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The role of village leaders and the allocation of government grants on the South Korean rural development

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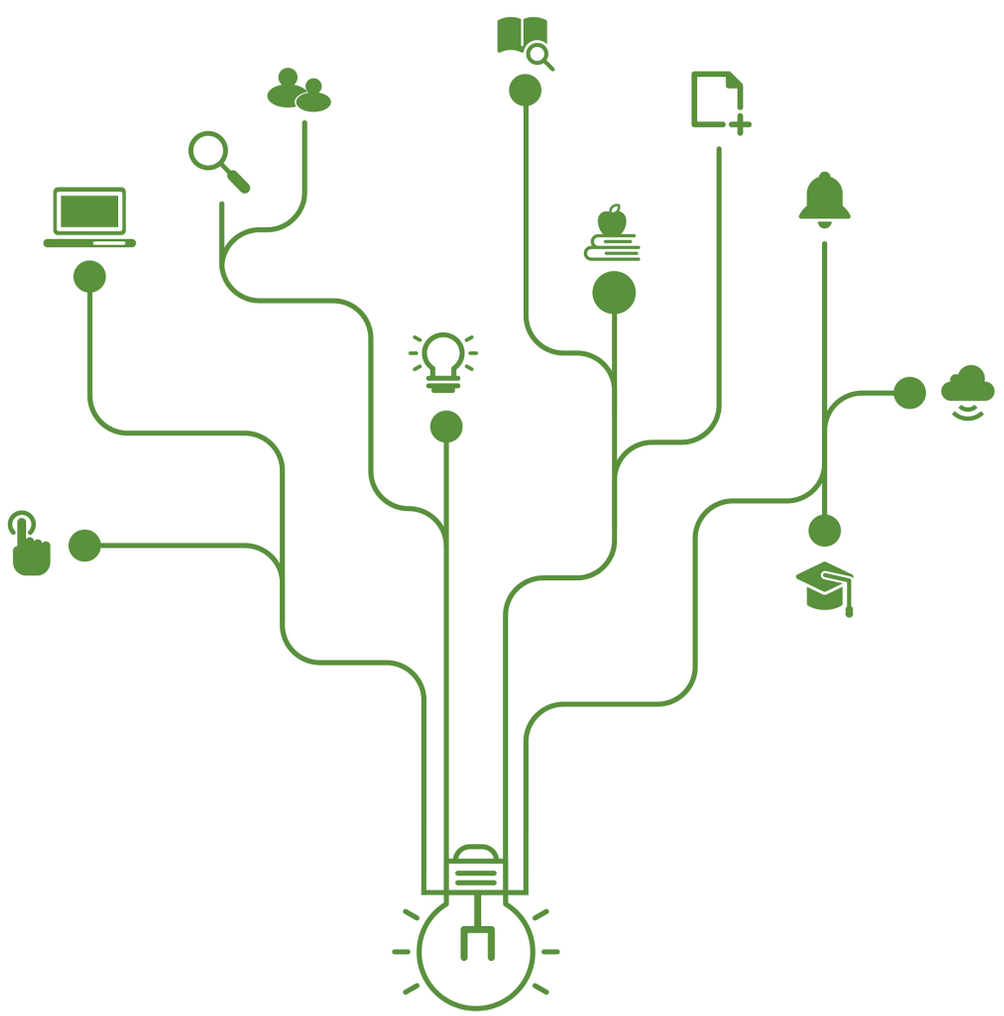

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The role of village leaders and the allocation of government grants on the South Korean rural development

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Executive Summary

This report contains two chapters. The first chapter, "The role of village leaders on the production of public goods: Evidence from South Korea," considers the role of village leaders in the Korean rural development in the early 1970s. Under the New Village Movement (Saemaul Undong), the role of village leaders was considered as one of the most important factors for the success of the Movement. However, there has been few empirical research documenting the relationship between the leaders and their roles on the improvement of village through the Movement. Using novel data on the village leaders and Saemaul classifications, we show that villages with village leaders who had relatively better educational attainment tend to improve their village public goods in two years. High human capital of both male and female village leaders mattered for the improvement of public goods. The second chapter, "The Allocation of Government Grants in the Community Development Program," shows that the government resource allocation in the 1970s was not matched with outcomes of Saemaul projects. Despite government documents and anecdotal evidences from Saemaul practitioners that the government selectively provided grants only to the better-performing villages in Saemaul projects, we find that there is no empirical evidence that verifies the performance-based support system.

Introduction

In this report, we empirically investigate potential factors of Korean rural development in the 1970s. We focus on two determinants of rural development. These are the roles of village leaders and of the government cash transfers. While there have been significant interests in Korean rural development strategy, including Saemaul Undong (New Village Movement), few systematic research on this topic is available. The lack of village-level data is a prominent reason. In this report, we contribute to the economic development literature by introducing novel village-level data to analyze Korean development experience.

This report contains two chapters. The first chapter, "The role of village leaders on the production of public goods: Evidence from South Korea," considers the role of village leaders in the improvement of village public goods in the early 1970s. The presence of effective village leaders was considered as one of the most important factors for the success of the Saemaul Undong. However, there has been few empirical research documenting the relationship between the leaders and their roles on the improvement of village. Using novel data on the village leaders and village classifications on the improvement of public village goods, we show that villages with village leaders who had relatively better educational attainment tend to improve their village public goods in two years. High human capital of both male and female village leaders mattered for the improvement of public goods.

The second chapter, "The Allocation of Government Grants in the Community Development Program," investigates the role of government grants, or cash transfers to villages. This chapter poses a fundamental question on the allocation of government resources during the Saemaul Undong era: was the allocation of government resources based on merit? One of the core principles of Saemaul Undong was that the resource distribution is prioritized toward villages that used public resources more effectively for producing public goods. The analysis, however, shows that data is not consistent with the stated principle of resource allocation by the government at that time: the government resource allocation in the 1970s had little correlation with outcomes of Saemaul projects in previous years. This results indicate that further analysis is needed. What were the true motivations or the objective function of the government in resource allocation to villages? Once this question is satisfactorily answered, the next question will be: what is the causal effect of cash transfers on village outcomes?

Chapter 1. The role of village leaders on the production of public goods: Evidence from South Korea

Introduction

In providing or producing public goods, the role of leaders can be critical. For example, communities with heterogeneous members may find it difficult to enforce social sanctions to punish free-riders. A leader can assume to role of enforcer to facilitate participation. In the Handbook of Economic Growth, Durlauf and Fafchamps (2015) argue that, in poor countries, collective action may act as a substitute for the state. According to them, there are two essential requirements for the collective action to work: leadership and trust. They argue that leaders can raise level of trust as well as reducing free-rider problem by persuading community members to contribute voluntarily.

In this paper, we focus on educational attainment as an important characteristics of leaders. Krishna (2001) provides an example from India. To get more resources from the government for their villages, village leaders need to know schemes and programs. They are required to negotiate demands with government officials successfully. Similarly, Korean village leaders were active negotiators with government officials as well as interpreters of government policies and directives (Han 2012). These kinds of skills require high levels of human capital.

This paper introduces novel data on leader characteristics of most of villages within a province in Korea. Combining this data set with village classifications which measure the improvement of village public goods, we show that an objective measure of leader characteristics, educational attainment, matter for improvement of village public goods. While there has been a large body of literature documenting the role of trust in provision of public goods, there has been surprisingly few research on the role of leaders. One important reason is that, except national leaders, it is difficult to get data on leader characteristics.

Our empirical analysis shows that Korean villages with leaders who have more than elementary school degree tend to improve public goods. The results were robust to various controls such as the number of households in the village, or township fixed effects. To

account for the unobserved time-invariant characteristics that may confound the results, we also use village fixed effects. While the statistical significance is weaker, the point estimates survive. This indicates that the results were not driven mostly by village-level unobserved confounders.

Our paper contributes to the development economics literature. To our knowledge, our paper is one of few to show that the leader characteristics may matter for the improvement of public goods. Related papers are Chattopadhyay and Duflo (2004) who used gender composition as a determinant of the type of public goods. Another paper, Jones and Olken (2005), showed that changes in national leaders had impacts on economic growth. Additionally, our research is related to the political economy literature on role of leaders. Typically, the national leaders were considered with the cross-country analysis which makes it difficult to control for many dimensions of country heterogeneity other than leaders (e.g., Jones and Olken, 2005). Our context provides a better empirical design. Even among very homogeneous villages within the same country, and the same township, we show that leaders matter. Finally, our paper is also related to business literature on the roles of business leaders on firm's performance (Johnson et al., 1985; Bertrand and Schoar, 2003).

Additionally, our paper contributes on the Saemaul Undong, or New Village Movement, literature. While there has been much attention to Korean rural development, there has been little systematical research on what factors contributed to the success of Saemaul. This paper follows a recent trend of using micro-data to evaluate factors that determined Movement's outcomes (e.g., Kim 2015; Seo 2018; Yang 2019).

The paper proceeds as follows. In Section 2, we provide brief background information on Korean villages and New Village Movement. In Section 3, we introduce empirical strategy. Data used in the paper are presented in Section 4. Section 5 provides results, followed by concluding remarks in Section 6.

Background

New Village Movement, or Saemaul Undong, is a large-scale rural development and village mobilization project under the rule of Park Chung Hee in the 1970s in South Korea. The key objective of the Movement was to improve village environment and the

increase of income of village members. The Korean government provided cash transfers and materials. However, the choice of village projects was supposed to be decided by village members themselves. Moreover, labor needs to supplied by themselves.

Under the Movement, villages are classified with a set of achievements such as widening roads, improving thatched roofs, etc. Once they achieve the objective, the village progresses from a C grade village (Gicho in Korean, or Basic villages) to a B grade village (Self-help villages) and finally to an A grade village (Self-reliant villages).

The most frequent village projects under the Movement is improving conditions of village roads. This can be observed from both demand and supply side of the village projects. First, from the demand side, according to a government survey in the 1970s, the most frequent priority projects mentioned by the village members were: 1) widening and straightening village access roads; 2) repairing and building village bridges; 3) widening and straightening roads in village; 4) improving sewage system; and 5) to install modern roofs (Park 1998). From the supply side, again, the largest portion of labor was used for improving roads. In 1973, out of about 36 million labor days contributed for village projects, more than 80% (29 million) days were devoted in road works according to a government statistics (Ministry of Home Affairs, 1973, p.116).

Important decisions on village matters are typically determined by the village development committee which consists of a dozen committee members from the village, as well as heads of households. For example, the committee propose a project and heads of the households decides democratically through voting in village meetings.

In decision making process, village leaders had significant roles. In a survey of village leaders who received awards for their achievements in 1975, they responded that the most important role of leaders is 1) to gain consensus and to successfully persuade village members; 2) to write meticulous plans for village projects; and 3) to assist village committee meetings so that important decisions to be made democratically (Park 1974). Leaders also provided reasonable target outcomes that villagers were able to meet (Han 2012).

When the government did a survey to understand the factor behind successful villages (i.e., getting an A or a B grades), the found out that successful villages usually had

motivated village leaders. Under the Movement, each village had designated male and female village leaders. These leaders are different from village head (Ri Jiang in Korean) who was a primary contact point with township officials and did administrative work related with village matters. Saemaul leaders, which is the focus of this study, had a different objective which is to increase village public goods and village incomes.

More educational attainment of village leaders could be helpful. For example, village leaders often negotiated with government officials for getting more resources. Additionally, leaders interpreted government policies and directives to village members which might be useful for increasing public goods (Han 2012). Additionally, having technical knowledge that they gained from schools, such as an agricultural high school, could be helpful in adopting better technology for improving agricultural income. Planning and executing complex projects such as improving village roads or bridge construction may also require higher human capital. In this paper, we attempt to use village-level data as well as leader characteristics to find out whether there was indeed a systematic tendency of better village outcomes when leaders had higher human capital.

Empirical strategy

Our research question is whether the more educational attainment is associated with more production of village public goods. For empirical test, we use the following specification,

$$\Delta public\_good_i = \alpha + \beta leader\_edu_i + X_i\gamma + \theta_t + e_i$$

where is the improvement of village public goods between 1972 and 1974 of village i, is the education level of the male village leader of village i, is a vector of controls, and represents township fixed effects.

The improvement of village public goods, , is measured as a dummy variable. If there was an improvement in Saemaul classification between 1972 and 1974 for village i, the dummy is equal to one, and zero otherwise. For example, if a village improves the grade from a C to a B, from a C to an A, or from a B to an A between these two years, the dummy will have the value of one. If the grade of the village remains the same, then there was no improvement and the dummy will record zero.

For those village which already has an A grade in 1972, no further improvement in

classification is possible, even though the village improves public goods. Additionally, given that the classification will be based on some cutoffs, despite there were some progress made, the grade may stay the same. These may underestimate the effect, .

The identifying assumption is that, once we have sufficient observable village characteristics and unobserved characteristics that are invariant at the township level, the human capital of the male village leader is orthogonal to other unobserved determinants of . Hence, can be considered as a causal effect of the human capital of village leader on the improvement of village public goods.

As a robustness check, we additionally include village fixed effects to account for time-invariant unobserved village confounders as below:

$$\Delta public\_good_i = \alpha + \beta leader\_edu_i + X_i\gamma + \tau_i + e_i,$$

where is the village fixed effects.

Data

We digitize and use novel village-level data for the analysis. The first data set is the information of village leaders for each village in the province of the province of Kyungsangnam-do. the province of Kyungsangnam-do is located in southeastern part of South Korea (see Figure A1 in the Appendix for the location of the province). This data set is obtained from Saemaul Training Center. Figure 1-1 shows the example of a page of the data of village leaders. Villages were first classified with grades, A, B, and C. Then for each grade the data contain the information on the name of the village, the number of households, population, the name of township and county that the village belongs to, etc. Importantly, it contains the name, occupation, age, and the village role of the male and female village leader in each village. It has three years, 1972, 1974, and 1975. To our knowledge, this is the only data set which contains village-level Saemual village classifications for three years. Having three years is useful to document the progress of each village.

The second data set we digitize is Saemaul Chongram, or the New Village Comprehensive Survey (NVCS henceforth), published by the Ministry of Interior in 1972. This dataset contains a wide variety of village characteristics which can be used as control

variables for our analysis. Yang (2019) digitizes and uses the same source of data in a different province. Figure 1-2 shows an example of information contained in NVCS. This data contains the share of agricultural households, the average cultivated area per household, population under age 14, population above age 14, distance from the township government office, etc. This is a cross-sectional data in 1971, before our study period.

Additionally, NVCS has village-level information from village maps (upper-left on Figure 1-2). The maps show indicators on whether the village has access to electricity, access to phone line, access to vehicles, whether a school exists, etc. We created dummy variables using the map information and included them as control variables in the analysis. Figure 1-3 provides the map legends as well as translations.

We construct two datasets using these two sources. First, we merged these two data sets as a wide-format cross-sectional data since two datasets has information on the common year of 1972. Using the county, township, and village name, we merged these two data sets together for the year 1972. The NVCS is available for the universe of villages of all provinces in Korea in 1972. On the other hand, Village Leader data are only available for the province of Kyungsangnam-do .

There are 5,044 villages in Kyungsangnam-do according to the NVCS. On the other hand, Village Leader data have total 3,690 villages, which means Village Leader covers 73% of all villages in the province and 27% are missing. There could be a potential selection bias. However, in many observable characteristics, the NVCS villages (5,044) and Village Leader data villages (3,690) did not differ much. For example, the average number of households is 83.5 for the former, and it was 86.1 for the latter. Similarly, the average cultivated area per household, it was 0.74 hectare v.s. 0.73. For the average distance from the township office, it was 4.1 km v.s. 4.0.

Out of 3,690 villages in the Village Leader data, we were able to merge all except 7 villages with the New Village Comprehensive Survey data. This merged dataset allows to control for many village-level variables available from the NVCS. For this dataset, is generated by using the village grades in 1972 and in 1974. When there were improvements in village grades, then the outcome variable was recorded as one and zero otherwise.

Our second dataset is a panel dataset. The Village Leader data cover three years, 1972, 1974, and 1975. Therefore, each village has three observations from these three different years. By combining these three years at the village level, we were able to generate a panel data set. Since our outcome variable is the we lose 1975 and keep two years. For year 1972, is the change in grades between 1972 and 1974. For in 1974, it is change in grades between 1974 and 1975. Since the NVCS only covers 1972, we are not able to extensively control for village characteristics for this dataset. However, this data set allows us to control for unobserved, time-invariant village characteristics.

There are some shortcomings of this panel dataset. in 1972 shows improvement in a two-year interval, 1972 and 1974. On the other hand, in 1974 shows improvement in grades in a one-year interval, 1974 and 1975. Additionally, in 1972, a large share of villages had a C grade (73%). In 1974, only 32% of villages had a C grade. As a result, there is much less variation in for year 1974. Only 16% had . In 1972, 36% of villages had 1. For these reasons, we use the panel data set as a robustness check and use wide-form cross-sectional data as the main data for the empirical analysis.

Table 1-1 shows summary statistics for the wide-form data in 1972. There are striking differences in the educational attainment of village leaders depending on the gender. For male leaders, about half of them (48%) had the elementary school as the final degree. 28% of them had junior high school degree, 20% had high school degrees, and 3% had college degrees. For female leaders, a majority of them (80%) had elementary school degree. Only 14% had junior high school degree, and 4% had high school degree. Only 0.2% had college degree. There was little difference in average age. The male leaders were on average 40.7 years old, whereas the female leaders were 38.5 years old.

Village characteristics shows that these villages are largely agricultural and small. More than 80% of households had agriculture as the main occupation. On average, there were about 85 households in a village. Their agricultural plots are small. The average cultivated area per household is 0.73 hectare.

Access to modern infrastructure or government-provided public goods were modest. Only 11% had tap water supply access. Electricity access is only 37%. Cars cannot enter the half of the villages (50%).

Figure A1 in the Appendix compares the summary statistics between different Saemaul grades in 1972. As seen from the table, a large fraction of variables has similar mean values regardless of grades. There are some differences for male leader characteristics. For example, the fraction of village leaders with a junior high school degree was 25% for B-grade villages. For A- and C-grade villages, the number was 29%. Female leader characteristics were quite similar across different grades. The most significant differences were observed in the number of households and population. A-grade villages had 84 households on average, while B-grade and C-grade villages had 112 and 79 households, respectively. In terms of population, A-, B- and C-grade villages had 489, 641, and 454 village members, respectively. Another set of variables with relatively larger differences are related to village public goods such as electricity, tap water supply, presence of schools, etc. However, there was little systematically monotonic relationship between presence of public goods and grades. For example, B-grade villages had the highest level of electricity accessibility and presence of schools.

Figure 1-1| Dataset of Village Leaders

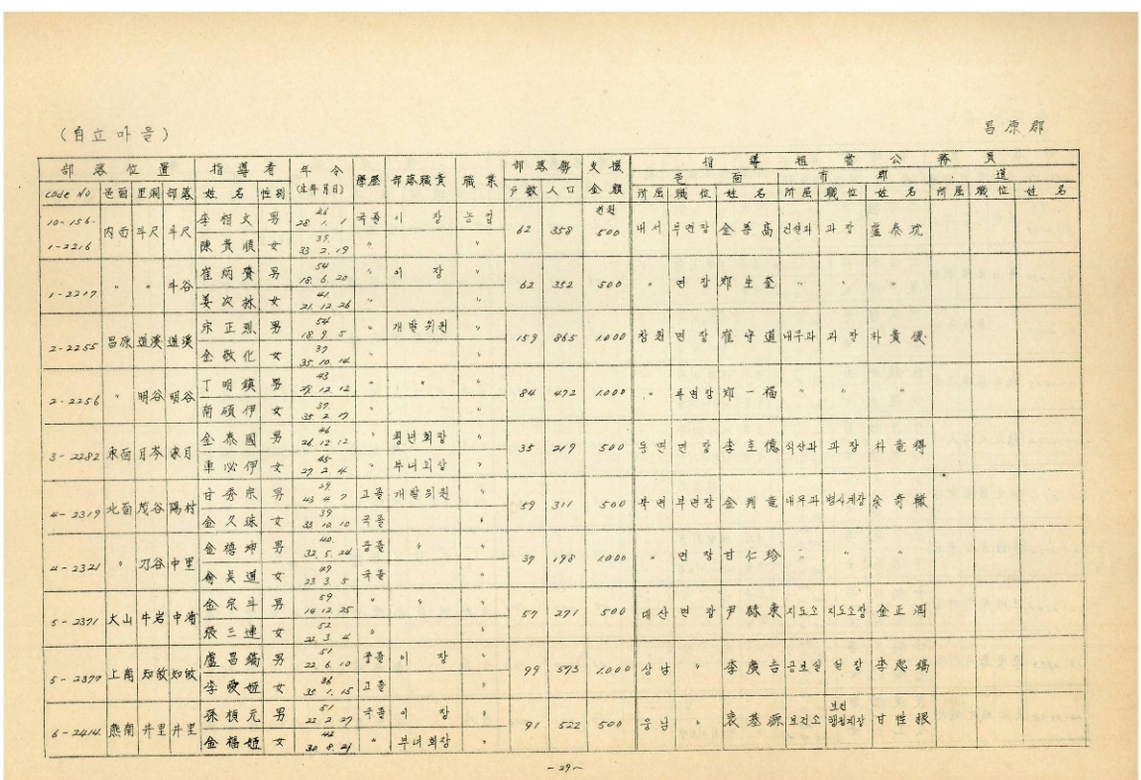

Figure 1-2| New Village Comprehensive Survey

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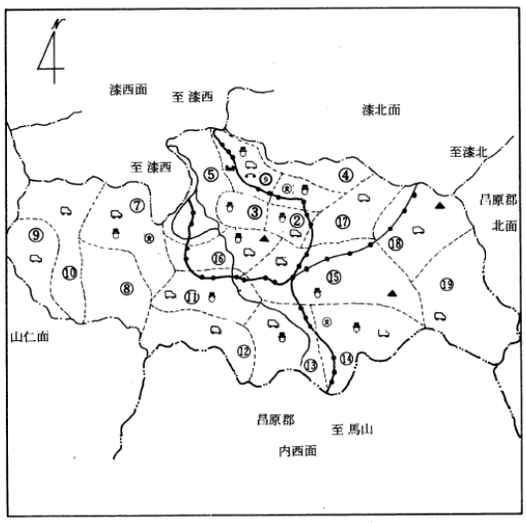
咸 安 郡 漆 原 面

1. 略 圖



2. 邑面一里洞距離表 (Km)

順位	里洞名	距離	順位	里洞名	距離
1	元龜城	0.1	16	楊亭里	2.2
2	南龜里	0.2	17	舞泝里	2.0
3	梨峴里	0.5	18	敦洑里	3.5
4	德山里	0.7	19	山亭里	6.0
5	龍山里	0.3			
6	西上里	0.1			
7	柳原里	3.0			
8	達田里	5.0			
9	藏岩里	6.0			
10	東岩里	6.0			
11	梧谷里	4.0			
12	釜谷里	4.3			
13	野村里	4.3			
14	谷村里	4.0			
15	石田里	3.0			

3. 里洞別現況

Code No.	里洞名	새마을 區分	指導者 姓名	指導者 年齡	戶當耕地面積	家口 計	家口 農家	家口 非農家	人口 計	人口 14歲未滿	人口 14歲以上	地域類型	지붕改良 改良	지붕改良 未改良	自然部落數	結緣機關
687	元龜城	기초	閔點植	38	0.4	89	61	28	411	148	263	1-1	35	138	1	
688	南龜里	자조	李鍾恒	50	1.1	161	103	58	833	259	574	1-1	172	243	1	農地改組
689	梨峴里	기초	金龍植	36	0.4	66	55	11	354	154	200	1-1	15	120	2	
690	德山里	기초	姜且信	39	0.5	45	53	10	260	88	172	1-1	25	84	2	漆原國校
691	龍山里	자조	金性午	51	0.8	164	75	89	841	306	535	1-1	159	328	3	
692	西上里	기초	權寧瀷	45	0.8	85	42	43	395	119	276	1-1	74	64	1	
693	柳原里	자조	黃奉周	62	0.7	220	186	34	1,379	535	844	1-1	301	306	2	柳原國校
694	達田里	기초	黃榮孝	32	0.7	36	34	2	213	83	130	1-1	28	79	3	
695	藏岩里	자조	金在烈	53	1.0	67	64	3	429	167	262	1-1	25	138	4	漆原郵遞局
696	東岩里	기초	金仁鐸	44	0.8	60	42	18	302	128	174	1-1	19	95	3	
697	梧谷里	자조	朴光濟	31	0.7	71	68	3	430	153	277	1-1	49	123	2	農協支所
698	釜谷里	기초	李文相	35	0.6	97	94	3	626	268	358	1-1	101	100	4	
699	野村里	기초	金泰洙	49	0.7	54	52	2	305	109	197	1-1	122	12	1	梧谷國校
700	谷村里	자조	金基謹	40	0.7	91	90	1	665	274	391	1-1	216	67	2	
701	石田里	자조	高相奉	46	0.9	107	91	16	677	222	455	1-1	148	141	5	漆原支署
702	楊亭里	자립	裵鍾錫	48	0.7	88	83	2	545	195	350	1-1	176	58	5	漆原面
703	舞泝里	자조	周永大	30	0.8	74	68	6	439	166	273	1-1	66	146	3	山亭國校
704	敦洑里	기초	韓熙秀	50	0.7	49	44	5	337	108	229	1-1	24	105	1	
705	山亭里	기초	李允秀	43	0.9	47	43	4	323	106	217	1-1	19	111	2	
計	19				0.8	1,671	1,333	338	9,765	3,588	6,177		1,774	2,458	47	

Figure 1-3| Map Legend from New Village Comprehensive Survey

Province boundary	道界		市郡道	County road
County boundary	郡界		名勝古蹟	National heritage
Township boundary	面界		公共機關	Public office
Village boundary	里界		學校	School
Mountain	山		里所在地	Village office
River	河川		面所在地里	Township office
Railroad	鐵道		電氣	Electricity access
Highway	高速道路		電話	Phone access
National road	國道		簡易給水(上水道)	Tap water access
Regional road	地方道		自動車	Motor vehicle access

Table 1-1| Summary Statistics

	Mean	SD	Min	Max
Dependent Variable				
	0.36	0.48	0	1
Male Leader Characteristics				
Elementary school dummy	0.48	0.50	0	1
Junior high school dummy	0.28	0.45	0	1
High school dummy	0.20	0.40	0	1
College dummy	0.03	0.16	0	1
Leader age	40.7	8.1	18	72
Female Leader Characteristics				
Elementary school dummy	0.80	0.40	0	1
Junior high school dummy	0.14	0.35	0	1
High school dummy	0.04	0.20	0	1
College dummy	0.002	0.05	0	1
Leader age	38.5	7.1	17	72
Village Characteristics				
Number of households	85.0	0.82	0	860
Population	489.1	358.5	0	5,051
Population per household	5.83	0.82	0.64	32.67
Fraction of agricultural households	0.86	0.18	0	1
Fraction of population with age below 14	0.40	0.07	0.04	1
Average cultivated area per household (ha)	0.73	0.31	0.02	6.2
Fraction of modern roofs	0.39	0.22	0	1
Number of hamlets	1.76	1.38	1	51
Distance from township office (km)	4.03	3.64	0	61
River passes through village (dummy)	0.37	0.48	0	1
Railroad passes through village (dummy)	0.05	0.21	0	1
Highway passes through village (dummy)	0.03	0.16	0	1
National road passes through village (dummy)	0.16	0.37	0	1
Regional road passes through village (dummy)	0.26	0.44	0	1
County road passes through village (dummy)	0.15	0.36	0	1
Historical monuments in village (dummy)	0.02	0.14	0	1
Public offices in village (dummy)	0.06	0.23	0	1
School in village (dummy)	0.16	0.37	0	1
Village office in village (dummy)	0.92	0.27	0	1
Township office in village (dummy)	0.05	0.21	0	1
Village with electricity access (dummy)	0.37	0.48	0	1
Village with landline phone access (dummy)	0.16	0.36	0	1
Village with tap water supply (dummy)	0.11	0.31	0	1
Village where cars can enter (dummy)	0.50	0.50	0	1
Village with high mountain (dummy)	0.08	0.28	0	1
Village with main occupation is agriculture (dummy)	0.82	0.39	0	1
Observations	3,566			

Note: The unit of observation is village. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise. Junior high school dummy equals one if the village male leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined.

Results

We found that there was a robust relationship between educational attainment of village leaders and the improvements of public goods in a variety of empirical specifications. Furthermore, we show that education levels higher than elementary schooling of both male and female leaders matter.

Table 1-1 shows the main regression results on the relationship between male leaders' education level and the improvement in public goods. Here the dummies are used to indicate the levels of education, junior high school, high school, and college degree dummies. The reference group is the leaders with just an elementary school degree which is omitted. Therefore, the coefficients of these dummies are interpreted as the increase in the probability of improvement of Saemaul grades relative to village leaders with elementary school degrees.

The overall results indicate that having more than elementary school degrees of a male village leader is associated with about 4-5% increase in probability of improving Saemaul grades in two years. Column (1) includes these educational level dummies without any control variables. Column (2) includes village-level control variables, which were introduced in summary statistics (Table 1-1). These includes the leader's age (and its square term), village demographic variables such as the number of village households (and its square term), share of agricultural households, the share of population below age 14, and a proxy for income such as the average cultivated area per household, access to transportation infrastructure, such as whether different classes of roads passes through the village or the existence of government-provided public goods such as electricity or tap water access. Column (3) includes township fixed effects without any other control variables. Column (4) includes both full controls and township fixed effects. This is the most preferred specification. In column (5), instead of having many education dummies, it includes a single dummy, "above elementary school dummy" which equals one if the village leader has more than elementary school education and zero otherwise.

In column (1), it shows that having a junior high school degree increases the chance of Samaul grade improvement about 4.4%, compared with elementary school educated village leaders. The coefficient is statistically significant at the 5% level. The magnitude is also strong, given that the mean of the outcome variable is 36%. Having high school

degree had similar effects of 4.4%. Having a college degree has a higher magnitude of 5%, but it was not statistically significant. In other columns, the magnitude is highly consistent and robust. The coefficients do not vary much regardless of addition of controls and fixed effects. F-test of the equality of the coefficients of high school dummy and junior high school dummy shows that we cannot reject that these two estimates are equal (p-value of 0.88).

For female village leaders, we also observed a positive association between higher education attainment of leaders and the Saemaul grade improvements. The specifications are identical to the empirical analysis of male leaders. The difference is using female leaders' education levels instead of male leaders' levels. Similar to the results of male leaders, F-test of the equality of the coefficients of high school dummy and junior high school dummy shows that we cannot reject that these two estimates are equal (p-value of 0.87). In our preferred specification (column 4), we document that having more than elementary school education of female leaders increase the chance of the improvement of Saemaul grades by 6% compared to elementary school educated village leaders. We have similar conclusion drawn from the results of column (5) which uses "above elementary school dummy." These interpretation applies to village leaders with junior high school or high school degrees.

Since there are very few leaders with college degrees (0.2%), The statistically insignificant 19% increase of college-educated leaders are not meaningful. Another reservation, compared to results of male leaders, is that the coefficients varies depending on the specifications. For example, junior high school dummy has the coefficient of 0.018 when no controls are included. The magnitude was not statistically significant. When full controls are used, the coefficient becomes 0.044, and it became statistically significant at 5% level. When only country fixed effects are used, the coefficient becomes 0.036 and not statistically significant. When fully controlled and township fixed effects are added, the coefficient becomes 0.6. These results indicate that there might be stronger selection of highly educated female leaders compared to male leaders.

We also include education dummies of both male and female leaders (Table A2). In the preferred specifications with full controls, the results were broadly similar compared to separate regression results in Table 1-1 and Table 1-2. Both relatively high levels of the

male and the female leader mattered. And the magnitude of the education level of female leaders were bigger.

While we extensively control for village characteristics, there is still concern that the selection of village leaders may be influenced by unobserved village level characteristics such as village institutions, decision-making process, overall education level, social capital, etc. Using the panel structure of Village Leader Dataset, we use village fixed effects as a robustness check to validate whether the association between educational attainment of leaders and the improvement of public goods are driven by some unobserved third factors.

Table 1-3 and 1-4 show these results for male leaders and female leaders, respectively. In Table 1-3, column (1) replicates the results with the most preferred specification shown in column (4) of Table 1-1. Similarly, column (3) replicates results from column (5) of Table 1-1 for the purpose of comparisons. Column (2) shows the results using village fixed effects. There are two years of observations for each village in this panel, 1972 and 1974. While the coefficient loses statistical significance, the coefficient still retains the magnitude of about 0.04. Results were similar when "above elementary school dummy" were used instead. Compared to the main regression coefficient of 0.049, the coefficient from panel analysis shows 0.043. Similarly, for female leaders, the coefficients using panel data has slightly reduced magnitude of around 0.055 instead of around 0.06 for junior high school dummy and "above elementary school dummy." Table A3 in the Appendix shows results when education dummies of both male and female leaders are added. The coefficients of education dummies are similar those using single-gender regressions.

In the traditional Saemaul literature, the role of male leaders was typically emphasized whereas the roles of female leaders were less discussed. Han (2012) describes the role of female leaders in eradicating gambling, and liquor shops, and encouragement of saving. All these are related to postponing immediate consumption and investing in future which may provide crucial village funds for village projects. However, we still have limited historical documents to shed more light on why female leaders mattered. The results of this paper may be an initial step to uncover the roles of female leaders further.

Moreover, even for male leaders, we do not have clear evidence on the potential mechanisms through which education may play a role in successful village projects. Is this

through better coordination with government officials? Is it because village leaders with better education have more technical knowledge on modern agriculture? Or is that the average community members had more respect for highly educated leaders and follow them given the strong influence of Confucianism which emphasizes education? We do not have sufficient knowledge on these either.

Table 1-1| Main Regression Results (male leader)

Variable	Dependent variable: (mean: 0.36, SD: 0.48)				
	(1)	(2)	(3)	(4)	(5)
Junior High School Dummy	0.044**	0.043**	0.046**	0.048**	
	(0.019)	(0.020)	(0.021)	(0.023)	
High School Dummy	0.044**	0.050**	0.048**	0.051*	
	(0.022)	(0.024)	(0.024)	(0.027)	
College Dummy	0.050	0.055	0.050	0.056	
	(0.051)	(0.053)	(0.049)	(0.053)	
Above Elementary School Dummy					0.049**
					(0.021)
Full Controls	N	Y	N	Y	Y
Township FE	N	N	Y	Y	Y
Number of Townships			217	217	217
Observations	3,566	3,543	3,566	3,543	3,543
R2	0.002	0.05	0.07	0.12	0.12

Note: Robust standard errors in parentheses. Standard errors in Column (3)-(5) are clustered at the township level. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise. Junior high school dummy equals one if the village male leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined. Above elementary school dummy equals one if the village male leader's educational attainment is above elementary school. In all specifications, the reference group is the villages whose male leaders have an elementary school degree.
* p<0.1, ** p<0.05, *** p<0.01

Table 1-2| Main Regression Results (female leader)

Variable	Dependent variable: (mean: 0.36, SD: 0.48)				
	(1)	(2)	(3)	(4)	(5)
Junior High School Dummy	0.018	0.044*	0.036	0.060**	
	(0.023)	(0.025)	(0.027)	(0.030)	
High School Dummy	0.039	0.091**	0.024	0.067*	
	(0.041)	(0.043)	(0.038)	(0.039)	
College Dummy	0.019	0.092	0.140	0.193	
	(0.171)	(0.156)	(0.157)	(0.121)	
Above Elementary School Dummy					0.062**
					(0.026)
Full Controls	N	Y	N	Y	Y
Township FE	N	N	Y	Y	Y
Number of Townships			217	217	217
Observations	3,566	3,546	3,566	3,546	3,546
R2	0.00	0.05	0.07	0.11	0.11

Note: Robust standard errors in parentheses. Standard errors in Column (3)-(5) are clustered at the township level. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise. Junior high school dummy equals one if the village female leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined. Above elementary school dummy equals one if the village female leader's educational attainment is above elementary school. In all specifications, the reference group is the villages whose female leaders have an elementary school degree. * p<0.1, ** p<0.05, *** p<0.01

Table 1-3| Robustness Checks (male leader)

Variable	Dependent variable: (mean: 0.36, SD: 0.48)			
	(1)	(2)	(3)	(4)
Junior High School Dummy	0.048**	0.037		
	(0.023)	(0.029)		
High School Dummy	0.051*	0.044		
	(0.027)	(0.039)		
College Dummy	0.056	0.211**		
	(0.053)	(0.107)		
Above Elementary School Dummy			0.049**	0.043
			(0.021)	(0.027)
Full Controls	Y		Y	
Township FE	Y		Y	
Number of Townships	217		217	
Village FE	N	Y		Y
Observations	3,546	7,145	3,543	7,145
R2	0.11	0.13	0.12	0.13

Note: Robust standard errors in parentheses. Standard errors in Column (1) and (3) are clustered at the township level. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise if the observation is in 1972. If the observation is in 1974, variable equals one if a village's Saemaul classification grade improves between 1974 and 1975 and zero otherwise. Junior high school dummy equals one if the village male leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined. Above elementary school dummy equals one if the village male leader's educational attainment is above elementary school. In all specifications, the reference group is the villages whose male leaders have an elementary school degree.
* p<0.1, ** p<0.05, *** p<0.01

Table 1-4| Robustness Checks (female leader)

Variable	Dependent variable: (mean: 0.36, SD: 0.48)			
	(1)	(2)	(3)	(4)
Junior High School Dummy	0.060**	0.055		
	(0.030)	(0.040)		
High School Dummy	0.067*	0.055		
	(0.039)	(0.064)		
College Dummy	0.193	0.084		
	(0.121)	(0.250)		
Above Elementary School Dummy			0.062**	0.055
			(0.026)	(0.037)
Full Controls	Y		Y	
Township FE	Y		Y	
Number of Townships	217		217	
Village FE	N	Y		Y
Observations	3,543	6,703	3,546	6,703
R2	0.12	0.12	0.11	0.12

Note: Robust standard errors in parentheses. Standard errors in Column (1) and (3) are clustered at the township level. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise if the observation is in 1972. If the observation is in 1974, variable equals one if a village's Saemaul classification grade improves between 1974 and 1975 and zero otherwise. Junior high school dummy equals one if the village female leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined. Above elementary school dummy equals one if the village female leader's educational attainment is above elementary school. In all specifications, the reference group is the villages whose female leaders have an elementary school degree.
* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Conclusions

In this study, we analyzed the under-researched question of the role of leaders in the production of public goods. Using New Village Movement during the 1970s as the context of study, we investigated whether the human capital of village leaders play a role in improving village public goods. We find that more education of a village leader is associated with a higher probability that village will improve public goods. The results were robust to a variety of controls and specifications. Education levels of both male and female leaders mattered. The magnitude of the higher education effects for both sexes were substantial and statistically significant.

We acknowledge limitations. There are several aspects of leadership. Intelligence, devotion, motivation, personal charm, charisma, or social networks are other potentially important characteristics. However, we do not have these measures. In fact, these might be characteristics that are hard to measure objectively or accurately. Also, we rely on Saemaul classifications as the measure of public goods. There will be measurement errors which we do not have detailed information. We only have village grades, but not the actual measures of public goods that determines these grades. Finally, even though we extensively control for potential confounding characteristics, both observable and unobservable, concerns still remain on potential factors unaccounted for which may invalidate the results of the study.

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Appendix

Figure A1| Map of South Korea (Kyungsangnam-do highlighted)

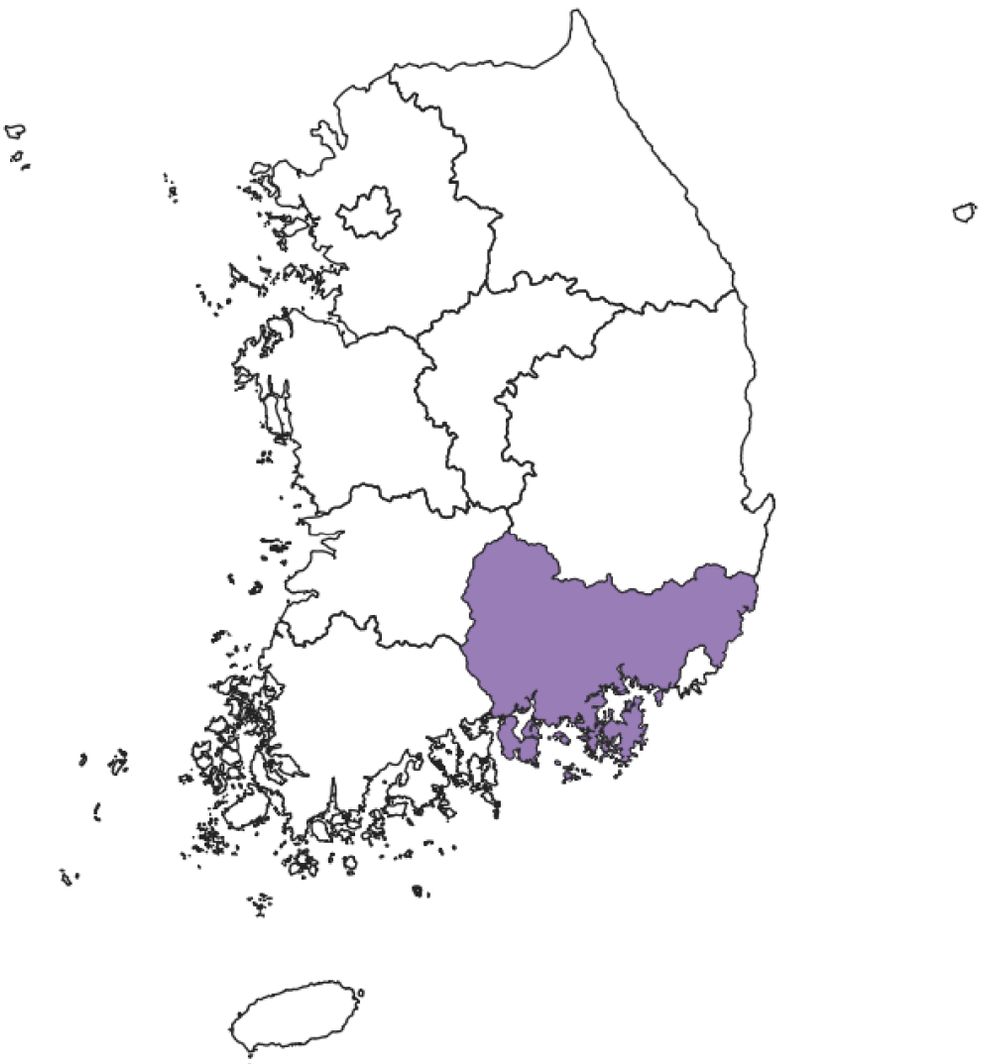

Table A1| Summary Statistics Comparisons across Saemaul Grades

	Mean (all sample)	Mean (A grade)	Mean (B grade)	Mean (C grade)
- Dependent Variable				
	0.36	0	0.13	0.47
- Male Leader Characteristics				
Elementary school dummy	0.48	0.45	0.51	0.47
Junior high school dummy	0.28	0.29	0.25	0.29
High school dummy	0.20	0.21	0.19	0.19
College dummy	0.03	0.02	0.03	0.03
Leader age	40.7	40.0	42.1	40.2
- Female Leader Characteristics				
Elementary school dummy	0.80	0.80	0.78	0.81
Junior high school dummy	0.14	0.14	0.16	0.14
High school dummy	0.04	0.04	0.05	0.04
College dummy	0.002	0.003	0.003	0.002
Leader age	38.5	38.0	38.3	38.6
- Village Characteristics				
Number of households	85.0	83.8	112.0	78.9
Population	489.1	488.8	640.5	454.3
Population per household	5.83	5.87	5.76	5.84
Fraction of agricultural households	0.86	0.88	0.85	0.85
Fraction of population with age below 14	0.40	0.40	0.39	0.40
Average cultivated area per household (ha)	0.73	0.72	0.70	0.74
Fraction of modern roofs	0.39	0.57	0.41	0.36
Number of hamlets	1.76	1.58	1.99	1.73
Distance from township office (km)	4.03	3.58	3.53	4.23
River passes through village (dummy)	0.37	0.39	0.36	0.36
Railroad passes through village (dummy)	0.05	0.04	0.04	0.05
Highway passes through village (dummy)	0.03	0.01	0.02	0.03
National road passes through village (dummy)	0.16	0.19	0.21	0.14
Regional road passes through village (dummy)	0.26	0.30	0.30	0.25
County road passes through village (dummy)	0.15	0.16	0.20	0.14
Historical monuments in village (dummy)	0.02	0.02	0.04	0.02
Public offices in village (dummy)	0.06	0.06	0.09	0.05
School in village (dummy)	0.16	0.18	0.22	0.15
Village office in village (dummy)	0.92	0.92	0.91	0.93
Township office in village (dummy)	0.05	0.06	0.07	0.04
Village with electricity access (dummy)	0.37	0.46	0.47	0.33
Village with landline phone access (dummy)	0.16	0.16	0.20	0.15
Village with tap water supply (dummy)	0.11	0.18	0.14	0.09
Village where cars can enter (dummy)	0.50	0.61	0.60	0.46
Village with high mountain (dummy)	0.08	0.08	0.10	0.08
Village with main occupation is agriculture (dummy)	0.82	0.83	0.79	0.82
Observations	3,566	388	593	2,585

Note: The unit of observation is village. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise. Junior high school dummy equals one if the village male leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined.

Table A2| Main Regression Results (both male and female leader)

Variable	Dependent variable: (mean: 0.36, SD: 0.48)				
	(1)	(2)	(3)	(4)	(5)
Male leader's education					
Junior High School Dummy	0.04**	0.04*	0.04**	0.04*	
	(0.02)	(0.02)	(0.02)	(0.02)	
High School Dummy	0.04*	0.04*	0.04*	0.04	
	(0.02)	(0.02)	(0.02)	(0.03)	
College Dummy	0.05	0.05	0.04	0.03	
	(0.05)	(0.05)	(0.05)	(0.05)	
Above Elementary School Dummy					0.04*
					(0.02)
Female leader's education					
Junior High School Dummy	-0.02	0.02	-0.01	0.05	
	(0.08)	(0.08)	(0.08)	(0.09)	
High School Dummy	0.00	0.05	-0.02	0.06	
	(0.09)	(0.09)	(0.09)	(0.09)	
College Dummy	-0.02	0.03	0.09	0.14	
	(0.19)	(0.18)	(0.18)	(0.15)	
Above Elementary School Dummy					0.06**
					(0.03)
Full Controls	N	Y	N	Y	Y
Township FE	N	N	Y	Y	Y
Number of Townships			217	217	217
Observations	3,566	3,543	3,566	3,541	3,541
R2	0.00	0.05	0.08	0.15	0.15

Note: Robust standard errors in parentheses. Standard errors in Column (3)-(5) are clustered at the township level. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise. Junior high school dummy equals one if the village the leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined. Above elementary school dummy equals one if the village leader's educational attainment is above elementary school. In all specifications, the reference group is the villages whose male leaders have an elementary school degree.
* p<0.1, ** p<0.05, *** p<0.01

Table A3| Robustness Checks (both male and female leader)

Variable	Dependent variable: (mean: 0.36, SD: 0.48)			
	(1)	(2)	(3)	(4)
Male leader's education				
Junior High School Dummy	0.04*	0.03		
	(0.02)	(0.03)		
High School Dummy	0.04	0.02		
	(0.03)	(0.04)		
College Dummy	0.03	0.23**		
	(0.05)	(0.11)		
Above Elementary School Dummy			0.04*	0.03
			(0.02)	(0.03)
Female leader's education				
Junior High School Dummy	0.05	0.09		
	(0.09)	(0.10)		
High School Dummy	0.06	0.08		
	(0.09)	(0.12)		
College Dummy	0.14	0.05		
	(0.15)	(0.31)		
Above Elementary School Dummy			0.06**	0.05
			(0.03)	(0.04)
Full Controls	Y		Y	
Township FE	Y		Y	
Number of Townships	217		217	
Village FE	N	Y		Y
Observations	3,541	6,698	3,541	6,698
R2	0.15	0.12	0.15	0.12

Note: Robust standard errors in parentheses. Standard errors in Column (1) and (3) are clustered at the township level. Data are from the Village Leader List and the New Village Comprehensive Survey. The variable equals one if a village's Saemaul classification grade improves between 1972 and 1974 and zero otherwise if the observation is in 1972. If the observation is in 1974, variable equals one if a village's Saemaul classification grade improves between 1974 and 1975 and zero otherwise. Junior high school dummy equals one if the village leader's final education degree from a junior high school and zero otherwise. High school dummy and college dummy are similarly defined. Above elementary school dummy equals one if the village leader's educational attainment is above elementary school. In all specifications, the reference group is the villages whose female leaders have an elementary school degree.
* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Chapter 2
The Allocation of Government Grants in the Community Development Program[1)]

Introduction

Efficient resource allocation is one of the fundamental issues in public finance. Public resources have tended to be allocated based mainly on three motivations: capitation, economic objectives or political consideration. There are many debates whether the allocation of public resources is motivated by political, social or economic objectives. During the New Deal, for instance, the federal government allocated massive expenditure across states for support of social welfare and other programs. Anderson and Tollison (1991) find that while spending allocations were correlated with indicators of the relative geographic severity of the Depression, indicators of relative political influence also seem to be strongly related spending patterns. Wallis (1996) shows that during the 1930s both political and economic effects were important determinants of grant allocation.

During the Saemaul Undong the government allocated huge grants across villages. According to government documents and anecdotal evidences from Saemaul practitioners, the government selectively provided grants only to the better-performing villages compared to the previous year's performance of Saemaul projects. It would be worthy of compliment considering that political bias and corruption in resources allocation have been rather universal in many developing countries. However, there is no empirical evidence that verifies the performance-based support system. Kim (2015) shows that the government resource allocation in the 1970s was not matched with outcomes of Saemaul projects. Her empirical analysis is limited in that she only matches the number of better-performing villages with the number of awarded villages because of lack of data.

This study is in line with Kim (2015) using augmented dataset and aims to investigate the mechanism that guided the resource allocation across villages in the nation-wide community development program of Saemaul Undong. To identify whether the government distributed grants selectively to better-performing villages or not, simple matching and logit

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1) 이 논문은 김선진(2015)의 박사학위 논문 제 3 장의 내용을 수정 보완한 것이다.

model is employed using the sample data from the Kyungsangnam-do province in the 1970s.

The Saemaul Evaluation System and Government Grants

The government classified rural villages into three categories based on the visible changes of villages after the implementation of Saemaul projects and provided the preferential support to outstanding villages. Eight dimensions of outcome changes were considered to categorize villages as "Basic", "Self-help" and "Self-reliant" villages: village roads, farm roads, river arrangement, irrigation, agricultural machine, cooperative farming, village fund, and household income (See Table 1). In order to correctly assess the outcomes of Saemaul projects, central and local government officials frequently visited rural villages and cross-checked results of the village projects. Goh Kun[2)], Former Prime Minister of Korea, said that "One of the most challenging parts of the Saemaul Undong was evaluating projects performance of rural villages".

The local government provided materials and guidelines for the next step tailored to the development status of villages. For the Basic villages, the lowest level in the development status, the government tried to encourage self-help spirits first among village members with simple projects implementation for the improvement of living condition while focusing on the non-farming income generation activities for the Self-help villages. Once the villages reached the highest development stage, Self-reliant villages, the priority was to improve the quality of life by increasing social and cultural wellbeing of village members.

By early 1973, for example, the government classified villages based on the outcome of Saemaul projects in 1972. For 18,415 Basic villages, easy projects such as farm roads constructions and roof improvement projects were encouraged and supported by the government while for about 13,943 Self-help villages, the government supported high-cost projects such as electrification and local amenities. For 2,307 Self-reliant villages, guidelines and support for doing business for the higher income generation were provided (See Table 2).

He played the key role in planning and designing *Saemaul* projects as Director of the *Saemaul* Bureau during 1971-75.

The government supports are divided by grant support and project support and the government provided total grants of KRW 57,183 million (USD 50 million) for 39,932 outstanding villages from 1972 to 1979. The government supports were classified into Saemaul project grants, outstanding village grants, rivulet arrangement grants, electrification grants, special village grants, success case of village grants and simultaneous support grants from 1974 to 1979 (See Table 3). The type of supports varied by year, however, Saemaul project grants, outstanding village grants, rivulet arrangement grants, and electrification grants were provided in a consistent manner. Saemaul project grants are the greater part of the government support and a fixed amount of KRW one million (USD 1,000) is distributed for a village. The number of grant awarded villages and the amount of the government grants reached its peak in 1976 (See Table 3 and Figure 1).

The share of villages categorized as Self-reliant started to increase rapidly after 1975 while there were no marked geographic differences in the spatial diffusion of Self-reliant villages particularly during the first half of the 1970s (See Figure 2). By 1979, almost every region reached the highest levels of equilibrium in that 97 percent of total villages were classified as Self-reliant villages, compared to only 7 percent in 1972 (See Table 2). Basic villages had disappeared by 1976. At the final stage of Saemaul Undong in the late 1970s, all the rural villages were promoted to Self-help and Self-reliant levels[3] (See Figure 2). Along with the development of village living environment and infrastructure through the implementation of Saemaul projects, rural household income had increased and exceeded that of urban wage rate since 1974 (See Table 4).

Empirical Analysis

Model

To identify whether the government distributed grants selectively to better or high-performing villages which showed the remarkable improvement compared to the previous year, simple data matching with dummy variables and logit estimation methods are employed. First, using the village performance of three stages including Basic, Self-help, and Self-reliant, we create a dummy variable. Villages promoted to the next

3) By 1980, the government set the different criteria to newly categorize villages as “Self-reliant”, “Self-employed”, and “Welfare villages” adapting to changing household income and living environment in rural villages. According to the Ministry of Home Affairs, the Self-reliant village is equipped with improved production infrastructure and living infrastructure while the Self-employed village has capacities to manage the business for themselves. In order to become a Welfare village, the household income should be more than 4 million KRW (1980. 11. 11, Maeil Business Newspaper).

development stage are considered to be one, and zero otherwise. These villages are matched with villages awarded by the government grants. The villages which are supported by grants are categorized as dummy equal to one if a village is awarded by grants. Therefore, there are four possible combinations such as (0,0), (0,1), (1,0), and (1,1), and if the null hypothesis is true, which means, the cases are either (0,0) or (1,1), then the government grants were distributed selectively only to better-performing villages.

As a robustness check, we additionally see whether the community project performance is associated with the government support. We employ the following estimation equation,

$$Grant_i^t = \alpha + \beta Performance_i^{t-1} + \mu x_i' + u_i$$

where , dependent variable, is a binary variable equal to unity if a village i was supported by government grant during the year t, and zero otherwise. The explanatory variable of interest is a dummy that shows whether the development level of village is increased or not at the village i at the previous year. That is, we check the change of village level from 1974 to 1975 and see the relation with government grants awarded in 1975. The vector of explanatory variables which show the village characteristics such as ratio of farm households, existence of highway, railway, and river, distance to township office, existence of government offices are controlled.

In defining "better or high-performing villages, two assumptions regarding the Saemaul performance indicators are considered; first, villages which show outstanding changes are promoted by no more than one level in a year. If a village was categorized as a Basic village, the lowest level among three levels, in the year t, it is not possible to directly become a Self-reliant village, the highest level among three, in the year t+1 even though the village shows highly remarkable improvement within one year. Second, development level of villages has never retreated. Once a village becomes the Self-help village, for instance, the village never drops to the level of the Basic village again. Villages move only towards upper levels.

Data

Data are constructed at a village level drawn from the Statistics Year book of Saemaul from 1974-79, Saemaul Chongram, and Saemaul Leader List. Performance indicators of villages are only appeared in Kyungsangnam-do Saemaul Leader List at a village level in 1974 and 1975 while grant-awarded villages are listed in the Statistics Year book of

Kyungsangnam-do from 1974-79. Saemaul Chongram contains village information for all Korean villages in 1972. Since we merged three huge data sets based on Saemaul Chongram we easily matched the name of each village defined as Basic villages, Self-help villages, and Self-reliant villages with the name of villages awarded by government grants by creating dummies.

The sample observations from Kyungsangnam-do are categorized by five groups based on the changes of village grade: no change, +1, +2, -1, and -2 (See Table 5). According to sample observation, the previous assumption 1 & 2 are wrong in that there are 26 villages which are promoted more than 1 as well as the development level of 15 villages are retreated. However, we ignore these cases and consider as "no change". Among 4,293 villages which appear their Saemaul performance grade during 1974-75, only 15.7 percent are promoted. The greater part of rest villages are maintained their grade while only 1 percent of villages are retreated (See Table 6).

According to the sample observation from Saemaul yearbook from 1974 to 1979, the government provided Saemaul grants for 4,484 villages in Kyungsangnam-do (See Table 7). The number of grant awarded villages reached its peak in 1975. 949 villages are awarded in 1975 under the name of "first Saemaul project support (362)", "second Saemaul project support (375)" and "outstanding village (212)".

Result

Among awarded villages, only 9.7 percent of 949 villages are promoted villages. Government grants are allocated to 90.3 percent of total awarded villages although they are not promoted. Among 857 villages which are granted but not promoted, 336 villages have maintain their development level fffffffffffffffffffffas Self-help while 56 villages as Self-reliant from 1974 to 1975. Even though 388 villages of total awarded villages are not observable, 469 villages are still supported by Saemaul grants without better performance result. Furthermore, 2,509 villages are not awarded despite the better result compared to the previous year (See Table 8).

We obtained robust results in two different models. As a robustness check, we estimate government grant model by the OLS and Logit and also control village characteristics as well as township fixed effect. The estimates from both models tell a consistent story in that the signs of the coefficients are the same across models and the same variables are statistically significant in each model (See Table 9). Table 9 presents

that promoted villages are less likely to get the government grants in comparison to the villages not promoted. However, the estimate of Performance is not statistically significant. The marginal effects and average marginal effects are almost identical. Promoted villages are 0.4 percent less likely to be supported by the government grants (See Table 9). Again, the result is not statistically significant.

Conclusion

In spite of the government documents regarding Saemaul Undong and statements from the Saemaul practitioners in the 1970s, in which the government selectively supported villages based on the performance of Saemaul projects, we could not find empirical evidence on it. According to the empirical investigation using the village-level data from Kyungsangnam-do province, it does not seem that the government provided supports only to the better-performing villages compared to the previous year's performance. However, it does not necessarily mean that the government allocated development resources in an egalitarian manner or randomly. It seems that the government did not exclude the villages lagged behind with low performances in the community development program.

The mechanism of the evaluation and rewards system in Saemaul Undong may not be so simple as we have thought to be so far. Thevgvvfre might arise occasions when the government allocated development resources partially taking into account other information and environment such as political situation, financial status of local government, region-specific factor or originally disadvantaged villages.

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Table 1| Criteria for Classification of Villages

Project	Basic	Self-help	Self-reliant
Village roads	Construction of main village roads	Construction of small village roads	-
Farm roads	Completion of main road to village	Completion of small farm roads	-
River arrangement	Reclamation of streams in villages	Reclamation of streams bt villages	Reclamation of surrounding streams
Irrigation rate	70 percent	70 percent	85 percent
Agricultural machine	-	Anti-insect (power-driven)	Threshing, Tiller (power-driven)
Cooperative farming	Cooperative working	Cooperative production	Cooperative production
Village fund	300,000 Won	500,000 Won	1 million Won
Household income	500,000 Won	800,000 Won	1.4 million Won

Source: Author's translation based on 10 Year History of Saemaul Undong by the Ministry of Home Affairs (1980)

Table 2| Village Development Level

Year	Basic village		Self-help village		Self-reliant village		*Saemaul* Villages
	No. of villages	%	No. of villages	%	No. of villages	%	
1972	18,415	53	13,943	40	2,307	7	34,665
1973	10,656	31	19,763	57	4,246	12	34,665
1974	6,165	18	21,500	62	7,000	20	34,665
1975	4,046	11	20,936	60	10,049	29	35,031
1976	302	1	19,049	54	15,680	45	35,031
1977	0	0	11,709	33	23,322	67	35,031
1978	0	0	6,114	18	28,701	82	34,815
1979	0	0	976	3	3,893	97	34,871

Source: 10 Year History of Saemaul Undong by the Ministry of Home Affairs (1980)

Table 3| Types of Government Grants

Year	Category	Grant (KRW 1000)	Total grant (KRW 1000)	No. of awarded villages
1974	1st *Saemaul* project	500 - 1,500	9,118,952	6,364
	2nd *Saemaul* project	1,000		
	Outstanding village			
	Rivulet arrangement	700 - 2,020		
	1st Electrification			
	2nd Electrification			
1975	1st *Saemaul* project (railway)	500	6,961,763	6,266
	1st *Saemaul* project (fishing village)	500		
	2nd *Saemaul* project	1,000		
	Outstanding village			
	Electrification			
1976	1st *Saemaul* project	1,000	11,697,356	8,672
	2nd *Saemaul* project (railway)	500		
	2nd *Saemaul* project (fishing village)	500		
	2nd *Saemaul* project (mining village)	500		
	2nd *Saemaul* project (northern the river Han)			
	Rivulet arrangement	1,000 - 2,000		
	Outstanding village			
	Electrification	488 - 20,069		
1977	Outstanding village	1,500	10,951,500	6,763
	Special training village	1,000		
	Rivulet arrangement	1,000 -3,000		
	Success case of village			
	Simultaneous support	3,000		
	Electrification	125 - 11,310		
1978	Outstanding village	1,500	5,952,000	3,994
	Special training village	1,000		
	Success case of village			
	Simultaneous support	3,000		
1979	Outstanding village	1,500	6,153,000	4,044
	Success case of village			
	Simultaneous support			

Source: Reconstructed based on Saemaul Undong: from the beginning to today by the Ministry of Home Affairs (various volumes)

Table 4| Income between Urban and Rural Area

Year	Urban wage worker (A)	Rural household (B)	B/A (%)
1970	381,240	255,804	67.1
1971	451,920	356,382	78.9
1972	517,440	429,394	83.0
1973	550,200	480,711	87.4
1974	644,520	674,451	104.6
1975	859,320	872,933	101.6
1976	1,151,760	1,156,300	100.4
1977	1,405,080	1,432,800	102.0
1978	1,916,280	1,884,200	98.3

Source: 10 Year History of Saemaul Undong by the Ministry of Home Affairs (1980)

Table 5| Sample Descriptive Statistics on Performance Indicators in Kyungsangnam-do

No.	Grade of 1974	Grade of 1975	grade	No. of Villages	Group	Dummy
1	Basic	Basic	No change	474	1	0
2		Self-help	+1	226	2	1
3		Self-reliant	+2	26	3	1
4	Self-help	Basic	-1	13	4	0
5		Self-help	No change	1,129	1	0
6		Self-reliant	+1	113	2	1
7	Self-reliant	Basic	-2	0	5	0
8		Self-help	-1	2	4	0
9		Self-reliant	No change	297	1	0

Table 6| Changes of Village Performance in Kyungsangnam-do

		Grade of 1975			Total
		Basic	Self-help	Self-reliant	
Grade of 1974	Basic	915	409	49	1,373
	Self-help	39	2,091	216	2,346
	Self-reliant	1	4	569	574
Total		955	2,054	834	4,293

Table 7| Types of Grants in Kyungsangnam-do

Type of grant	1974	1975	1976	1977	1978	1979
1st *Saemaul* project	272	362	17	-	-	-
2nd *Saemaul* project	272	375	426	-	-	-
3rd *Saemaul* project	-	-	85	-	-	-
Outstanding village	2	212	2	495	498	568
Rivulet arrangement	153	-	163	130	-	-
Electrification	96	-	236	-	-	-
Success case of village	-	-	-	2	1	1
Special training village	-	-	-	40	40	-
Simultaneous support	-	-	-	15	14	-
Total	802	949	929	682	553	569

Table 8| Relation between Performance and Grant in Kyungsangnam-do

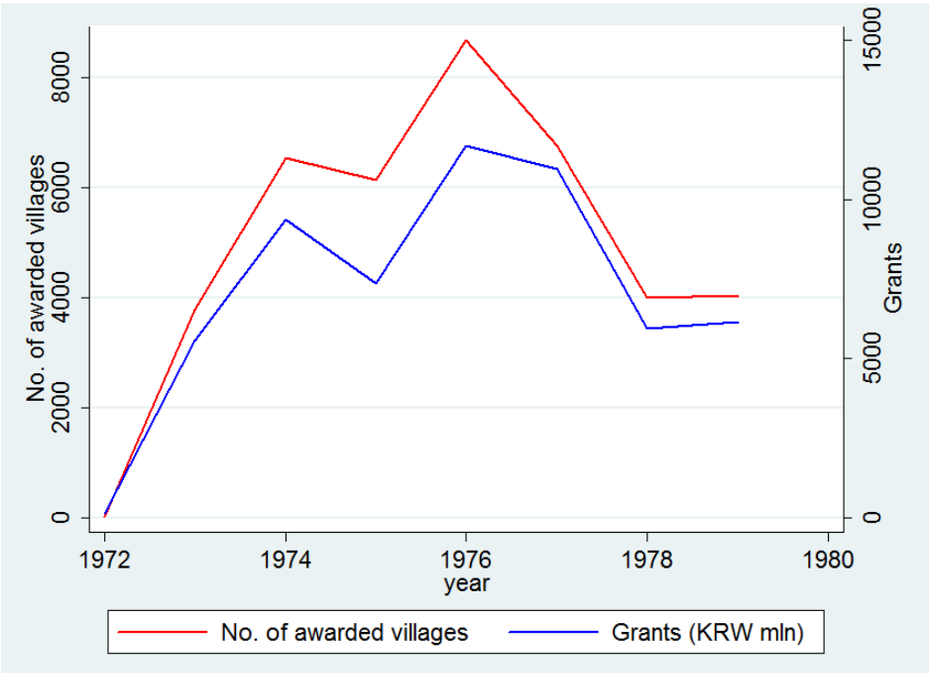
		Grant 1975		Village total
		Awarded	Not awarded	
Grade 1974-75	Increased	92 (9.7%)	2,509	2,601
	Not increased	857 (90.3%)	3,150	4,007
Village total		949 (100%)	5,659	6,608

Table 9| The Estimates and marginal effects of Village Performance on Government Grants

	Dependent variable: Government grant		
	LPM (OLS)	Logit (MLE)	Logit Marginal effects at means
Performance	-0.0024 (0.0144)	-0.0179 (0.129)	-0.0044 (0.0314)
Farm household	0.00065*** (0.0002)	0.0057*** (0.0016)	0.0014 (0.0004)
Highway pass through village	-0.0242 (0.0174)	-0.233 (0.154)	-0.0568 (0.0373)
Railway pass through village	0.210*** (0.0423)	1.279*** (0.212)	0.3117 (0.0568)
River pass through village	-0.0034 (0.0126)	-0.031 (0.126)	-0.0076 (0.0307)
Distance from township office	0.004 (0.0018)	0.0291 (0.017)	0.0071 (0.0042)
Government office (*myeon*)	-0.033 (0.048)	-0.379 (0.438)	-0.0443 (0.0972)
Government office (*ri*)	-0.0149 (0.0413)	-0.182 (0.388)	-0.0925 (0.1112)
constant	0.083 (0.043)		
Township FE	O	O	O
Observations	4293	3910	3910
Log-likelihood value		-1221.36	
Pseudo R^2	0.089	0.019	

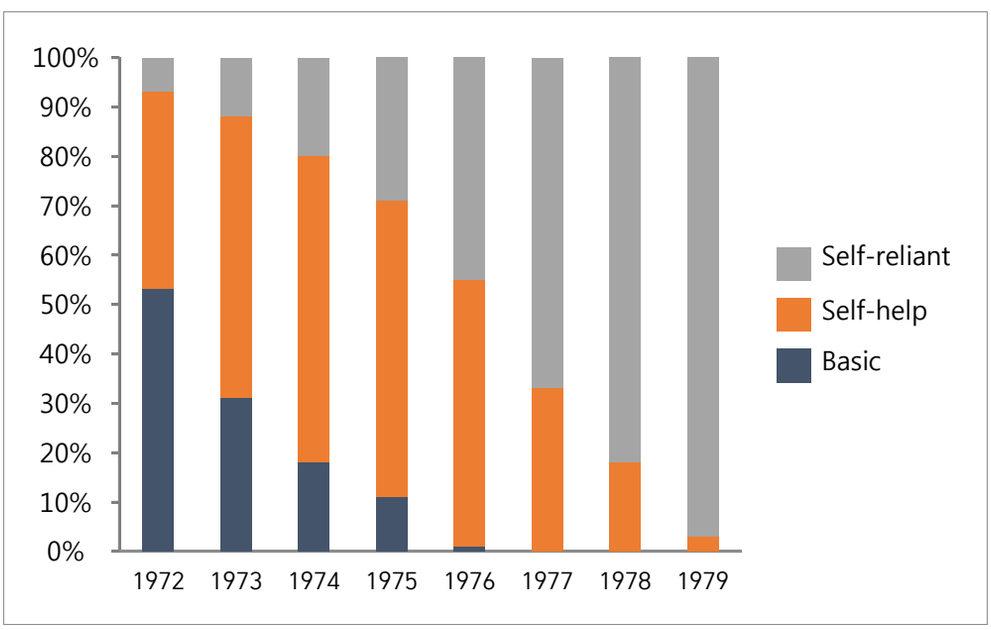
Note: Standard errors in parentheses. The pseudo R-squared for the LPM is just the usual R-squared reported for OLS; for logit, the pseudo R-squared is the measure based on the log-likelihoods.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1| Number of Grant-awarded Villages and Total Grant Amount



Source: Author's calculation based on "Saemaul Undong: from the Beginning to Today" by the Ministry of Home Affairs (various volumes)

Figure 2| Transformation of Village Development Status



Source: "10 Year History of Saemaul Undong" by the Ministry of Home Affairs (1980)

Appendix

Figure A1| Spatial Diffusion of Self-reliant Villages in Kyungsangnam-do