

The Effects of Model Project of Self- governing Coastal Fishery in Korea

© 2004 In Kim

? . Introduction

Recently, many scholars of public administration had a great concern with the government's role (Kettl, 2000; Stoker, 2000; Park, 2000). They asserted that the work which we had thought government should do traditionally ought to be delegated to the private sector or to the self-governance system (Ostrom, 1998).

This kind of discourse was reviewed seriously by the Department of Fishery Management, Ministry of Maritime Affairs & Fisheries, in Korea. Traditional government initiative management system of coastal fishery could not reflect the regional fishing characteristics. The system brought about the conflicts between fishers and officers in charge as well as among fishers. The Ministry of Maritime Affairs & Fisheries has enforced the Model Project of Self- governing Coastal Fishery in Korea since July 2001 to solve those problems, and to make fishers to participate positively in fostering their sustainable production base of fishery.

The Ministry selected 79 model communities of self-governing fishery, which were administered under 11 Local Authorities of Maritime & Fisheries, in 2002. The types of model fishing communities were village fishing, fostering fishing, fisher-boat fishing, and compound fishing. The Ministry decided to enlarge the responsibility and the power of fishers to manage fishing ground, resources, and production, and to provide the model communities with administrative, financial and technical assistance for fostering the base of self-governance. The Ministry tried to develop the self-governing system of fishery through solving the problems which were brought about after they enforce the model project, and to spread the improved system all over the country after 2003. Therefore, the government invested 5.1 billion won (almost 4.3 million dollars) in 2002, 175 billion won (150 million dollars) for the projects (Ministry of Maritime Affairs & Fisheries, 2001).

Because coastal fishery has the characteristics of common-pool resource, fishing ground is apt to be easily devastated, and extremely difficult to recover the devastated one without efficient management system (Ostrom, 1992; Ostrom, Gardner, and Walker, 1997; Kim, 1998a; Choi, Lee, and Bai, 2001). Therefore, we have to fully understand the theory of common pool resource and the method of policy evaluation in

order to evaluate correctly the effects of self-governing fishery (Ostrom, 1998; Kim, 1998b).

In this context, this paper tries to evaluate correctly the model project of self-governing fishery which Korean Ministry of Maritime Affairs & Fisheries has enforced, and to suggest the policy recommendation for improvement of self-governing fishery.

? . The Characteristics of Self-governing Fishery and The Policy Effect of Model Project

1. The Characteristics of Self-governing Fishery

(1) The Characteristics of Self-governing Fishery as Common Pool Resource

Common pool resource is natural or man-made resources in which exclusion is difficult and resource yield is subtractable (Hackett, 1992: 325). The CPR is sufficiently large as to make it costly, but not impossible, to exclude potential beneficiaries from obtaining benefits from their use (Ostrom, 1990: 30; Ostrom and Ostrom, 1978; Oakerson 1986; Ostrom, Gardner, and Walker, 1997; Tang, 1991: 42-3; Lee, 1995: 1291). Self-governing fishery uses the same coastal fishing ground. Therefore, the quantity which every fisher withdraws brings about subtraction of total quantity of fish, and it is very difficult to exclude the fishers to withdraw in the fishing ground. In this context, the coastal fishery is one of the common pool resources. Inexcludability of

fishers from using fishing ground and subtractability of available amounts of fish bring about high level of interdependency among fishers.

Fishers using the same fishing ground and withdrawing from the common fishing area influence each other. This interdependency brings about problematic situations. Therefore, all the coastal fisheries can be characterized as common pool resource dilemma (Gardner, Ostrom, and Walker, 1990).

If total demand of individual appropriator on appropriation units does not exceed total producing capability or naturally recovering capability of the resource, they can appropriate or use the resource continuously without being competitive or intervening each other. But, if the demand exceeds the supply or naturally recovering capability, even though the individuals who are to use the common pool resource are rational beings, they meet serious problems. Because it is difficult to exclude the potential users, if they are rational, they are to use or appropriate, if possible, much more quantity of the common pool resource for maximization of their profit. Therefore, crowding effects and overuse problems are chronic in CPR situations. Especially, when CPR is a biological resource, such as a fishery, approaching the limit of resource units not only may produce short-run crowding effects but also may destroy the capability of the resource itself to continue producing resource units (Ostrom, 1990: 32). Because of

those characteristics of the CPR, it is difficult to manage efficiently the common pool resource (Hardin, 1968).

(2) Successful Management of Self-governing Fisheries

All the coastal fisheries can be characterized as common pool resource dilemma (Gardner, Ostrom, and Walker, 1990). This dilemma is a social dilemma that individual behavior based on the individual rationality does not bring about social rationality (Messick and Brew, 1983). This situation of using the common pool resources can be easily explained with the prisoners' dilemma games (Wade, 1988; Ostrom, 1990).

This nature of fishery as common pool resources (CPRs) can easily devastate the fishing ground if there are no rules to regulate fishers' activities. It is common that they make rules to regulate their activities in order to increase their amounts to harvest. Those kinds of rules are in place at all communities which have to preserve their common fishing resources.

Ostrom reviewed 14 cases of CPRs in the world which had been successfully managed for long time. She identified a set of necessary design principles for the success of these institutions in sustaining the CPRs and gaining the compliance of

generation after generation of appropriators to the rules in use¹. The design principles illustrated by long-enduring CPR institutions are ?) Individuals or households who have the rights to withdraw resource units from the CPR must clearly defined, as must the boundaries of the CPR itself. ?) Appropriations rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, material, and money.² ?) Most individuals affected by the operational rules can participate in modifying the operational rules. ?) Monitors, who actively audit CPR conditions and appropriator behavior, are accountable to the appropriators or are the appropriators.³ ?) Appropriators who violate operational rules are likely to be assessed graduated sanctions by other appropriators, by officials accountable to these appropriators, or by both. ?) Appropriators and their officials have rapid access to low-cost local arenas to resolve conflicts among appropriators and officials. ?) The rights

¹ To solve social dilemmas, successive generations have added to the stock of knowledge about how to instill productive norms of behavior in their children, to craft rules to support collective action that produces public goods and avoids "tragedy of the commons", and to enforce them. Ostrom asserts the theory of collective action is the central subject of political science. It is the core of the justification for the state (Ostrom, 1998b: 1).

² Generally, eligible users had to be local residents who would be available to perform their full duties to contribute to the commons; absentee landowners were not welcome. This requirement minimized enforcement costs, since eligible local users and outsiders could be instantly distinguished (Mckean, 1992: 258).

³ Mckean asserts that close attention to monitoring and enforcement is crucial to success, must be conducted or supervised by members of the community itself rather than by an overlord or super-ordinate layer of government to ensure that enforcement is both thorough and impartial(1992: 276).

of appropriators to devise their own institutions are not challenged by external governmental authorities.⁴) Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises (Ostrom, 1990: 90; Kim Y., 1992: 324; Kim, 1998b: 10-11).

One important finding that is emerging from the case study literature is that productivity-enhancing CPR governance is difficult when appropriators have heterogeneous objectives. The source of heterogeneity is diverse . It includes difference in opportunity cost, appropriation skill, caste, language, ethnicity, initial wealth, political influence, technology and physical location. Therefore, the collective-choice problem should be considered in terms of two points. First, appropriators must agree on a reduced overall level of appropriation intensity and fashion a set of rules for allocating appropriations rights consistent with the overall reduction. Second, appropriators attempt to implement governance by investing in monitoring and enforcement (Hackett, 1992: 326).⁵ This assumption of self-enforcement is consistent with the case study analysis by Ostrom. She found that sizable resources were invested in monitoring

⁴ National and domainal governments of Tokugawa Japan left villages essentially alone with regard to the management of the commons (Mckean, 1992: 259).

⁵ Many scholars use assignment problems and technological externalities in addition to two measures of flow of fish as performance measures of coastal fisheries (Powers, 1984; Miller, 1989; Berkes, 1992; Ostrom, Gardner, and Walker, 1997: 253- 4)

activities in various cases, but the "guards" were rarely "external". She found that even though widely divers monitoring arrangements were used, in all of them, the appropriators themselves played a major role in monitoring each other's activities (Ostrom, 1990: 59).

If CPR governance is not successfully implemented, non-cooperative appropriation is assumed to result. Those shares in the gains from CPR governance may have incentive to invest in its success. On the other hand, any appropriators made worse off relative their non-cooperative payoffs have an incentive to cheat on their allocated appropriation right, or to legally challenge the governance structure (Hackett, 1992: 326). Therefore, it is very important the appropriators of the same resources believe that cooperative appropriation will improved resource yield, and keep the rules of the community. It is not easy for the appropriators to do in the early days of self-governing. Therefore, it requires that the leaders of the community persuade the appropriators, members of the community believe it and keep the rules.

2. The Effect Evaluation of Model Project of Self-governing Fishery

It is important to measure the effect in effect evaluation of government activities. The effect means the change of out comes indicated in the goals of policy or project of government. This effect evaluation study is a kind of performance evaluation study(Kim, Hur, Lee, 1999; Lee, 2000: 243- 262). But, it does not deal with efficiency which relates

output to the cost input, equity which measures the distribution of outcomes. It is important to grasp the goal of the policy or project in the effect evaluation study (Kim, Kim, Ryu, 1991; Jo, 2001: 297- 316).

The ultimate goal is enhancement of productivity of fishery with maximum sustainable production of fishing resources and minimization of conflicts caused in the production process. The indirect or short term goals of self-governing fisheries are to make the fishing community to be activated in order to maximize those goals, and to maximize fishing ground management, resource management, and production management.

Outcomes are deeply related to the goals which the system is to produce. In the case of coastal fishery, those goals are more harvest of the good fishing resource with less cost while maintaining sustainable conditions of fishing resource as well as conflict reduction. The fishing resource has self recovering capability, and inevitably fluctuates in quantity. Not to withdraw only does not necessary bring about the affluent fishing resource. They should not also withdraw too much fishing resource at random. It is necessary for them to withdraw the resource with maximum sustainable yield (Jang, 1994: 205- 210). This is the problem of preservation of fishing resources to make maximum sustainable yield in coastal fishing ground. In this context, resource preservation in fishing ground is one of important outcomes.⁶

3. Influencing Factors of the Effect of Model Project of Self-governing Fishery

The effect of model project of self-governing fishery is not influenced by the project itself but also by many other factors. Therefore, we must fully understand the influencing factors of the effect of model project of self-governing fishery in order to evaluate accurately the effects. It is institutional framework to suggest good ideas when reviewing the factors. By the framework, the effect could be influenced by the attributes of community, a set of rules as institutional arrangements, and material/physical conditions.

(1) Attribute of Community

Singleton and Taylor(1992: 315) define the term as a set of people (?) with some share beliefs, including normative beliefs, and preferences, beyond those constituting their collective action problem, (?) with a more- or -less stable set of members, (?)

⁶ Authority rules can be confused with scope rules. The former specifies the rights of those holding a position and deals with who can do what, and the latter specifies what kind of works the fraternity can do.

who expect to continue interacting with one another for some time to come, and (?) whose relations are direct and multiplex (1992: 315).

Ostrom asserts that a group of individuals who share the above four attributes identified by Singleton and Taylor can more easily than others develop social capital of considerable value to help them address problems of mutual vulnerability. Individuals with share similar beliefs are more likely to be able to communicate effectively about the problems they face. If the group is stable, can communicate directly, and will interact over a long period of time, the likelihood that the group will find solutions to many of the problems they face is indeed higher than for those groups lacking these characteristics (Ostrom, 1992: 343- 344). She also asserts that community is important, but not sufficient for the solution of CPRs problems. Because the external government may intervene and take over the governance and management of local CPRs, community is not necessary for the solution of CPRs problems. But if community is built up, it is necessary. She argues that neither community nor enforcers are sufficient. Both are needed, and both can enhance the other (Ostrom, 1992: 344- 351). In the case of self-governing fisheries, a fraternity of a fishing village is a representative community (Kim, 1984). Recently, a study on problem solving of commons dilemma through self-governing focused on a fraternity of a Korean fishing village (Choi, Lee, and Bae, 2001).

It is very important in using CPRs or collective goods that they are familiar and get along with each other. If they know well each other, they can easily forecast other's actions with relation to the use and the contribution of those resources (Olson, 1965). An important fact found in the case studies of CPRs is that it is difficult to govern the CPRs when their users are heterogeneous. The sources of heterogeneity are diverse, and include differences in the opportunity cost, appropriation skill, caste, language, ethnicity, initial wealth, political influence, technology and physical location (Hackett, 1992: 326). The positive leader can make the members to participate in the cooperative activities and persuade them to keep the rules. Thus he can bring about good performance of the self - governing fisheries (Hoy and Miskel, 1996; Lee, 2002).

(2) The Relevance and Validity of Community's Rule

It is a set of rules that is considered as most important in Institutional Analysis & Development (IAD) Framework. Those institutions compose individual or group incentive structure, and escape or resolve their conflicts (Choi, 2000).

Ostrom classifies the rules as boundary rule, scope rule, position rule, authority rule, aggregation rule, information rule, pay -off rule in IAD Framework (Ostrom, 1992: 19). Especially, among those rules, Payoff rule which defines distribution of benefit and cost

is important. If anyone becomes one of the community members, he has much concern with the rules which defines how to distribute the fishing resources harvested, and how to distribute the cost which is necessary for resource management, production management, and fishing ground management.

Aggregation rule which defines the way of collective decision making made in the community is also important. In the case of self governing of village fisheries, a fraternity of fishing village governs the village fishing ground. Aggregation rule defines how the general assembly decides, who withdraws the fish, who has the right to withdraw, and how much money is necessary to foster the fishing ground. Authority rules specify which set of actions are assigned to which positions at each node of a decision tree. Within the fraternity, it is the authority rule to specify who can do what in relation to various decision-making. It is a good example of authority rule to specify what can be decided in the general meeting of the fraternity or what authority chairman has (Kim, 1999). Besides, there are scope rule specifies the set of outcomes that may be affected, including whether outcomes are intermediate or final, boundary rule specifies how participants enter or leave these positions. Position rule specifies a set of positions and how many participants are to hold each position (Ostrom, Gardner, Walker, 1992: 41).

How much these rules are relevant and valid, and are consistent with community conditions would influence the community members to keep the rules, and to participate in cooperative activities. How much the opinions of all the members are reflected in the process of making these rules and how much democratically the rules are made would influence the community members to keep the rules. Keeping the rules and participating in cooperative activities would influence greatly the performance of the community.

(3) Physical/Material Conditions of Fishing Ground

Even though the communities are well made up, and their rules are also well made, that the quantities of their harvest are different is due to the different physical conditions of their fishing grounds. The temperature of fishing ground influences the kind of fish and their growth (Sutherland, 1986: 36). If the temperature suddenly goes up, and the fishing ground is contaminated by influx of wasted water or oil, the fishing resource is devastated. Each fishing ground has different depth of water, different temperature, and different drift of a current. These differences make the fishing ground different, and make the fishers to withdraw different fishing resource. Even though the fishing ground had been devastated by the commons tragedy, the fishing ground which

had once good natural and geographical conditions in the past would bring about good performance in coastal fisheries.⁷

⁷ Self-governing Community of Eng-gang Bay in South Sea is also a good representative community to succeed in the model project. In the past, there were affluent sedentary shellfish, such as abalone, turban, trepang at Eng-gang Bay. Fixed shore net fishery was developed. Because there was also affluent other fishing resource, fishing-boat fishery was developed. But illegal lease of the village fishing ground and modernization of fishing equipment brought about too much harvest, resulted in the depletion of fishing resources, and reduction of household income. Since 1980s all the fraternities of fishing village managed directly their fishing-ground, fostered their resource regularly. With this system, there broke some other problems which raised serious conflicts among the fraternities, brought about inefficiency in monitoring, and cleaning of the fishing grounds. Therefore, they need fisheries resource management system based on wide area covering the whole Eng-gang Bay. They made a large community which includes 3 administrative units, 15 fraternities of fishing villages, whose members are 559 households, 838 fishers. Recognizing the necessity of fostering fishing resource based on the wide area, and efficiency of cooperative management made the fishers to participate in the model project of self-governing fisheries, to overcome local selfishness. It resulted in good fishing villages to live in.

? . Research Design and Framework of Analysis

1. Research Design

The effect of model project of self-governing fisheries is a difference between the outcomes which were brought about if the model project would not be enforced and the outcomes which were brought about when the project was enforced. Therefore, in order to evaluate accurately the effect, we should select samples of communities with random sampling, and compose the experimental group and control group. But, we could not enforce the model project compulsorily like most policy experimentation. The project could be carried on selected communities among the ones which are willing to propose to participate in the model project. It is common that the participating communities are apt to be more successfully managed than non-participants. Government also tries to make the participating communities to take a role of precursor. Therefore, we have to make a research design elaborately in order to evaluate the effect more accurately.

Even though model project of self-governing fishery was enforced to 79 communities, some communities brought about great effects, and some other ones brought about little effects. This paper tries to find the successful communities, and how to succeed in self-governing fisheries. For this purpose, depth-interview of the leaders of the communities may be helpful.

The model project of self-governing fisheries was enforced to the 57 communities in 2001, 79 communities in 2002, 175 communities in 2004. It takes some time to bring about the effects. Therefore, we try to measure and compare the activities and outcomes of 79 communities which the model project has been enforced to, and the activities and outcomes of 79 communities as control group which the model project has not been enforced to. This method is a kind of non-equivalent control group design as one of quasi-experimentation research design (Cook, Campbell, 1979). The model project could not be compulsorily enforced to the communities. Therefore, the objects of the model project were selected among the ones which had proposed voluntarily to participate in the project. In this case, there will be some problem of internal validity due to the selection effects.

In order to solve the above problem, this paper tries to use non-experimental research design with statistical method. For this purpose, regression analysis may be more helpful in order to compare the effects of two groups with controlling of the

variables which could influence the performance of fisheries. In order to use this method, we have to know influencing variables on the effects of self-governing fisheries.⁸

The above method has also a problem that we could not know all the influencing variables. Therefore, this paper tries to compare the outcomes of this year of target communities which the model project was enforced to, and those of themselves as produced one year before the model project was enforced (Rossi, & Freeman, 1982: 176, 247). This method may be easily used, but it is not easy to use this method if there were no data measured before. Therefore, this study is to use the data which measured by themselves on how much effect the project brought about as compared to the outcomes of one year before the model project was enforced. This method may raise several problems including maturation effect, interfering event, intra-session history (Cook, Campbell, 1979: 51), as well as subjectivity of measurement.

This paper tries to evaluate the effects of model project of self-governing fishery. Survey research has been carried on 79 communities which the model project of self-governing fisheries has been enforced to in 2002, and 79 similar non-participant communities which are located in the same jurisdiction of local government. The effects could be measured by the ton of fish or sea-weed harvested. But, the kind of fisheries resources is various, and it is very difficult to measure. Therefore, this paper uses the relative evaluation by survey of community chairmen.

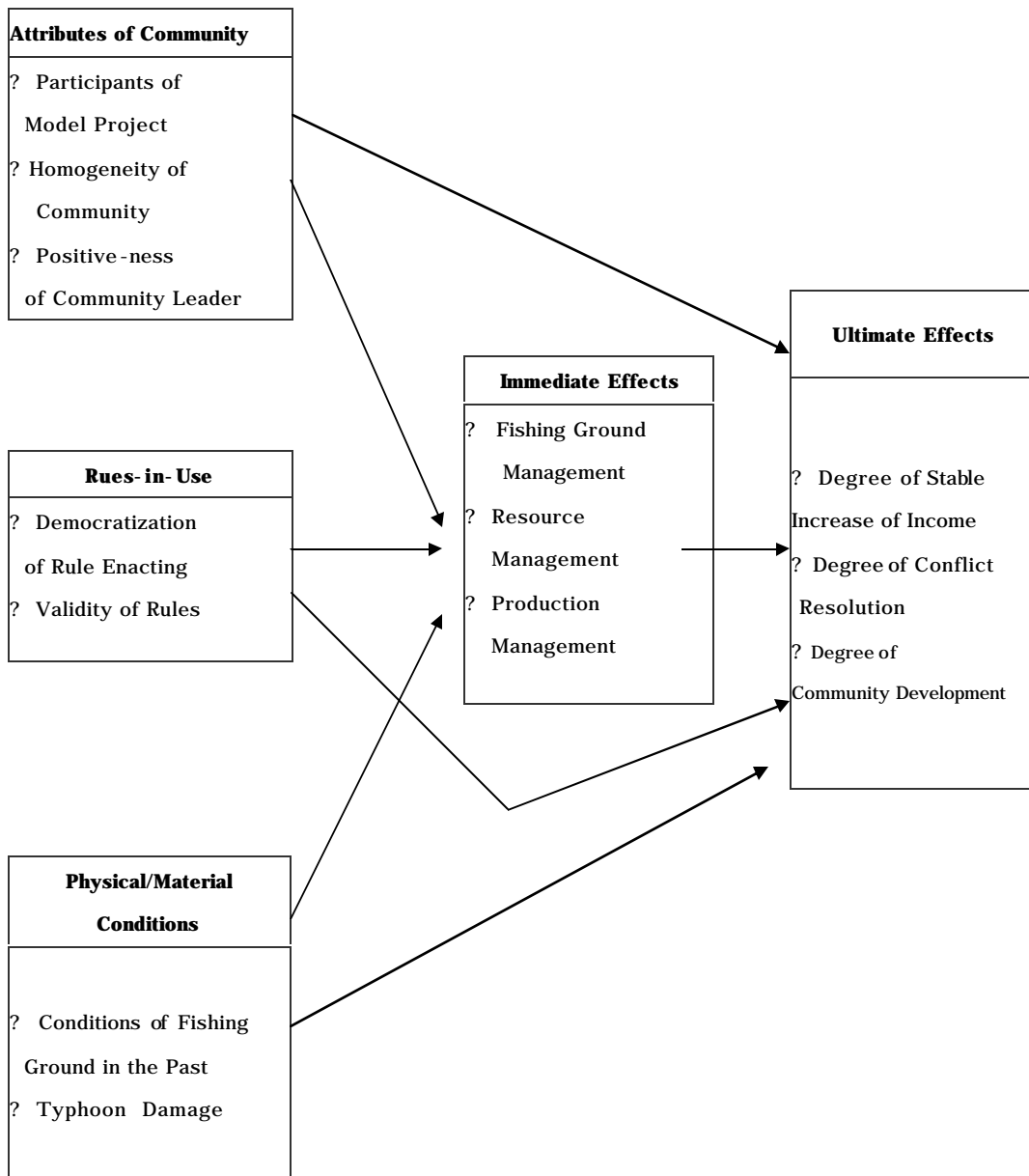
2. Framework of Analysis to Evaluate the Effects of Model Project

Considering on the above theoretical review, we can make a model including policy variables and controlling variables. The management activities and the outcomes of coastal fisheries are influenced by attributes of community, and physical/material conditions as well as participating in the model project.

The model can be briefly described as followings.

⁸ The evaluation study on Korean local government reform uses also regression analysis with independent variables explaining the effectiveness of the reform (Kim, 2001: 239-260).

<Figure 1>.



In the above model, besides the policy variable, participants in the model project, the attributes of community, and physical/material conditions influence the immediate effects of model project, that is, participation in the management activities, and in the end the ultimate effects. The focus of the model is on whether policy variable influences the management activities and the outcomes of fisheries or not.

Attributes of community are socio-economic conditions of the communities. Homogeneity of community and positive-ness of community leader would influence the activities of the management, and outcomes of the fisheries. Physical/material conditions including various characteristics, such as type of fisheries, natural conditions of fishing ground in the past, and typhoon damage as dummy variable would also influence the management activities and in the end the outcomes of the coastal fishery.

Immediate effects of the model project mean the change of objectives which the project is to bring about within short period to the community members through enforcing the project. Therefore, the model project tries to make the community members to participate in various activities or to abstain themselves from harvesting for preserving the resources. The direct effects are fishing ground management, resource management, and production management. The ultimate effects of the project mean the change of objectives which the project is to bring about in the end in the community through enforcing the project. Therefore, stable increase of income, degree of conflict resolution, and community development.

It is also important to find under what the condition the model project brings about high performance. Institutional framework insights us that it is important to make good institutions in order to high performance. Therefore, it necessary to ascertain whether the variables of the characteristics of rules influence the management activities and outcomes of coastal fishery with controlling physical/material conditions, attributes of community in the regression analysis. In this analysis, we have to analyze only the participating communities.

The variables used in the model and their measures, and reliability test scores can be synthesized as followings.

<Table 1> Variable Index of Effect Evaluation of Model Project of Self Governing Fisheries

| Factor | Variables | Measures | ? ? |
|--------|-----------|----------|-----|
|--------|-----------|----------|-----|

| | | | | |
|------------------------------|------------------|---|---|-------|
| Attributes of Community | | Participants of Model Project | | D.V |
| | | Homogeneity of Members of Community | ? Degree of Mutual Acknowledgement ? Degree of Familiarity | .8096 |
| | | Positive Leadership of Community Leader | ? Degree of Positive Participation, ? Degree of Commitment to Community Work | .7843 |
| Physical/Material Conditions | | Conditions of Fishing Grounds in the Past | ? Degree of Ecological Conditions of Fishing Ground in the Past ? Degree of Geographical Conditions of Fishing Ground in the Past | .7634 |
| | | Typhoon Damage | | D.V |
| Characteristics of Rules | | Democratization of Rule Enacting | ? Degree of Reflecting Members' Opinion ? Degree of Consensus Building | .1836 |
| | | Validity of Rules | ? Congruence of Regional Condition ? Relevance of Penalty Rule ? Relevance of Right and Duty Rule ? Relevance of Member Qualification Rule ? Relevance of Fishing Ground and Resource Management Rule | .5087 |
| Effects | Direct Effects | Degree of Fishing Ground Management | ? Expellant Activities ? Fishing Ground Cleaning ? Cleaning of Surroundings of Fishing Ground ? Restoration of Spawning Ground and Inhabitants | .8154 |
| | | Degree of Resource Management | ? Discharging of Fishing Resources ? Keeping of Not Permitting Period of Withdrawal ? Keeping the Length Standard of Fish | .7047 |
| | Ultimate Effects | Degree of Production Management | ? Enforcing On e Year Production Plan ? Keeping the Limit of Working Days ? Keeping the Limit of Working Times ? Installation & Operation of Common Facilities | .8487 |
| | | Degree of Stability and Growth of Income | ? Growth of Income ? Stability of Income | .8527 |
| | | Degree of Conflict Resolution | ? Improvement of Relationship between Officials | .7499 |

| | | | | |
|--|--|------------------------------------|--|-------|
| | | | and Fishers ? Resolution of Fisheries Conflict | |
| | | Degree of Community Development | ? Activation of Community Function ? Self-governing of Fishing Ground ? Development of Fishing Village | .7719 |

D. V: Dummy Variable, Typhoon Damage means whether they got the damage or not.

In the above <Table 1>, because most of reliability coefficients are over .7000, there is no problem of reliability. But, the coefficient of the democratization of rule enacting is very low, and that of validity of the rules is also a little low. It means that the measures are not homogeneous. Therefore, we use the measures of the variables as an individual variables. In this case, it may raise reliability problem of variables.

? . The Content of Model Project of Self-governing Fishery

1. Background of the Model Project Enforcement

License and Permission System brings about great over-withdrawing of fishing resources through prior occupation of non-owner's things and competitive operation. It also raises high cost problem of fishery due to the duplicate investment and over-investment. Therefore, it results in seriously bad management of fisheries caused from reduction of quantity of fishing harvest and reduction of income. Besides, serious social problems due to over-fishing through illegal fishery and conflict from over-fishing occur at many fishing villages. Few fishers use about 60% of the village fishing ground, and most fishers who expect new policy or government's support could not rely on themselves.

In 1997, government planned to enforce the self-governing fisheries with TAC, but it was not enforced successfully. Planning Board of Fishery Policy Development in Korean government suggested enforcement of self-governing fisheries in 1997. The Ministry of Maritime Affairs & Fisheries has planned enforcement of Model Project of Self-governing Fishery since 2001, has selected 59 fishing communities in 2001, which 11 Local Authorities of Maritime Affairs & Fisheries have jurisdiction over, and has enforced the model project since 2001. The model project has been enforced to 79 communities in 2002, and 179 ones in 2004.

(2) The Purposes of Model Project of Self-governing Fishery

The model project has been enforced to solve the conflicts between fishers and officers as well as among fishers due to the fact that traditional government initiative management system of coastal fishery could not reflect the regional fishing characteristics, to make fishers to participate positively in fostering their sustainable production base of fishery, and finally to bring about stable increase of income and community development.

2. The Basic Orientations of Model Project Enforcement

The basic orientations of model project enforcement boil down to the following three points.

?) Government enlarges responsibility and power of fishers over fishing ground management, resource management, production management. For this purpose, functions of fishers' community will be activated, and self-governing of fisheries according to agreement among fishers within community will be enforced. For example, fishing community can make rules autonomously within the law of fisheries, and ordinances of fishing license and management of fishing ground. That is, the rule can specify the size of abalone or turbo which can be harvested as larger than size specified in the ordinance of resource preservation. The rule can specify the limit of harvest of fish per a day, and preservation of the resource.

?) Government provides administrative, financial, and technical supports for fostering the base of self-governing of fishery. It supports the successful community for better success, provides unsuccessful community with motivation for doing better, provides nothing to the community which runs counter to governmental policy such as illegal fishing, etc.

?) Government enforces the project on a nationwide scale after resolving the problems coming out from enforcement of model project. Model project will be enforced with focused on technical guidance with Local Authorities of Maritime Affairs and Fisheries as the central figure, the main project will be enforced with local government (the institution permitting fishing license) as the central figure after revising the self-governing fishery system.

3. The Contents of Model Project of Self-governing Fishery

The model project can be reviewed as following as classified into the main body of propelling the model project, the objects of project, contents of project, selection of project, and propelling of the project.

First, the main body of the project is fishing community. Considering with focusing on region, a fisheries cooperative by region, fraternity of fishing village, village, or association of these institutions will be the main body of model project. Considering with focusing on fishing tool or fishing method, the fisheries cooperative by category of business, association of fishing boat owners, or association of these institutions will be the main body of model project.

Second, the objects of the model project are ?) branch fishing ground which multiple fishers use together. ?) specific fish which multiple fishing boats withdraw together at fixed area of water, ?) specific fish which fishers harvest together at same fishing grounds based on a fixed area.

The contents of model project are ?) improvement of fishing ground environment including improvement of aged fishing ground and relief work of living things of sea robber, ?) reduction of fishing intensity such as restriction of fishing tool and method, reduction of withdrawing days and working hours, etc. ?) adjustment of the number of simultaneously withdrawing boat and the quantity of production for maintaining fish price.

The selection of objects of model project is as following. That is, ?) in the case of enabling to make agreement among fishers on object and contents of the project ?) selecting two communities for model project within jurisdiction of Local Authorities of Maritime Affairs & Fisheries and Management Institute of Fisheries Technology, ?) selecting the communities within the accommodating scope in the case of too many fishers' groups proposing voluntarily.

The enforcement of model project is to be carried on according to the rules of self-governing fisheries.

4. The content of enforcement of model project by the main body

The main bodies of the model project are Ministry of Maritime Affairs & Fisheries, Local Authorities of Maritime Affairs & Fisheries, Local Governments, National Institute of Fisheries Development, and fisheries community, and the contents to be enforced by main body are different.

First, Ministry of Maritime Affairs & Fisheries generally takes responsibility of enforcement of the model project, and the responsibility of revising institutions. It also selects and rewards superior communities, and devises various supporting programs.

Second, Local Authorities of Maritime Affairs & Fisheries take the responsibility of technical guidance including selection of communities for model projects, assignment of the project propagators, and monitoring actual conditions of model projects and evaluation of their achievements.

Third, Local Governments take the role of administrative guidance including review of rules for self-governance and appointment of water surface for fostering, and also evaluate the achievement of model project, devise the supporting program with guarantee of local budget.

Fourth, National Institute of Fisheries Development takes the role of research, advisory, and evaluation on the self-governing fishing grounds and their resources.

Fifth, the fishing community composes the committee of self-governing fisheries, enacts the rules for the community, and enforces the model project.

The model project is enforced in the order of composing the committee of self-governing fisheries, enacting the rules for the communities, reviewing rules for self-governance, selecting communities for model projects, and enforcing model project.

5. Supporting Programs for Fostering Self-governing Fisheries

The Ministry of Maritime Affairs & Fisheries selects and supports superior communities of self-governing fisheries in order to support the basic projects which makes the communities to positively participate in the model project of self-governing fisheries, which the efforts of fishing community for doing the project with sincerity bear fruits (Ministry of Maritime Affairs & Fisheries, 2003: 9-10)

With enforcement of fostering projects for self-governing fishery, some problems were raised that a few communities gave up the self-governing fishery, the participation in the project of self-governing fisheries was poor, and revolt and discord of non-participants appeared. Even though the characteristics of communities are different, and the achievements of projects are also different, the communities are evaluated with the same criteria as the same group. The criteria of evaluation items are also vague, so it is very difficult to evaluate the communities concretely (Ministry of Maritime Affairs & Fisheries, 2003: 10).

? . Effect Analysis of Model Project of Self-governance Fisheries.

1. Comparison of Coastal Fishery Performance between Participants and Non-Participants of Model Project of Self-governance Fishery.

Model Project of Self-governance Fishery has purpose to make the community members to participate in the fishing ground management, resource management, and production management, and to bring about stable increase of income, prevention and resolution of conflict, and community development. Therefore, this paper tries to compare the management activities and outcomes of fishery between participants and non-participants of Model Project of Self-governance Fishery, and the result of the comparison is as following <Table 2>.

<Table 2> Comparison of the Management Activities and Outcomes of Fishery between Participants and Non-participants of Model Project

| | | | Mean | S.D | T | Prob. Val. |
|--------------------------|---------------------------------------|------|------|-------|-------|------------|
| Management | Fishing Ground Management | P | 4.33 | .59 | -4.87 | .000 |
| | | N | 3.42 | .94 | | |
| | Resource Management | P | 4.40 | .68 | -4.79 | .000 |
| | | N | 3.45 | .97 | | |
| | Production Management | P | 4.44 | .58 | -5.38 | .000 |
| | | N | 3.42 | .97 | | |
| Total(Immediate Effects) | P | 4.38 | .49 | -5.73 | .000 | |
| | N | 3.47 | .81 | | | |
| Outcomes | Stability and Increase of Income | P | 4.18 | .78 | -5.69 | .000 |
| | | N | 2.92 | 1.11 | | |
| | Prevention and Resolution of Conflict | P | 4.05 | .75 | -3.46 | .001 |
| | | N | 3.36 | .94 | | |
| | Community Development | P | 4.43 | .51 | -5.19 | .000 |
| | | N | 3.46 | 1.01 | | |
| | Total (Ultimate Effects) | P | 4.22 | .62 | -4.95 | .000 |
| | | N | 3.32 | .90 | | |

P: Participants of Model Project, N: Non-Participants of Model Project

In the above <Table 2>, the means of fishing ground management, resource management, production management, and total management of the participants of the model project of self governing fisheries are one point higher than those of non- participants of the model project. The difference is significant at the level of $\alpha=.001$.

The means of stable increase of the income, prevention and resolution of conflict, and community development, and ultimate effect of the participants of the model project of self- governing fishery are almost one point higher than those of non - participants of the model project. The difference is significant at the level of $\alpha=.001$. Especially, the difference is great in terms of stable increase of the income.

2. Immediate Effects of Model Project of Self- governing Fisheries

By the way, it is difficult to know whether the difference is due to the model project or the other third factor. So, it is necessary to analyze the effects of model project on the management and the effects of community characteristics as controlling variables on the management at the same time. The result of the analysis is as following <Table 3>. And there is no problem of multi-collinearity in all the models.

< Table 3> Immediate Effects Regressed on Model Project of Self- governing Fishery

| Dependent Var. | Fishing Ground | | Resource | | Production | | Management | |
|----------------------------------|----------------|-------|------------|-------|------------|------|------------|-------|
| | Management | | Management | | Management | | Effect | |
| | β | B | β | B | β | B | β | B |
| (Constant) | | 1.102 | | 1.693 | | .939 | | 1.146 |
| Participants of Model Project | .394*** | .709 | .368*** | .756 | .465*** | .851 | .456*** | .726 |
| Homogeneity of Community | .243* | .309 | .218 | .301 | .151 | .199 | .244* | .268 |
| Positiveness of Community Leader | .195 | .315 | .141 | .242 | .283** | .417 | .254** | .357 |

| | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| Typhoon Damage | -.003 | -.002 | -.124 | -.097 | .011 | .016 | -.064 | -.040 |
| Conditions of Fishing Grounds in the Past | -.090 | -.083 | -.064 | -.063 | -.063 | -.059 | -.079 | -.060 |
| Adjusted R ² | .319 | | .296 | | .408 | | .462 | |
| Significance | .000 | | .000 | | .000 | | .000 | |

In the above table, 31.9% of the variance in fishing ground management is explained by the independent variables, such as participants of the model project, homogeneity of community, positive-ness of community leader, typhoon damage, and conditions of fishing grounds in the past ($R^2=.319$). Because the fishing ground management of the community participating in the model project is better than that of non-participants of the project controlling variables of community characteristics in regression analysis, we can conclude that the policy effect is evident. Besides, homogeneity of community also brings about immediate policy effects, that is, activation of managements of coastal fisheries.

In the above table, the second regression model accounts for 29.6% of the variance in resource management of fishing community ($R^2=.296$). The policy variable is only significant in the model, that is, participants of the model project.

The third regression model accounts for 40.8% of the variance in production management of fishing community ($R^2=.408$). In the model, participants of the model project and positive-ness of community leader are significant variables which influence on the production management.

The fourth regression model accounts for 46.2% of the variance in total management activities including fishing ground management, resource management, and production management. The participants of the model project, and positive leadership of community significantly influence the total management at the level of $\alpha=.05$.⁹ The typhoon damage in 2003 year and the past conditions of the fishing grounds do not influence significantly on total management as immediate effect of model project.

⁹ In the case of Do - Hang - Ri Fishing Community, fishers used a fish trap harvesting too much, and indiscreetly worked, fished fry excessively for long time. It results in reduction of fisheries resource and income. It also brings about thoughtless illegal fishing, and overflowing individualism, and finally conflicts among fishers. In 2001, the members of fraternity of fishing village drove to make self-governing community of fisheries. The community leaders persuaded community members to participate in various management activities, and brought about a great success which means stable increase of income, reduction of conflict, and community development.

3. Ultimate Effects of Model Project and Community Characteristics

The ultimate effects of model project could be influenced by the community characteristics as well as by the model project. Therefore, we can find pure effects of the model project with regression analysis including independent variables. such as community characteristics and whether or not the participants of the model project to explain the ultimate effects. The result of analysis is as following <Table 4>. And there is no problem of multi-collinearity in all the models.

< Table 4> Model Project's Effects Regressed On Community Characteristics

| Independent Var. | Stability and Growth of Income | | Prevention and Resolution of Conflict | | Community Development | | Ultimate Effects | |
|---|--------------------------------|-------|---------------------------------------|------|-----------------------|------|------------------|-------|
| | β | B | β | B | β | B | β | B |
| Participants of Model Project#1 | .502*** | 1.079 | .266* | .475 | .420*** | .713 | .456*** | .726 |
| Homogeneity of Community | .209* | .320 | .152 | .188 | .337** | .407 | .244* | .268 |
| Positive Leadership of Community Leader | .186 | .353 | .291* | .436 | .081 | .122 | .254* | .357 |
| Typhoon Damage#1 | .040 | .034 | .025 | .016 | .041 | .028 | -.064 | -.040 |
| Conditions of Fishing Grounds in the Past | .079 | .086 | .091 | .081 | .060 | .051 | -.071 | -.059 |
| Adjusted R ² | .433 | | .211 | | .386 | | .462 | |
| Significance | .000 | | .000 | | .000 | | .000 | |

#1: Dummy Variable

In the above <Table 4>, the stable increase of income is statistically influenced by the enforcement of model project of self-governing fisheries with controlling the variables of homogeneity of community, positive leadership (prob. value <.001). Therefore, we can conclude that model project brings about the policy effects of the stable increase of income. In the model, independent variables account for 43.3% of the variance in the stable increase of income. The homogeneity of community statistically significantly influences the stable increase of community members' income, but the positive leadership, the typhoon damage in 2003 year, and the past conditions of the fishing grounds does not influence the stable increase of community members' income.

Conflict prevention and resolution is statistically significantly influenced by the variable of enforcement of model project with controlling independent variables of community characteristics (prob. value <.05). Therefore, we can conclude that model

project brings about the conflict prevention and resolution. And the independent variables account for 21.1% of variance in the conflict prevention and resolution.

Positive leadership of community leader influences conflict prevention and resolution, but homogeneity of community, the positive leadership, the typhoon damage in 2003 year, and the past conditions of the fishing grounds do not. The model project accounts for 43.3% of variance in the stable increase of incomes, but it does 21.1% of variance in conflict prevention and resolution. It is due to the fact that conflict occurs to among the members of community, but it does to between the members and non-participants of the model project, and between the members of community and illegal fishers of other area who work at nationwide fishing ground.

The community development is statistically significantly influenced by the enforcement of model project with controlling variables of community characteristics (prob. value $<.001$). Therefore, we can conclude the model project brings about the community development. The independent variables account for 38.6% of variance in community development. Homogeneity of community statistically significantly influence community development, the positive leadership of community leader, the typhoon damage in 2003 year, and the past conditions of the fishing grounds do not.

Ultimate effects including the stable increase of community members' incomes, the conflict prevention and resolution, community development are statistically significantly influenced by the by the enforcement of model project with controlling variables of community characteristics (prob. value $<.001$). Homogeneity of community, the positive leadership of community leader statistically significantly influences ultimate effects, but the typhoon damage in 2003 year, and the past conditions of the fishing grounds do not.

4. Analysis of Ultimate Effects of Model Project of Self-governing Fishery

The influence of management on ultimate effects including stable increase of income, conflict prevention and resolution, community development, can be analyzed by the regression analysis with community characteristics, and participants of model project as well as management as independent variables. The result of regression analysis is as following <Table 5>. And there is no problem of multi-collinearity in all the models.

<Table 5> Model Project's Effects Regressed On Community Characteristics and Management Activities

| Independent Var. | Dependent Var. | Stable Increase of Income | | Prevention and Resolution of Conflict | | Community Development | | Ultimate Effects | |
|---|----------------|---------------------------|---------|---------------------------------------|--------|-----------------------|-------|------------------|-------|
| | | β | B | β | B | β | B | β | B |
| Constant | | | - 1.179 | | - .773 | | .612 | | -.432 |
| Participants of Model Project | | .150 | .311 | -.163 | -.278 | .089 | .148 | .044 | .072 |
| Homogeneity of Community | | .039 | .055 | -.053 | -.063 | .237* | .270 | .077 | .087 |
| Positive - ness of Community Leader | | -.026 | -.047 | .094 | .140 | -.092 | -.134 | -.003 | -.003 |
| Typhoon Damage | | .106 | .085 | .069 | .045 | .017 | .011 | .084 | .052 |
| Conditions of Fishing Grounds in the Past | | .102 | .109 | .151 | .137 | .099 | .084 | .125 | .108 |
| Fishing Ground Management | | .303*** | .347 | .310** | .296 | .282* | .257 | | |
| Resource Management | | .373*** | .403 | .333** | .292 | -.079 | -.068 | | |
| Production Management | | .215* | .247 | .344* | .337 | .466*** | .428 | | |
| Total Management | | | | | | | | .801*** | .828 |
| Adjusted R ² | | .729 | | .557 | | .574 | | .717 | |
| Significance | | .000 | | .000 | | .000 | | .000 | |

In the above <Table 5>, the stable increase of income which the model project seeks to achieve as one of ultimate goal is statistically significantly influenced by fishing ground management($\beta=.303$), resource management($\beta=.373$), and production management($\beta=.215$). The independent variables such as positive-ness of community leader, homogeneity of community, the positive leadership, the typhoon as well as management variables account for 72.9% of variance in the stable increase of income(prob. value= .000).

Conflict prevention and resolution is statistically significantly influenced by the variables of fishing ground management($\beta=.310$), resource management($\beta=.333$), and production management($\beta=.334$). 55.7% of variance in Conflict prevention and resolution is explained by the above independent variables and variables of community characteristics (prob. value =.001).

Community development is statistically significantly influenced by the variables of production management($\beta=.466$), fishing ground management($\beta=.282$), and homogeneity

of community, but is not statistically significantly influenced by the participants of model project, resource management, and community characteristics.

The ultimate effect including ultimate effects including stable increase of income, conflict prevention and resolution, community development is statistically significantly influenced by the variables of management($\beta=.801$) including fishing ground management, resource management, and production management. The regression equation model with independent variables including participants of model project, community characteristics, and three management variables accounts for 71.7% of the variance in the ultimate effect(prob. value $<.001$). But the participants of model project and community characteristics do not statistically significantly influence the ultimate effect.

Considering the result of analysis, we can conclude that the model project of self-governance fisheries influences directly the management activities, and through those managements the project influences finally the stable increase of community members' income, conflict preservation and resolution, and community development.

5. The Analysis of the Effects and Their Influencing Factors of Self-governing Fishery

One method of effect evaluation of model project is self-evaluation of fishers participating in the project. We can ask them to evaluate the performance of the project whether it brings about effects or not as compared to the outcomes of the year when the project was not enforced. The result of the evaluation on the management and ultimate effects is as following <Table 6>.

<Table 5> Management Effects and Ultimate Effects by Evaluation of Fishers

| | Fishing Ground Management | Resource Management | Production Management | Increase of Income | Prevention and Resolution of Conflict | Community Development |
|------|---------------------------|---------------------|-----------------------|--------------------|---------------------------------------|-----------------------|
| Mean | 4.3488 | 4.5698 | 4.3690 | 4.3750 | 4.2697 | 4.4841 |
| S.D | .5540 | .5410 | .7098 | .6233 | .6560 | .5712 |
| N | 73 | 73 | 72 | 70 | 68 | 72 |

In the above table, the results of evaluation on fishing ground management, resource management, production management, increase of income, prevention and

resolution of conflict, and community development are similar, and all the values are over 4.0. It means that the model project has policy effects. Especially, it brings about good effects in resource management (M=4.5968).

If the model project brings about the effects, it requires finding what factor influences greatly to the outcomes of the project. It is focused on which factor influences more the outcomes of the model project between the community characteristics and rules characteristics

The result of regression analysis with community characteristics, and characteristics of rules as independent variables is as following <Table 7>. And there is no problem of multi-collinearity in all the models.

<Table 7> Analysis of Effects and Influencing Factors of the Model Project

| Dependent Var. | Fishing Ground Management | | Resource Management | | Production Management | | Management | | Stable Increase of Income | | Prevention and Resolution of Conflict | | Community Development | | Ultimate Effects | |
|-------------------------|---------------------------|-------|---------------------|-------|-----------------------|-------|------------|-------|---------------------------|-------|---------------------------------------|-------|-----------------------|-------|------------------|-------|
| | β | B | β | B | β | B | β | B | β | B | β | B | β | B | β | B |
| Constant | * | 2.121 | * | 2.550 | | .497 | | 1.737 | | .369 | | .125 | | .850 | | -.649 |
| V1 | .456** | .340 | .025 | .018 | .137 | .141 | .237 | .169 | .274 | .257 | .350* | .335 | .006 | -.003 | .351* | .306 |
| V2 | -.199 | -.125 | -.255 | -.163 | .054 | .046 | -.136 | -.081 | .147 | .114 | -.086 | -.062 | -.041 | -.028 | .050 | .034 |
| V3 | .614*** | .621 | .477* | .487 | .472* | .656 | .610** | .586 | .324 | .434 | .482* | .617 | .656*** | .722 | .400* | .465 |
| V4 | .228 | .148 | .219 | .145 | .205 | .183 | .256 | .158 | .183 | .148 | .225 | .185 | .281 | .199 | .376* | .337 |
| V6 | .281 | .167 | .399* | .238 | -.003 | -.002 | .237 | .134 | .273 | .210 | .294 | .213 | .293* | .189 | .345* | .232 |
| V7 | -.149 | -.087 | .071 | .042 | -.110 | -.088 | -.079 | -.044 | .194 | .133 | -.046 | -.034 | .067 | .042 | .136 | .091 |
| V8 | -.439* | -.473 | -.203 | -.222 | -.188 | -.279 | -.318 | -.326 | -.230 | -.031 | -.211 | -.279 | .222 | .260 | .211 | .251 |
| V9 | -.111 | -.066 | -.115 | -.069 | .263 | .214 | .045 | .025 | -.106 | -.075 | -.037 | -.029 | -.064 | -.041 | -.118 | -.085 |
| Adjusted R ² | .441 | | .249 | | .130 | | .322 | | .157 | | .425 | | .427 | | .464 | |
| Significance | .001 | | .029 | | .143 | | .010 | | .118 | | .003 | | .001 | | .004 | |

V1: Relevance of Fishing Ground and Resource Management Rule, V2: Relevance of Member Qualification Rule, V3: Homogeneity of Members of Community, V4: Congruence of Regional Condition, V5: Relevance of Penalty Rule, V6: Conditions of Fishing Grounds in the Past, V7: Positive Leadership of Community Leader, V8: Reflecting Members' Opinions

In the above <Table 7>, fishing ground management is statistically significantly influenced by the variables of homogeneity of community ($\beta=.614$), relevance of fishing

ground and resource management rules ($\beta = .456$),¹⁰ and positive leadership of community leader ($\beta = -.439$). The community whose members know more each other is, the community whose the rules are more relevant, and the community whose leader is more positive have more effects of the model project. The model accounts for the 44.1% of the variance in fishing ground management (prob. val. = .001).

The effect of resource management is significantly influenced by the homogeneity of community ($\beta = .477$) and relevance of sanction ($\beta = .399$). The model accounts for the 24.9% of the variance in the effect. The model explaining the effect of production management is not significant (prob. val. = .143). The effect of total management is influenced by the only homogeneity of the community ($\beta = .610$), and the model accounts for the 32.2% of the variance in the effect.

The model explaining the effect of stable increase of income is not significant (prob. val. = .118). The effect of conflict prevention and resolution is well explained by the homogeneity ($\beta = .482$) and relevance of fishing ground management ($\beta = .472$), 42.5% of the variance in the effect is accounted by the model. The effect of community development is explained by the homogeneity ($\beta = .656$) and relevance of sanction ($\beta = .293$), 42.7% of the variance in the effect is accounted by the model. Finally, the comprehensive ultimate effect is influenced by the goal the homogeneity ($\beta = .400$), congruence of regional conditions ($\beta = .376$), relevance of penalty rule ($\beta = .345$), and relevance of the fishing resource ($\beta = .351$). The model accounts for 46.4% of the variance in the ultimate effect, and is statistically significant (prob. val. = .004). This result hints us that the rule itself and the process of the rule enacting are very important in the management of common pool resources.

Synthesizing the above result of the analysis, the most important factor for the community members to participate in fishing ground management, resource management, and production management is homogeneity of the community. The most important factor in bringing about the ultimate effect of self-governing fisheries including the stable increase of income, conflict prevention and resolution, and community development is also homogeneity of community. This is partly caused from Confucian culture which considers personal relationship as very important, and it is also caused

10 Sung-san Fraternity of Fishing Village is located at a famous sight-seeing place. Most of the members were old women, and the fishing resources were also reducing gradually. In addition, it is impossible for the members over 70 years to work in the sea. The members of fraternity decided to participate in the model project of self-governing fisheries, and they made rules which reflect well those conditions of the village. Even though more than 80% of community members are old men and women over 60 years, they changed their community an affluent and harmonious one through participating in the model project

from fact that trust is one of important social capitals as Fukuyama indicated. Therefore, mutual trust is important in solving common pool resource problems as well as in community life. Besides, the rules and rule enacting process are also important in order to make the community members to participate positively in the management activities.

V. Findings and Discussion

Common pool resource like coastal fisheries is apt to raise the conflict with appropriation of the resource among fishers, and to become easily devastated without great efforts of preservation. This paper tries to analyze the effects of the model project of self-governing fisheries which was enforced to solve those problems. The findings and discussions of this study are as followings.

First, considering the background of enforcement of model project of self-governing fisheries, we can find devastation and depletion of fishing resources, and serious conflicts among fishers, and between fisheries and officials in charge. In the process of research, we could easily hear those conflicts and resource depletion in Korean coastal fisheries as many scholars found the same phenomena (Gardner, Ostrom, and Walker, 1990; Wade, 1988). In the case of the fishing community which has been selected as a successful one, the community members have recognized the seriousness of the depletion of fishing resource from excessive harvest and conflicts among fishers. The leaders of the community try to solve those problems with enforcement of the model project, and to persuade the members of the community to participate positively in the project. As Hackett (1992: 326) asserted, if fishers thought that fishing governance would not be successfully implemented, non cooperative appropriation would be assumed to result.

Second, there is a great difference in management activities including fishing ground, resource management, and production management between the communities participating in the model project and communities not participating in the project. This difference also results in a great difference in the ultimate effects, including stable increase of income, prevention and resolution of conflicts, and community development, between the two groups. In the analysis of finding whether this difference between two groups causes from the effects of the model project or the difference of inherent characteristics between two groups, we can find that the effects of the model project brings about the difference.

Third, the enforcement of the model project brings about the ultimate effects including the stable increase of income, prevention and resolution, and community development. The effects can be realized through positive participating in the management activities including fishing ground management, resource management, and production management which the model project tries to achieve as immediate goals. In this context, various management activities are very important in bringing about the successful management of CPRs.

Fourth, the most important factor in bringing about the effects of the model project of self-governing fisheries is the homogeneity of community. That is, the more community members know, become intimate with, and trust each other, the more they participate in the management activities, and ultimately the more they bring about stable increase of income, prevention and resolution of conflict, and community development. This finding supports Hackett's assertion that heterogeneity complicated efficient governance structures (Hackett, 1992: 325). From this study result, we can find that it is important to foster community for successful enforcement of model project of self-governing fisheries. As Fukuyama indicates, it is important to make community members to trust in and to be familiar with each other in fostering of fishing community as well as community development. Even though the fostering of community could not be made within short time, government has to concern with it.

Fifth, when community members do not keep the rules, how much relevant the penalty rules are is important in bringing about the ultimate effects. If the rule is too strong or too weak, it is difficult to bring about the effects of penalty. In this context, it requires that when they make rules of community, they try to make relevant penalty rules.

Sixth, the relevance of the management rule including fishing ground management, resource management, and production management is important in bringing about the ultimate effects of model project. It is easily expected result. The immediate objective of the model project was to foster management of self-governing fisheries. In this context, we can conclude that it is relevant for achieving the ultimate goals.

Seventh, the rules and rule enacting process are also important in order to make the community members to participate positively in the management activities, and finally to the model project to bring about good effects. This finding supports the Ostrom's design principles for the success of the institutions in sustaining the CPRs (Ostrom, 1990: 90).

Eighth, even though they call the project as a project of self-governing fisheries, it is not really self-governing. Government directly and deeply involved in the project.

Therefore, government decided to support the project indirectly with establishment of National Association of Self-governing Fishers. Anyway, though the model project of self-governing fisheries brought about a great success, it doubts whether the project could bring about great effects if it would be enforced in nationwide area. That is, there may be external validity problem (Cook & Campbell, 1979: 70).

<Reference>

- Choi, Byoung-Sun, (2000). Conflicts between Institutional Reform and Discretionary Involvement, *The Journal of Korean Public Administration*, 9(1): 24 - 53.
- Choi, Jae-Song, Lee, Myoung-Sung, Bae, In-Myoung. (2001). Problem-solving through Self-governance of Common Pool Resource: Focused on the Fraternity of Fishing Village of Jang-Go Island, Boryoung City, Chung-Nam Province. *The Journal of Korean Public Administration*, 10(2), 152 - 172.
- Cook, Thomas D., Campbell, Donald T. (1979). *Quasi-Experimentation: Design & Analysis Issues for Field Settings*, Chicago: Rand McNally College Company.
- Fukuyama, Francis. (1995). *Trust: The Social Virtues and Creation of Prosperity*, New York: Free Press.
- Gardner, Roy, Ostrom, Elinor, and Walker, James. (1990). The Nature of Common - Pool Resource Problems. *Rationality and Society*. 2(3): 335 - 358.
- Hackett, Steven C. (1992). Heterogeneity and The Provision of Governance for Common - Pool Resources, *Journal of Theoretical Politics* 4(3): 325 - 342
- Hardin, G. (1968). The Tragedy of Commons. *Science*. 162: 1243- 1248.
- Hoy, W. K. and C. G. Miskel. (1996). *Educational Administration: Theory, Research, and Practice*, 5th ed. New York: McGraw - Hill.
- Jang, Soo Ho. (1994). *Management of Fishing Grounds in an Era of International* _____ ed. (1992). *Fishing Village and Their Management*, Institute of Fisheries Firms Attached to Pusan College of Fisheries.
- Jo, Youn -Sug. (2001). Performance Evaluation of Welfare Service Institutions by Operation Style, *Korean Journal Of Public Administration*, 35(4): 1 - 14.
- Kettl, Donald F.(2000). The Transformation of Governance: Globalization, Devolution, and the Role of Government, *Public Administration Review*. Nov./Dec. 60(6): 488- 497.
- Kim, In. (1998a). Institutional Arrangement for Efficient Management of Common Pool Resource: Focused on Coastal Fisheries, *Korean Journal of Local Government Studies*, 2(1): 1- 28.

- Kim, In. (1998b). Social Dilemma of Common Pool Resource and Efficient Management, *Journal of Local Government and Administration*, 10(1): 3- 18.
- Kim, In. Ryu, Ki-Heung, Kim, Young-Ki, (1991). Performance Measurement of Public Service in Local Government and Their Determinants. *Journal of Local Government and Administration*, 3(2): 155- 224.
- Kim, In, Hur, Young-Hoon, Lee, Hi-Tae, (1999). Performance Evaluation of Local Public Hospital by Operational Type, *Korean Journal Of Public Administration*, 33(3): 383- 402.
- Kim Tae-Ryoung. (2001). Evaluation for Administrative Reform in Korean Local Government, *Korean Journal Of Public Administration*, 35(4): 239- 260.
- Lee, Man -Woo, *Influencing Factors of Educational Performance*, Ph. D. Dissertation..
- Lee, Myoung-Suk, Possibility of Self-governance for Common Pool Resource Problems, *Korean Journal Of Public Administration*, 29(4): 1291- 1312.
- Lee, Sang-Soo, (2000). Performance Evaluation of Local Medical Service by Organizational Management Type, *Korean Journal Of Public Administration*, 34(3): 243- 262.
- McKean, Margaret A. (1992). Success on the Commons: A Comparative Examination of Institutions for Common Property Resource Management, *Journal of Theoretical Politics* 4(3): 247- 281.
- Messick, D. M. and M. B. Brewer. (1983). Solving Social Dilemmas: A Review. in L. Wheeler and P. Shaver, ed., *Review of Personality and Social Psychology*. 4: 11- 44.
- Ministry of Maritime Affairs & Fisheries. (2001). Domestic Papers.
- Ministry of Maritime Affairs & Fisheries. (2003). *A Study on Successful Settlement of Self-governing Fisheries*.
- Oakerson, Ronald J. (1986). A Model for Analysis of Common Property Problems. in National Research Council, ed., *Proceedings of the Conference on Common Property Resource Management* (Washington: National Academic Press). of Fisheries Resources, *Management of Fisheries* 22(1): 1- 52.
- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups* Cambridge, Mass.: Harvard University Press.
- Ostrom, Elinor. (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- _____ (1992). Community and the Endogenous Solution of Commons Problems, *Journal of Theoretical Politics* 4(3): 343- 351.

- Ostrom, Elinor. (1998). A Behavioral Approach to the Rational Choice Theory of Collective Action, Presidential Address, American Political Science Association, 1997. *American Political Science Review*, 92(1), March.
- Ostrom, Elinor, Gardner, Roy, and Walker, James. (1997). *Rules, Games, and Common-Pool Resources*, Ann Arbor: The University of Michigan Press.
- Park, Young-Joo. (2000). New Governance and Social Contract: Searching for Role and Responsibility among Citizen, Government, Market, *Korean Journal Of Public Administration*, 34(4): 19- 39.
- Pusan Fisheries Cooperatives, (1997). *Laws and Ordinances of Fisheries*.
- Pusan -Ilbo(Newspaper). 1997. 10. 20.
- Rossi, Peter H. and Freeman, Howard E.(1982). *Evaluation: A Systematic Approach*, 2nd. Ed., Beverly Hills, California: Sage Publication Ltd.
- Singleton, Sara and Taylor, Michel (1992). Common Property, Collective Action and Community. *Journal of Theoretical Politics* 4(3): 309- 324.
- Stoker, G. (2000). *The New Politics of British Local Governance*. St. Martin Press.
- Sutherland, Anne (1986) *Cave Cauker : Economic Success in a Belizean Fishing Village*. Boulder, Co : Westview Press.
- Tang, Shui Yang. (1991). Institutional Arrangements and the Management of Common - Pool Resources. *Public Administration Review*. Jan./Feb. 51(1): 42- 51.
- Wade R. (1988). The Management of Irrigation Systems: How to Evoke Trust and Avoid Prisoner's Dilemma. *World Development*. 16: 489- 500.