

Network Analysis of Korean Health Insurance Policy-Making Process

Myongsei Sohn, Seung Hum Yu and Yong Hak Kim¹

This study examines how the decision-making process evolved in Korea during the initial phases of introduction and implementation of National Health Insurance. This study analyses the official documents and interviews made with government officials and related personnel. We used the method of network analysis and multidimensional scaling in order to demonstrate how the major participants in the decision-making process developed and changed under the contemporary political situations. In the pre-implementation stage around 1976, major concerns were concentrated around the issues of financial support for social insurance, the fee schedule and who ought to be covered first. The total number of participants of the health or health-related organization was 61, which included the President, the Minister of Health and Social Affairs, representatives of special interest groups, etc. In the actual implementation period of 1982, different issues were brought up by the major participants. The number of participants in this period declined to 44 with the deletion of 19 and with the addition of two newly formed health insurance organizations. By 1988, as the implementation reached its final decision period, disagreements were centered on progressive premium rating and the administration of National Health Insurance. The number of participants increased to 60 after the addition of 16 participants. The analysis of this paper may provide some insight for other countries which wish to establish National Health Insurance; as reference to the policy-making process, it may provide some suggestions for when to initiate and how to formulate National Health Insurance policies.

Key Words: Network analysis, policy-making process, Korean health insurance

The first movement for National Health Insurance (NHI) began in 1959 with the formation of a research group for health insurance. The majority of people in this group were those who had kept their interests in preventive medicine and public health.

Because of the political turmoil came about around April Student Revolution and May Military Coup after the Korean War, as the government wanted to compromise with political legitimacy.

Then economic development was given the first priority, and the social welfare program was the secondary concern of the government as well as the people in general. Under the military regime, the Social Security Committee was formed and the Health Insurance Act was drafted in 1963 by the Committee. The economic advisors in Korea argued against the mandatory act of NHI on the grounds of low per capita GNP. It was only one hundred U.S. dollars at that time. Because of this argument the Health Insurance Act for NHI was passed only on a voluntary basis.

In 1976 the Ministry of Health and Social Affairs (MOHSA) and the recent strong economic development had much influence on the future of NHI. The debate of NHI intensified among policy makers, and senior officials were pushing for employer mandated health insurance. The per capita GNP at this time had risen significantly to eight hundred dollars, way above that of the 1960s. Not only the

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increase in per capita GNP but also the strong attentions shown by special interests groups, motivated the decision makers to initiate new policies. Before they passed the Employer Mandated Health Insurance Act, the Medical Assistance program for medically indigent populations became necessary and passed the National Assembly.

In the beginning of 1977, the actual implementation of the new NHI Act was promulgated and in 1989 all were to be covered by NHI. Per capita GNP in 1981, 1986, 1989 respectively increased to seventeen hundred, twenty three hundred and five thousand U.S. dollars.

The authors will examine each unit period, consisting of approximately 6 years with regard to the agenda setting, decision-making, and actual implementation.

The Fourth Republic (Park administration) in 1975 set the agenda-setting of health insurance policy in full motion. The next year, the implementation of NHI was endorsed by the President. In 1977 Employer Mandated Health Insurance was put into practice.

The Fifth Republic (Chun administration) started the Regional Health Insurance program in 1981, and tried to extend administrative system which led to the extension of implementation was proposed, but was rejected by the executive branch.

Around 1988 the Sixth Republic (Roh administration) reopened the debate over progressive premium rating and the attempt for a unified administrative body.

A new NHI bill was introduced by the policy makers of the executive branch of the government, political parties, and the interest groups. The success of NHI in Korea may be compared to that of the United States. In the United States the percentage of people covered under health insurance has declined from 86.4 to 82.9 in the last 10 years, whereas in Korea the coverage has increased from below 10 percent in 1976 to universal coverage within a dozen years (Anderson 1989). There are so many differences in economic, political, and social conditions and life style between the two countries. However, certain points may be postulated from this comparison.

The purpose of this study is to identify the following points:

- a. Which were the most influential organizations in the formation of health insurance policy at each stage.
- b. What are the characteristics of the network structure among the influential organizations. To

give an answer to this question, we analyzed the path distances in the information exchange network.

- c. What is the nature and process of transitional structure in public policy formulation through different periods.

MATERIALS AND METHOD

For the last two decades a series of models has been proposed to describe the policy-making process. Allison (1971) compared three different models. In the organizational process model, the policy decisions are derived as a consequence of efforts to evaluate the efficiency of each proposal through a Standard Operating Procedure. In the governmental politics model, the final decision is a result of political power struggles among governmental figures.

When some models are in the phases of consideration for application, one must bear in mind that a single model alone is not necessarily helpful in understanding a particular society, but the application of various models may be integrated into a complete synthesis. Thus for the application of these models to a case study in Korea, the integrated views from different models ought to be derived and developed. In the application of the different models, the understandings of agenda-setting, alternative specification, decision-making, implementation, and evaluation must provide the general understanding for the policy formulation process of any of these models. In addition, these models must categorize the participating organizations involved in the process of policy-making into subdivisions. They are divided as either, 1) iron or cozy triangle for bureaucrats, Congress and interest groups; or more specifically, 2) a government group in which bureaucrats, administrators; and other governmental personnel inclusively considered a subgroup and Congress as the other, and the third non-government representation from public organizations such as scholars, university institutions, media and public opinion (Kingdon 1984).

Since the initial application of the social network analysis in socio-cultural anthropology for understanding the kinship network, this method of analysis was adopted for various studies. This social network analysis has been borrowed more recently to explain the patterns of social relations. The merit acquired in the applications of this method lies in the understanding of interactions among social units

under study (Kim 1984).

Subject

All of the participating units in the health insurance policy formulation were categorized according to Kingdon's methodology. First, the participants were divided into two groups: a) a government group, including the National Assembly/Congress, executive branch, and b) a non-government group, political parties. Secondly, we clarified the government group, including the President, presidential staffs, bureaucrats, and ministers of each ministry; political appointees of the President, and the members of the standing committee of the National Assembly as well as the governmental officials. Lastly, the non-governmental group consisted of political parties, interest groups, scholars, university institutions, media, as well as public opinion.

We collected the official records of these organizations and individuals. The official record and consultation with informants allowed the author to constitute a list of personnel and organizations involved in the health insurance policy formulations. A snowball sampling technique was used to include those who might have not been included in our initial list. When individuals involved in the decision making process were deceased or declined to be interviewed, we substituted individuals who worked closely with them or knew them in the process of the policy formulations. Extensive documents and records from the media as well as other sources of publications were examined, and review the participants' input and activity level in the policy formulation processes.

Interviews and Data Collection

All participants were asked the same set of questions from the authors, then the data was gathered from these interviews. The questionnaire consisted of questions including 1) the nature of the organization, 2) the major role of the organization into the health insurance policy formulation, 3) the nature of the input, and 4) the frequency and direction of the network of interaction and information exchange among the organizations.

All of them were interviewed by the author and each interview took from 30 minutes to 4 hours. The interviewer collected data concerning the participant (interviewee) and the organization of the participant prior to the interview. Collected data based on the official records were discussed during

the interview, aiding the participants to refresh their memories by documenting some cases. The official records were set out to be guidelines, and the participant was given the full opportunity to explain his or her own observations and experiences in the policy formulation process.

First interview was done with the minister of MOHSA in 1976 after reviewing government records of NHI. From on, the author carefully followed all of the possible participants who underwent initial interview, and also those people whose names and organizations which were mentioned in the initial interviews.

At this point, the snowball effect has increased the participants to 49. Among the participants, the President of each stage and some of initial interviewees were not contacted and refused the follow up for political reasons. There were many refusals and contradictory statements which were made following each of different stages. But because of the prolonged period of the authors' involvement in health insurance policy analysis, the interview process was successful under these circumstances.

The information acquired beyond the questionnaire and the scope of this study were also separately documented for a qualitative evaluation.

Data Analysis

As we gathered data from interviews, it was necessary to see how these participants were related and who was in the center of the decision maker, different concepts and analytical methods were used. First, it was important to identify the center of decision making process using the method of centrality score. The network analysis was used to put a number on each participant, so it can be applied to a multi-dimensional scaling map, which attempts to represent the path distance and pathway from each participant to the center of decision maker.

Informational exchange network data were collected and arranged by the individual and organization. The arranged materials were recorded in binary matrix fashion by using proc matrix* in the Statistical Analysis System (SAS). Once the individual contact was established as an analyzed unit, it was arranged in a binary matrix. When an individual of an organization shares same activity level and the

* proc matrix: abbreviation of technique for network analysis in SAS.

direction, an elimination process was used to reduce the pool of analysis via the variable reduction method. For example, a collection of scholars from a university or a field of specialization was considered as one unit rather than separate participants. As the units were arranged, Pearson correlation coefficients were applied to Convergence of Iterated Correlation (CONCOR) techniques to arrive at a more identifiable value.

The stages of agenda-setting and follow-up discussions as well as decision-making had various individuals and organizations as the participants. To understand the exchange network as well as the course of the exchange, it was necessary to establish path distance and centrality score. We used dichotomous procession for calculating the path distance of network of those connecting more than once. In calculating centrality score for the recognition of center and periphery, we used real numbers. In cases where an individual or organization connects through other individuals or organizations to reach to the center of the decision-making in policy formulation process, each individual or organization showed in a maximum of 5 steps to do such. The five steps of proc matrix of SAS in network analysis indicated that only the first 4 steps were analyzed to show the different path distance matrix;

$$D=K + K^{++} + K^{++3} \dots + K^{++T}$$

(note: in using K^{++} , only when K^{++} of the antecedent equals 0, 0 is replaced by an element other than 0)

Proc alscale** of the SAS was used to create a multi-dimensional scaling map in order to represent the path distance in two-dimensional space, of the individuals and organizations participated in the stages of agenda-setting and decision-making.

Burt (1980) proposed a formula of calculating prestige score (C_j) in order to distinguish the center and periphery of the network. The formula follows as below;

$$C_j = \sum_i Z_{ji} C_i$$

(note: this is normalized to satisfy $\sum_i Z_{ji} = 1.0$ for every j)

** proc alscale: abbreviation of technique for multidimensional scaling in SAS.

RESULTS

Information Exchange Network of Each Period

The period of limited implementation: Years neighboring 1976:

participating organizations; Table 1 shows the individuals and organizations in participation of 1976's health insurance policy formulation. Total of 61 organizations comprising of President, presidential staff, prime minister, minister of Economic Planning Board (EPB) and the members of the cabinet: all of them, appointees of the President. The political parties in the National Assembly, along with media, scholars, and Urban Industrial Mission Organizations representing the underprivileged also participated.

total and mean path distance; The path distances of 61 organizations are represented in Table 1. This table also shows that the director general of the Bureau of Social Insurance of the MOHSA can reach each and every participating organization and personnel through 66 steps. Taking the principle that the lower the total and mean path distance, the higher the level of information exchange in policy formulation process, the table shows the total and mean path distance in the minister of the MOHSA to be lower than the most of the organizations (see, table 1). Therefore, one can safely assume that the information exchange level of this minister is the active in the political appointee group (note the total path distance=61, mean path distance=1, if it reaches all the organizations directly). It is interesting to note, on the other hand, that the Social Security Committee (11) of the MOHSA is the highest in both total and mean path distance, in this ministry. This implies that this organization which is the group of social security professionals is not well utilized in the health insurance policy formulation.

centrality score; The center of the policy domain was defined by the centrality score 0.02 or above in this study. Eleven organizations were located in center of the policy domain. Six of them were governmental organizations and others were Korean Medical Association etc.

stimulus coordinate on multi-dimensional scaling; Below, figure 1 represents the path distance among the participating organizations on a multi-dimensional scaling map. The Bureau of Social Insurance in the MOHSA is situated in the center (0.0007, -0.0209) of the information exchange network. And the President (1.4771, -0.0410) is surrounded by, in

Table 1. Path distance and centrality score of the participating organization (year neighboring 1976)

ORGANIZATION (ID NUMBER)	Path distance	Centrality score
	Total p.d/mean p.d.	
president (01)	109/1.79	.0263
-political presidential staff (02)	113/1.85	.0177
-economic presidential staff (03)	149/2.44	.0092
prime minister (04)	117/1.92	.0113
minister of economic planning board (05)	111/1.82	.0220
-director general of economic planning board (06)	115/1.89	.0156
ministry of health and social affairs* (07)	093/1.52	.0604
-director general, bureau of social insurance (08)	066/1.08	.1160
-director general, bureau of medical affairs (09)	113/1.85	.0199
-director general, bureau of pharmaceutical affairs (10)	118/1.93	.0092
-director general, social security examining committee (11)	122/2.00	.0070
ministry of finance* (12)	118/1.94	.0092
-bureaucrats of ministry of finance (13)	125/2.05	.0028
ministry of governmental affairs* (14)	118/1.93	.0092
-bureaucrats of ministry of governmental affairs (15)	124/2.03	.0049
ministry of agriculture and fishing* (16)	151/2.48	.0049
ministry of commerce trade and industry* (17)	151/2.48	.0049
ministry of legislation* (18)	120/1.97	.0049
Seoul metropolitan government** (19)	120/1.97	.0049
ministry of defence* (20)	152/2.49	.0028
-bureaucrats of ministry of defence (21)	125/2.05	.0028
sub-committee of health and social affairs in national assembly (22)	103/1.69	.0391
-leading party's secretary general (23)	105/1.72	.0348
-opposition party's secretary general (24)	114/1.87	.0156
-electoral college secretary general (25)	159/2.61	.0070
Korean medical association*** (26)	093/1.52	.0604
-the Korean medical academy of medical science*** (27)	112/1.84	.0199
-provincial medical society (PMS)*** (28)	122/2.00	.0092
-secretary general, Korean medical association (29)	093/1.52	.0604
Korean hospital association*** (30)	107/1.75	.0305
-board of Korean hospital association (31)	123/3.77	.0070
-secretary general, Korean hospital association (32)	116/1.91	.0199
Korean dental association*** (33)	115/1.89	.0135
Korean pharmaceutical association*** (34)	114/1.87	.0156
Korean oriental medical association*** (35)	120/1.97	.0112
Korean pharmaceutical industry association*** (36)	123/2.02	.0070
Korean midwife's association*** (37)	121/1.98	.0092
Democratic republican party (leading party) (38)	110/1.80	.0241
New democratic party (opposition party) (39)	117/1.92	.0092
School of public health, Seoul National University**** (40)	119/1.95	.0156
Department of social welfare, Seoul National University**** (41)	181/2.97	.0156
College of medicine, Yonsei University**** (42)	119/1.95	.0028
Chungang University**** (43)	121/1.98	.0158
Korea development institute**** (44)	107/1.75	.0092
Korea health development institute**** (45)	119/1.95	.0412
Korea productivity center**** (46)	123/2.02	.0156
Dong-a daily news***** (47)	122/2.00	.0070
Chosun daily news***** (48)	122/2.00	.0092
Hankook ilbo**** (49)	122/2.00	.0092
Joongang daily news**** (50)	122/2.00	.0092
Kyunghyang daily news**** (51)	122/2.00	.0092
Seoul daily news**** (52)	122/2.00	.0092

Table 1. Continued

ORGANIZATION (ID NUMBER)	Path distance	Centrality score
	Total p.d./mean p.d.	
Korea economic news**** (53)	122/2.00	.0092
Economic daily**** (54)	122/2.00	.0092
Korea broadcasting system**** (55)	123/2.02	.0070
Moon-hwa broadcasting corporation**** (56)	123/2.02	.0070
urban industrial mission (57)	125/2.05	.0028
the federation of Korean industries (58)	114/1.87	.0177
the federation of Korean trade unions (59)	125/2.05	.0028
Korea chamber of commerce and industry (60)	121/1.98	.0113
Korea employer federation (61)	121/1.98	.0113

* minister

** mayor

*** president

**** field specialist (s)

***** reports and field specialist (s)

order, the minister of the MOHSA, presidential staffs and National Assembly.

The period of implementation of unified operating system: years neighboring 1982:

participating organizations; During this period of 5th Republic, participating organizations amounted to 44 as shown in the table 2. And fifteen of them, including the National Assembly, represent governmental apparatus (bureaucrats and congress); sixteen the interest groups; 2 political parties; and the rest consists of scholars, research institutions, and mass media. None of the organizations representing the interests of the underprivileged participated. An additional group of organizations were present, among them Korea Medical Insurance Cooperation and the Federation of Korea Medical Insurance Society.

total and mean path distance; According to Table 2, the Bureau of Social Insurance in the MOHSA needs sixty two steps of information exchange to reach all 44 organizations. The minister and the director of the EPB take more steps to reach those organizations, the minister, 67 steps and the director of EPB, 69 steps.

centrality score; The centrality score of the director general of Social Insurance Bureau of MOSHA is the highest (0.0465). The chairman of Committee on Health and Social Affairs in National Assembly and Korean Medical Association positioned themselves at the second highest. In this period, the President marks 33rd among 44 organizations. The

President therefore is not positioned anywhere near the center of the information exchange network. It is because the President can be reached from several organizations which are positioned in the center.

stimulus coordinate on multi-dimensional scaling map; The position of the political presidential staff (02) is noteworthy in Figure 2. This confirms the high level of activity of the political presidential staff in the actual policy formulation process.

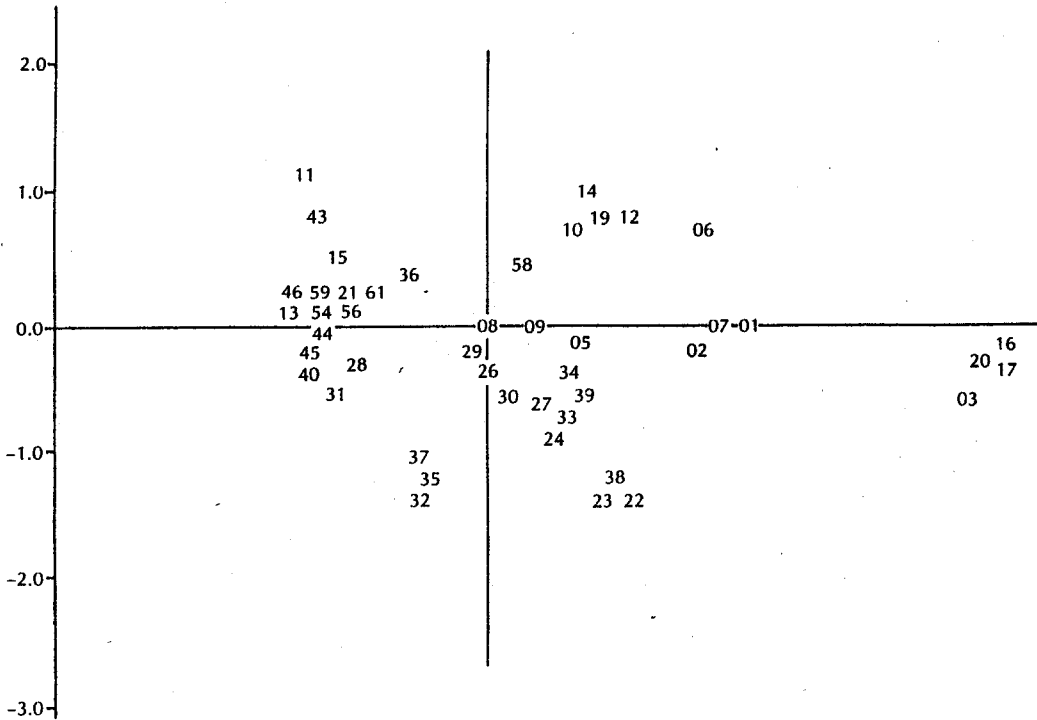
The period of debate for implementation of federated and unified operating system: years around 1988:

participating organizations; Since the health insurance policy emerged as one of the major issues dealt with in the election and people's democratization movement at the end of the 5th Republic and early of the 6th Republic, 60 different organizations participated. Among them, were "conventional" organizations, but also a new group of interest and pressure organizations, particularly representing the underprivileged (Table 3).

total and mean path distance; The total path distance of the director general of Bureau of Health Insurance (formerly, Bureau of Social Insurance, 08) is 67, lower than most of the organizations. Also the newly formed interest and pressure organizations (55, 56, 57, 58, 59, 60) score relatively low on total path distance.

centrality score; 19 organizations marked the centrality score of higher than 0.02. Among them, 6

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- president (01)
- political presidential staff (02)
- economic presidential staff (03)
- prime minister (04)
- minister of economic planning board (05)
- director general of economic planning board (06)
- ministry of health and social affairs* (07)
- director general, bureau of social insurance (08)
- director general, bureau of medical affairs (09)
- director general, bureau of pharmaceutical affairs (10)
- director general, social security examining committee (11)
- ministry of finance* (12)
- bureaucrats of ministry of finance (13)
- ministry of governmental affairs* (14)
- bureaucrats of ministry of governmental affairs (15)
- ministry of agriculture and fishing* (16)
- ministry of commerce trade and industry* (17)
- ministry of legislation* (18)
- Seoul metropolitan government** (19)
- ministry of defence* (20)
- bureaucrats of ministry of defence (21)
- sub-committee of health and social affairs in national assembly (22)
- leading party's secretary general (23)
- opposition party's secretary general (24)
- electoral college secretary general (25)
- Korean medical association*** (26)
- the Korean medical academy of medical science*** (27)
- provincial medical society (PMS)*** (28)
- secretary general, Korean medical association (29)
- Korean hospital association*** (30)
- board of Korean hospital association (31)
- secretary general, Korean hospital association (32)
- Korean dental association*** (33)
- Korean pharmaceutical association*** (34)
- Korean oriental medical association*** (35)
- Korean pharmaceutical industry association*** (36)
- Korean midwife's association*** (37)
- Democratic republican party (leading party) (38)
- New democratic party (opposition party) (39)
- School of public health, Seoul National University*** (40)
- Department of social welfare, Seoul National University*** (41)
- College of medicine, Yonsei University*** (42)
- Chungang University*** (43)
- Korea development institute*** (44)
- Korea health development institute*** (45)
- Korea productivity center*** (46)
- Dong-a daily news*** (47)
- Chosun daily news*** (48)
- Hankook ilbo*** (49)
- Joongang daily news*** (50)
- Kyungyang daily news*** (51)
- Seoul daily news*** (52)
- Korea economic news*** (53)
- Economic daily*** (54)
- Korea broadcasting system*** (55)
- Moon-hwa broadcasting corporation*** (56)
- urban industrial mission (57)
- the federation of Korean industries (58)
- the federation of Korean trade unions (59)
- Korea chamber of commerce and industry (60)
- Korea employer federation (61)

Fig. 1. Stimulus coordinate on multi-dimensional scaling map (years neighboring 1976).

Table 2. Path distance and centrality score of the participating organizations (years neighboring 1982)

ORGANIZATION (ID number)	Path distance	Centrality score
	Total p.d./mean p.d.	
President (01)	086/1.95	.0141
-political presidential staff (02)	074/1.68	.0261
-economic presidential staff (03)	082/1.86	.0158
prime minister (04)	091/2.07	.0056
minister of economic planning board (05)	078/1.77	.0192
-director of economic planning board (06)	069/1.57	.0346
ministry of health and social affairs * (07)	067/1.52	.0346
-director general, bureau of social insurance (08)	062/1.41	.0465
-director general, bureau of medical affairs (09)	080/1.82	.0192
-director general, bureau of pharmaceutical affairs (10)	096/2.18	.0039
-director general, social security examining committee (11)	079/1.80	.0192
sub-committee of health and social affairs in national assembly (12)	065/1.48	.0380
-leading party's secretary general (13)	064/1.45	.0380
-opposition party's secretary general (14)	085/1.93	.0124
-leading party's majority leader/floor leader (15)	074/1.68	.0278
Korean medical association*** (16)	065/1.48	.0380
-the Korean academy of medical science*** (17)	081/1.84	.0141
-regional medical association*** (18)	084/1.91	.0124
-secretary genral, Korean medical association (19)	073/1.66	.0312
Korean hospital association*** (20)	066/1.50	.0363
-board of Korean hospital association (21)	076/1.73	.0209
-secretary general, Korean hospital association (22)	072/1.64	.0312
Korean dental association*** (23)	096/2.18	.0056
Korean pharmaceutical association*** (24)	090/2.45	.0090
Korean oriental medical association*** (25)	100/4.67	.0039
Korean pharmaceutical manufacturers association*** (26)	132/2.20	.0022
federation of Korea medical insurance societies*** (27)	065/1.08	.0380
Korea medical insurance corporation*** (28)	067/1.12	.0380
Democratic justice party (leading party) (29)	066/1.10	.0363
Democratic Korea party (opposition party**** (30)	075/1.25	.0244
School of public health, Seoul nation university*** (31)	077/1.28	.0226
Department of social welfare, Seoul national university**** (32)	076/1.27	.0244
College of medicine, Yonsei university**** (33)	074/1.23	.0261
Chungang university**** (34)	077/1.28	.0209
Korea institute for population and health*** (35)	072/1.20	.0278
Korea development institute**** (36)	073/1.22	.0295
Dong-a daily news**** (37)	074/1.68	.0226
Chosun daily news**** (38)	074/1.68	.0226
Hankook ilbo**** (39)	074/1.68	.0226
Jungang daily news**** (40)	074/1.68	.0226
Kyunghyang daity news***** (41)	079/1.80	.0192
the federation of Korean industries (42)	068/1.13	.0346
Korea chamber of commerce and industry (43)	109/1.82	.0039
Kthe federation of Korea trade unions (44)	109/1.82	.0039

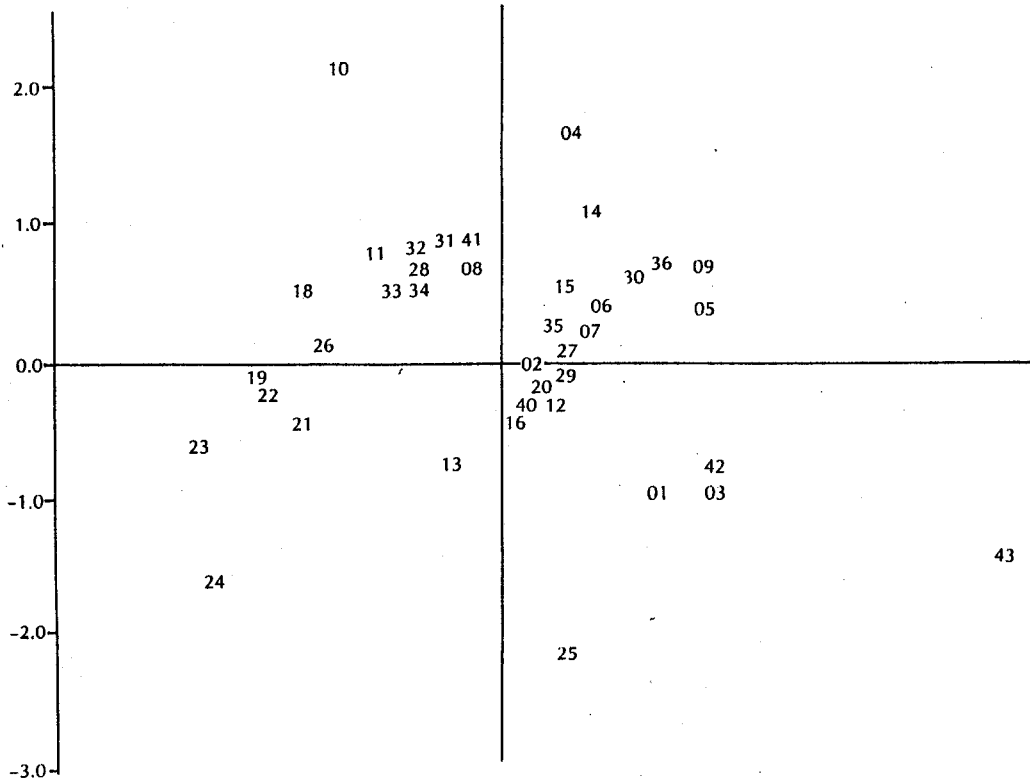
* minister

*** president

**** field specialist (s)

***** reports and field specialist (s)

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- President (01)
- political presidential staff (02)
- economic presidential staff (03)
- prime minister (04)
- minister of economic planning board (05)
- director of economic planning board (06)
- ministry of health and social affairs * (07)
- director general, bureau of social insurance (08)
- director general, bureau of medical affairs (09)
- director general, bureau of pharmaceutical affairs (10)
- director general, social security examining committee (11)
- sub-committee of health and social affairs in national assembly (12)
- leading party's secretary general (13)
- opposition party's secretary general (14)
- leading party's majority leader/floor leader (15)
- Korean medical association*** (16)
- the Korean academy of medical science*** (17)
- regional medical association*** (18)
- secretary general, Korean medical association (19)
- Korean hospital association*** (20)
- board of Korean hospital association (21)
- secretary general, Korean hospital association (22)
- Korean dental association*** (23)
- Korean pharmaceutical association*** (24)
- Korean oriental medical association*** (25)
- Korean pharmaceutical manufacturers association*** (26)
- federation of Korea medical insurance societies*** (27)
- Korea medical insurance corporation*** (28)
- Democratic justice party (leading party) (29)
- Democratic Korea party (opposition party)*** (30)
- School of public health, Seoul nation university*** (31)
- Department of social welfare, Seoul national university*** (32)
- College of medicine, Yonsei university*** (33)
- Chungang university**** (34)
- Korea institute for population and health*** (35)
- Korea development institute**** (36)
- Dong-a daily news**** (37)
- Chosun daily news**** (38)
- Hankook ilbo**** (39)
- Jungang daily news**** (40)
- Kyunghyang daily news**** (41)
- the federation of Korean industries (42)
- Korea chamber of commerce and industry (43)
- Kthe federation of Korea trade unions (44)

Fig. 2. Stimulus coordinate on multi-dimensional scaling map (years neighboring 1982).

Table 3. Path distance and centrality score of the participating organizations (1988)

ORGANIZATION (ID NUMBER)	Path distance	Centrality score
	Total p.d./mean p.d.	
President (01)	119/1.98	.0061
-political presidential staff (02)	104/1.73	.0148
-economic presidential staff (03)	119/1.98	.0090
prime minister (04)	115/1.92	.0051
minister of economic planning board (05)	112/1.84	.0099
-director general of economic planning board (06)	090/1.50	.0283
ministry of health and social affairs* (07)	087/1.45	.0302
-director general, bureau of health insurance (08)	067/1.17	.0495
-director general, bureau of medical affairs (09)	103/1.72	.0148
-director general, bureau of pharmaceutical affairs (10)	116/1.93	.0061
ministry of internal affairs* (11)	143/2.38	.0022
-bureaucrats of ministry of internal affairs (12)	123/2.05	.0022
sub-committee of health and social affairs in national assembly (13)	085/1.42	.0321
-secretary general, Democratic justice party (leading party) (14)	099/1.65	.0206
-secretary general, Peace-democratic party (opposition party) (15)	095/1.58	.0234
-secretary general, Democratic unification party (opposition party) (16)	093/1.55	.0254
-secretary general, New democratic republican party (opposition party) (17)	097/1.62	.0225
-Korean medical association*** (18)	089/1.48	.0283
-Korean medical academy association*** (19)	133/2.22	.0061
-secretary general, Korean medical association (20)	106/1.77	.0138
Korea medical association news**** (21)	099/1.65	.0196
Korean hospital association*** (22)	097/1.62	.0206
-secretary general, Korean hospital association (23)	113/1.88	.0080
Korean dental association*** (24)	123/2/05	.0022
Korean pharmaceutical association*** (25)	117/1.95	.0061
Korean oriental medical association*** (26)	119/1.98	.0042
Korean pharmaceutical manufacturers association*** (27)	122/2.03	.0042
federation of Korea medical insurance societies*** (28)	090/1.50	.0273
Korea medical insurance corporation*** (29)	088/1.47	.0292
Democratic justice party (leading party) (30)	100/1.67	.0186
Peace-democratic party (opposition party) (31)	099/1.65	.0186
Unification democratic party (opposition party) (32)	099/1.65	.0186
New democratic republican party (opposition party) (33)	101/1.68	.0167
School of public health, Seoul national university**** (34)	100/1.67	.0177
College of medicine, Seoul nation university**** (35)	105/1.75	.0138
College of medicine, Yonsei university**** (36)	101/1.55	.0167
School of public health, Yonsei university**** (37)	102/1.70	.0157
Choongang university**** (38)	097/1.62	.0206
College of medicine, Hallym university**** (39)	104/1.73	.0138
Won-kwang university**** (40)	120/2.00	.0157
Department of social welfare, Hallym university**** (41)	098/1.63	.0196
Department of social welfare, Seoul national university**** (42)	106/1.77	.0138
Korea institute for population and health**** (43)	103/1.72	.0157
Korea development institute**** (44)	094/1.57	.0244
Korea rural economics institute**** (45)	121/2.02	.0032
Dong-a daily news***** (46)	101/1.68	.0186
Chosun daily news***** (47)	101/1.68	.0186
Hankook ilbo***** (48)	102/1.70	.0177
Jungang daily news***** (49)	102/1.70	.0177
Hankyoreh shinmun***** (50)	109/1.82	.0109
the federation of Korea industries (51)	116/1.93	.0061
Korea chamber of commerce and industry (52)	142/2.37	.0042

Table 3. Continued

ORGANIZATION (ID NUMBER)	Path distance	Centrality score
	Total p.d./mean p.d.	
the federation of Korea trade unions (53)	112/1.87	.0138
national health insurance operating committee (54)	098/1.63	.0225
Korea catholic farmers movement (55)	098/1.63	.0225
Korea christian farmers federation (56)	098/1.63	.0225
Korea peasant movement association (57)	098/1.63	.0225
association of physicians for humanism (58)	098/1.63	.0225
The dentists for healthy society (59)	098/1.63	.0225
christian medical council for the poor (60)	098/1.63	.0225

* minister

*** president

**** field specialist (s)

**** reports and field specialist (s)

organizations were newly participated interest and pressure organizations representing the rural population and the underprivileged. Also the organizations which led people's movement for democratization at the end of 5th Republic and the early of 6th Republic showed relatively high centrality score.

stimulus coordinate on multi-dimensional scaling map; The positions of the organizations are represented in figure 3. The director general of the Bureau of Health Insurance (08), the Committee on Health and Social Affairs in the National Assembly (13), the Korean Medical Association (18) and political parties position around the center.

Change in Center and Periphery during Three Periods

In all three periods, the government is situated at the center of the policy formulation. The director general of Bureau of Social Insurance (later, Health Insurance) marked the lowest total path distance and the highest centrality score. This indicates that the executive branch of the policy system sits in the center of policy formulation. In a multi-dimensional scaling map, however, the gradual positional change of the director general of Bureau of Social Insurance can be observed. In 1976, the director general was at the middle of the center, and through 1982 to 1988, the position became slightly off the middle of center.

The minister of the MOHSA also showed a similar tendency. In 1976, with the centrality score of 0.0604, the minister was most closely located, to the President who at that time, was deeply involved

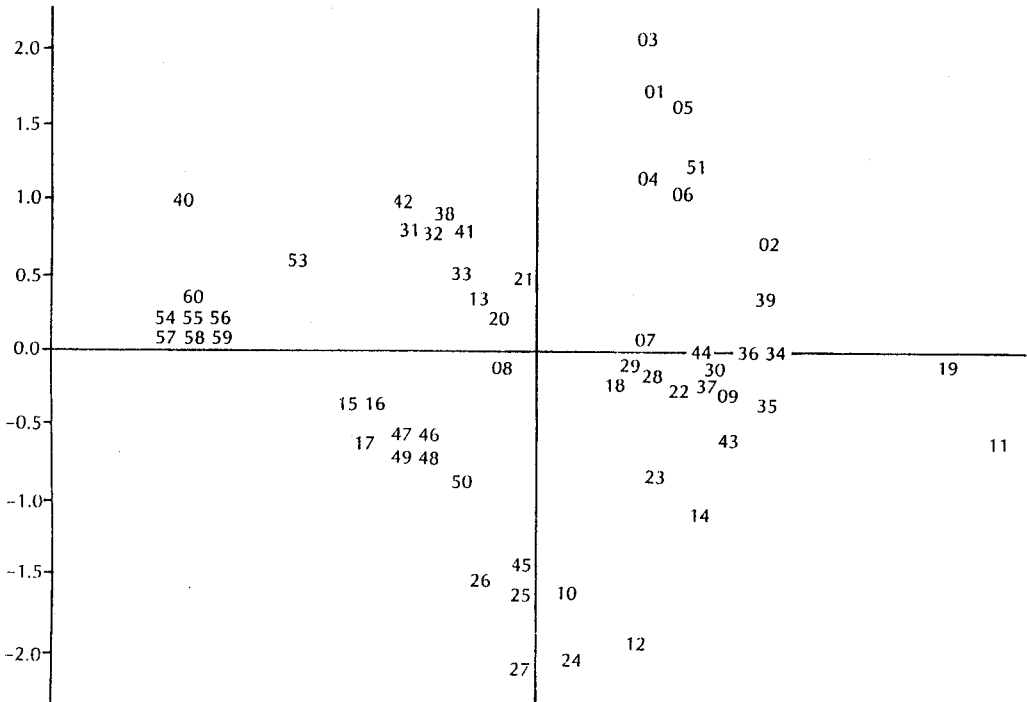
with the actual policy formulation. The minister of MOHSA also played a key role among the organizations participating in both stages of decision-making and implementation of the health insurance policy. Even in 1982 and 1988, the centrality score still indicates higher than 0.03.

In the cases of the President, the position on the multi-dimensional scaling map continues to exist within the right half of the plane, indicating that he was closely connected with the minister of MOHSA. The centrality score changes over the periods and in 1988, it was only below 0.01.

In the National Assembly, the chairman of standing committee, in all three periods marked the centrality score of 0.03. However, the opposition party's ranking member for the Committee on Health and Social Affairs in the National Assembly presented high information exchange level by displaying a high total path distance. In 1988, in particular, as a result of the highest acquisition of seats in National Assembly by the opposition party, more active communication was observed among the members of the National Assembly, including those of the opposition parties.

The pressure groups represented by the Urban Industrial Mission in 1976 and others in 1988 gradually moved towards the center, yet positioned all at the left half of the plan. It is interpreted as the reflection of these organizations representing a specific interest of the underprivileged population.

The Korea Chamber of Commerce or the Federation of Korea Industries pressure group marked the lowest centrality score in 1988. These



- President (01)
 -political presidential staff (02)
 -economic presidential staff (03)
 prime minister (04)
 minister of economic planning board (05)
 -director general of economic planning board (06)
 ministry of health and social affairs* (07)
 -director general, bureau of health insurance (08)
 -director general, bureau of medical affairs (09)
 -director general, bureau of pharmaceutical affairs (10)
 ministry of internal affairs* (11)
 -bureaucrats of ministry of internal affairs (12)
 sub-committee of health and social affairs in national assembly (13)
 -secretary general, Democratic justice party (leading party) (14)
 -secretary general, Peace-democratic party (opposition party) (15)
 -secretary general, Democratic unification party (opposition party) (16)
 -secretary general, New democratic republican party (opposition party) (17)
 -Korean medical association*** (18)
 -Korean medical academy association*** (19)
 -secretary general, Korean medical association (20)
 Korea medical association news**** (21)
 Korean hospital association*** (22)
 -secretary general, Korean hospital association (23)
 Korean dental association*** (24)
 Korean pharmaceutical association*** (25)
 Korean oriental medical association*** (26)
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 Department of social welfare, Hallym university**** (41)
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 Korea institute for population and health**** (43)
 Korea development institute**** (44)
 Korea rural economics institute**** (45)
 Dong-a daily news***** (46)
 Chosun daily news***** (47)
 Hankook ilbo***** (48)
 Jungang daily news***** (49)
 Hankyoreh shinmun***** (50)
 the fedreation of Korea industries (51)
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 national health insurance operating committee (54)
 Korea catholic farmers movement (55)
 Korea christian farmers federation (56)
 Korea peasant movement association (57)
 associaion of physicians for humanism (58)
 The dentists for healthy society (59)
 christian medical council for the poor (60)

Fig. 3. Stimulus coordinate on multi-dimensional scaling map years around (1988).

organizations did not maintain the key roles they once did in 1976, perhaps due to the emergence of new organizations which played similar roles. The Korean Medical Association is one interest organization which maintained the same position in all three periods with a high centrality score. The newspaper published by this organization, Korea Medical News, in 1988 also earns a high centrality score and positions close to the center.

DISCUSSIONS

Methods

The purpose of this study was to evaluate and analyse the policy-making structure of Korea by examining the series of the informational exchanges between the organizations participating in health insurance policy making. The methods of social network analysis and multi-dimensional scaling were very useful for this purpose. In this part of the paper, several limitations in directing this study are discussed.

First of all, these methods display problems in how to define policy making process. Although policy making process can be explicated generally through 4 different stages—agenda-setting, decision-making, implementation, and evaluation—, it is not always clear as to how one can delineate each stage without contributing to a stage before or after the stage being distinguished. This uncertainty becomes more evident especially when dealing with the stages of 1) implement and 2) evaluation of the policy since these later stages tend to occur repeatedly with overlapping of the first two stages of agenda-setting and decision-making. Therefore it is difficult to establish a consensus on, when in fact, a policy has been actually implemented as an activating full policy. And it is highly variable based on various views of researchers.

In this study, the main concern lies in how to analyse the policy formulation and execution based on author's distinction of three important periods; first, around 1976 of the 4th Republic, the first years of effectuating the health insurance policy; second, the years of 5th Republic, the years of establishing the nationally unifying health insurance operating body along with the efforts after the pilot projects of regional health insurance system; and lastly, the year of 1988, the newest republic which involved the vast political movements for democratization, also called for a nationally unified pre-

mium rating and benefit package of health insurance policy. Therefore, the years preceding 1976 were seen as stages of the agenda-setting and decision-making and the years from 1976 on the present day as implementation of the policy. Especially the years from 1976—stage of policy-making and implementation—were assumed to be a period in which new and interrelated policy formulations also occurred and thus necessarily require analyses of the transition from one republic to the other. This provides an analysis on temporal facets of a social structure.

In the process of the study, the participating organizations in formulation of policy needed to be defined. In so doing, one finds various forms of participating organizations. Each individual engaged in the formulation of a policy is, in fact, an organization; for instance, a university professor or scholarly member. Yet it is also valid to consider a whole collective organization of many individuals as an organization. For this, we have tried to eliminate the confusion of the character of each organization by adopting Bonacich's (1972) analysis. In addition, the possible information exchanges between each individual or organization beyond the authors' direct contact were taken into a consideration, by using other available data and documents as discussed elsewhere (Sohn 1989). However, mass media bring out a problematic situation where the communications were formed based on the exchanges between the reporters vs. reportees. This particular form of exchange of information, however, can be easily biased, more than other cases mentioned above, since the sole purpose of this form of exchange was primarily decided at the time as reporting, thereby restricting this analysis within the particular framework of "reporting" of one time or another.

The next criticism on the method of this study can be seen through the examination of Laumann and Knoke's (1987) study of defining the center and periphery as well as the directionality in actual exchange of information. In this study, we were unable to establish such issues adequately. As explained earlier in the paper, we have established dichotomous variables based on the existence and non-existence (two of the subordinate variables) of the exchange of information between and amongst organizations. Again, the range and directionality as well as the subjective priority in exchange network have not been fully appreciated in this study. Although these questions seem of great interest to the analysis of a social structure, they still remain to

be dealt with in future studies.

From a social network analysis, proposed by a recent trend in social science (Laumann and Knoke 1987), we can benefit from the profile of the social structure we examine, despite its simplicity. Social network analysis can be used in various domains of understanding a society, yet the role, it – social network analysis – plays in understanding public health domain is invaluable (Kim and Palmore 1984) for an application of social network analysis in family planning in Korea.

Results

In a study, Choi (1987) concluded that policy making process tends to develop according to the nature of the organizations who/which lead the formulation process. He concluded that the government policy making process differ in the nature and format of the organizations in terms of the degree of the authority embedded within the character of the government. In other words, Choi's study reflected the difference between the 3rd, 4th and 5th Republics of Korea in their degree of structural flexibility as a government regime. It is interesting to note that Choi's study also shares a similar sentiment with Sohn's study (Sohn 1963).

Yet this study presented several interesting points to the previous studies as represented in terms of 1) number of participating institutions and organizations and 2) position of each republic in a multi-dimensional scaling which distinguishes itself in various ways. The 4th Republic carried significant numbers of organizations involved with policy making process, yet the Republic seemed to have lacked organizations who or which carried out a close or direct contact with the underprivileged sector of the society. This was a result of the fact that there were no direct representatives to deliver the interests of such a sector. It is also noteworthy that the direction of the professionally well-qualified group (such as scholarly members and specialists in the field) remained at the periphery in the process of policy making, probably due to 1) not enough understanding and appreciation of the urgency of health insurance policy and 2) the social and political constraints at the time of Korea.

The 5th Republic took a health insurance policy which failed to represent not only the interests of a particular sector of the society, but also the interests of the society as a whole. This was derived more from the repressed political and social mood of the society, that health insurance policy was not on top of the list of governmental primary concerns.

However the centrality of the National Assembly group members, in terms of multidimensional scaling (note, the position of two-dimensional scaling and high score) can be interpreted as the existence of frequent exchanges between and amongst the ruling party's floor leader and the members of the MOHSA.

In the 6th Republic, however, health insurance policy emerged as one of the most important issues, even in the presidential election in 1987. This was a clear reflection of diversifying social and political concerns along with the country's democratization. The National Health Insurance Committee initiated, along with the other organizations, a legislative bill of health insurance security plan which was derived from an active level of exchange between many organizations, especially various opposition party apparatus as the country progressed with more intense democratization. This analysis of the 6th Republic, however, should be taken into a consideration that its total and mean path distance and multi-dimensional scaling position can appear different from expected, as well take the opposition party apparatus as a single group which brings the informational exchange to be unilineal.

It is also suggested that the major difference in the 6th Republic in the increase of functional efficiency of the National Assembly regarding the policy formulation does not appear in the analysis, probably due to the method of the analysis which did not take the direction and the frequency of the informational exchange into consideration.

Finally, 1) it is presented that the organization or institution which appears at the center on the multi-dimensional scaling axis lowers the points at the center. The informational exchange path distance is represented by two-dimensional scaling techniques, thus is expected it to be different when represented by three-dimensional scaling techniques. Yet the "young's s-stress" (Knoke & Kuklinsky 1982) of the three different periods indicated i) 0.0628 after 14 iterations for 1976, ii) 0.0844 after 12 iterations for 1982, and iii) 0.1341 after 12 iterations for 1988. A two-dimensional plan appears to be effective in this case. 2) it also presents another question as to how to record the increase of the total path distance as the number of the participating organizations also increase in informational exchange. In this case, however, the total of the minimal path distance per organization indicates the number of the participating organizations and therefore a direct comparison of the three periods is not favorable. The average is taken to explicate the scaling. The positions on the

multi-dimensional scaling already take these notions into consideration, and this interpretation based on these positions seems appropriate.

CONCLUSIONS

The analysis and review of the public policy-making process structure of Korea through the processes of health insurance policy formulations during the three important periods of 4th, 5th, and 6th Republic can be summarized as follows.

In the national health insurance plan of 1976 the following personnel and organizations participated in the procedures of policy decisions. They were: President, minister of the MOHSA and some other members of the cabinet (Economic Planning Board), National Assembly members, representatives of interest organizations in the medical field, economically and labor related pressure groups, related research organizations, university institutions and urban industrial missionary groups totalling 61 social units.

It became evident by network analysis and multi-dimensional scaling that the director-general of Social Insurance Bureau in the MOHSA occupied the key position; the President, minister, interest group members surrounded the second posts; however, the scholars specialized in the field of social security and public health remained at the periphery.

In 1982 the participant organization was reduced to the number of 44 and saw the participation of the insurance beneficiary and reduction of other ministers except that the MOHSA. However, the scope of participant remained similar to that of 1976. Seen from a multidimensional scaling information exchange level the presidential secretary in political affairs and director general of social insurance bureau of MOHSA director general became important, the latter playing the key role.

In 1988 the participant group increased to the number of 60 comparable to that in 1976.

The increase was due mainly to the functional intensification of the impact from the National Assembly. Concurrently, the committee for the improvement of insurance policy and other organizations for the promotion of rural life came into a co-operative relationship especially with the opposition party apparatus which approached the central position of policy formulation.

The score in policy formulation was always in the director's side throughout the entire course of the

three different stages; however, the power concentration rate gradually diminished as time went by. It is noted that the power constellation of the National Assembly loomed large in the opposition party in 1988 and the gradual change in the roles of policy formulations seems to demonstrate similar trends as general social change was enhanced in 1988.

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