	99,828	73,279	26,549	36.2
10. (3)+(4)	98,049	69,857	28,193	40.3
11. (1)+(2)+(3)	35,533	25,311	10,222	40.4
12. (1)+(2)+(4)	118,477	85,933	32,544	37.9
13. (1)+(3)+(4)	116,698	82,510	34,187	41.4
14. (2)+(3)+(4)	107,381	77,896	29,485	37.9
15. (1)+(2)+(3)+(4)	126,030	99,550	35,479	39.2

Source: Computed

Table 44. Cost-Effectiveness of Alternative Policies for Rice Production of Large Farms in 1992 dry season.

Policy Alternatives	Net benefit to farmers VN dong/acre	Government subsidy VN dong/ac.	Net impact of policy VN dong/ac.	Cost effective-ness (%)
1. 10% ↓ in lab. price	18,220	12,030	6,190	51.5
2. 10% ↓ in fert. price	10,117	7,792	2,325	29.8
3. 10% ↓ in pest. price	5,538	4,459	1,079	24.2
4. 10% ↑ in rice price	82,660	63,538	19,122	30.1
5. (1)+(2)	26,746	19,823	6,923	34.9
6. (1)+(3)	22,373	16,490	5,883	35.7
7. (1)+(4)	95,580	75,569	20,011	26.5
8. (2)+(3)	14,870	12,252	2,618	21.4
9. (2)+(4)	88,077	71,331	16,747	23.5
10. (3)+(4)	83,704	67,998	15,707	23.1
11. (1)+(2)+(3)	31,994	31,994	24,282	31.2
12. (1)+(2)+(4)	105,201	83,361	21,840	26.2
13. (1)+(3)+(4)	100,828	80,028	20,800	26.0
14. (2)+(3)+(4)	93,326	75,790	17,536	23.1
15. (1)+(2)+(3)+(4)	110,450	87,820	22,629	25.8

Source: Computed

In terms of cost to the government, the small farmers require greater subsidy costs of the government than the large farmers due to high response in inputs use of the small farmers to changes in prices (Tables 43 and 44). Alternatives 15 place heavy burden on the government budget than others (99,550 VN dong and 87,820 VN dong/acre for the small and large farmers, respectively). Alternatives 3 with 10 percent reduction in pesticide price would cost the government the least.

In terms of benefit to the farmers, all policies related to an increase in rice price would benefit farmers the most. For instance, among 4 single-instrument policies, alternatives 4 would provide highest benefits (96,397 and 82,660 VN dong per acre for the small and large farmers, respectively). On

the other hand, among the 15 price policies, alternatives 15 would provide the highest net benefits to farmers due to all inputs and output subsidies.

After examining cost to the government and net benefits to farmers, one can derive the net benefits of the policy alternatives to the society (country) as a whole. Once again, alternatives 15 would also generate the highest net impact of the policy to the country with 35,479 VN dong/acre in small farms and 22,629 VN dong/acre in large farms.

Based on the cost to the government and net benefit to the country, the cost effectiveness is formed so as to see the effectiveness of one VN dong subsidized to the country. All of the 15 policy alternatives yield positive returns to farmers and the country, and the cost effectiveness of all 15 price policies set for the large farms is lower than that for the small farms. The rates of return of subsidy policies range from 25 to 72.8 per cent in small farms, and from 21.3 to 51.4 per cent in large farms.

For rice production in the dry season in small farms the most cost-effective policy appears to be a reduction in pesticide price. The second cost-effective alternative would be alternative 1 with 10 per cent reduction in labor wage. A 4,617 VN dong subsidy for pesticide price would give a net benefit of 7,979 VN dong/acre to rice farmers, and 3,362 VN dong/acre to the country. This amounts to as much as 72.8 per cent return on pesticide subsidy compared to 60.8 per cent return on a wage rate subsidy (rank two).

On the other hand, in large farms the most cost-effective policy

appears to be a reduction in wage rate. A 12,000 VN dong subsidy per acre would provide a benefit of 18,200 VN dong /acre to farmers and 6,190 VN dong/acre to the country. The rate of return is 51.4 per cent. The second cost-effective alternative would be alternative 6 which is a combination of fertilizer and pesticide subsidies. This amounts to 35.7 per cent return on the cost of subsidy.

The cost of subsidy and benefit discussed above are rather small as compared to the current input costs. For example, the cost of pesticide price subsidy per acre equals approximately 1/20 that of one kg a.i. of pesticide; and the cost of labor wage subsidy per acre is less than the wage of one manday.

Choosing which alternative to impose is not based only on the criterion of cost effectiveness but farmers' income improvement, farmers' financial capacity, and government budget as well. Since all policy alternatives set for the small and large farms all provide a very high rate of return from subsidy cost, the government may have several choices in making decision which alternative is more appropriate. As the comprehensive set of policies is beyond the scope of this study, the following suggestions are made based on possible objectives of the government.

If the objective of the government is to increase both farmers' income and rice production, and to apply single-instrument policy, then alternative 4 would be appropriate since it would benefit farmers the most among the four single-instrument policies; provide relatively high rates of return from

subsidy which equal 47.7% in the small farms and 30.1% in large farms. If the government wants to increase the rice production only and consider the cost-effectiveness of the subsidy, then alternative 4 is also well matched because other policies which are combinations of rice price subsidy and input price subsidy would yield lower cost-effective ratios despite their higher rice production than alternative 4.

Rice price increase will lead to a greater use of labor than uses of fertilizer and pesticide. However, rice price subsidy requires more relevant investigations such as the gap between export price, world rice market price and farm price before imposing such a policy to rice production industry. The rice price may increase without subsidy, perhaps, by the improvement of rice marketing system, or by the introduction of high quality varieties, or rice banks which are well practiced in neighboring Southeast Asia countries.

If the subsidy program is chosen, at present, the Vietnamese government would face limited budget. The price policies to raise part of the farmer's income should focus on fertilizer prices and pesticide prices, or combination of both. It means that alternatives 2, 3 and 8 would be appropriate. These alternatives will cost the least for the government budget. The farmers would appreciate this since the prices of fertilizers and pesticides are reportedly high. The prices of one kilogram fertilizer nutrient is estimated to be approximately equivalent to 5 kg of paddy during the survey. The actual cost of fertilizer and pesticide could be reduced through encouraging these inputs in the country, cutting on material imports, compensating transportation cost, etc.

Price policies reducing pesticide and fertilizer prices will certainly cause a greater use of these inputs in rice production. Then, side effects on rice quality and environment may occur. Agricultural extention activities should focus more on guidance for effective use of fertilizer and pesticide so as to increase productivity as well as to prevent the environment from being polluted.