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경제학석사학위논문

Analysis of Economic Growth in South Korea
: Modeling Saemaul Movement in 1970s

한국의 1970년대 새마을운동을 통한 경제성장 분석

2012년 8월

서울대학교 대학원
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이 병 욱

Analysis of Economic Growth in South Korea
: Modeling Saemaul Movement in 1970s

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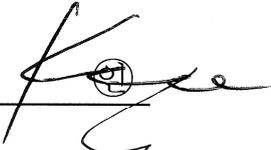
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Abstract

Analysis of Economic Growth in South Korea : Modeling Saemaul Movement in 1970s

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This paper discusses the meanings of Saemaul Movement in 1970s as an economic growth and development model and analyzes the effect of Saemaul Movement as a key factor of rapid growth in South Korea. Many factors are embedded in Saemaul Movement but especially the *Three Spirits, Self-help, Diligence, Cooperation*, are key elements to make the Movement successful. I assumed these spirits as social capital and analyzed how sustainable support from the government could affect to increase the social capitals. I find out that as the portion of government support increases, social capitals are accumulated more and this makes economic growth rate to boost up. It suggests that there are limitations to economic growth just for the physical capital accumulation but with the social capital, one country can get the full benefit of economic growth. This paper proved Saemaul Movement can be applied to other developing countries as an economic growth model.

Keywords : *Saemaul Movement, Social Capital, Economic Growth, Development*

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1 Introduction

As most countries envy, South Korea had experienced rapid economic growth since 1960s. At the early 1960s, the per capita GDP of South Korea was only \$87, but after that, at the middle of 1990s it was almost \$10,000. It ranked 11th in the world and the volume of trade was big enough to become a world top 12th country. During this period, the average annual growth rate of South Korea was 8.7%. Figure 1 shows the annual growth rate of South Korea during 1963 to 1990. This kind of long-term growth rate could hardly find except for a few countries in East-Asia, i.e. Singapore, Taiwan, Hong Kong, and South Korea.

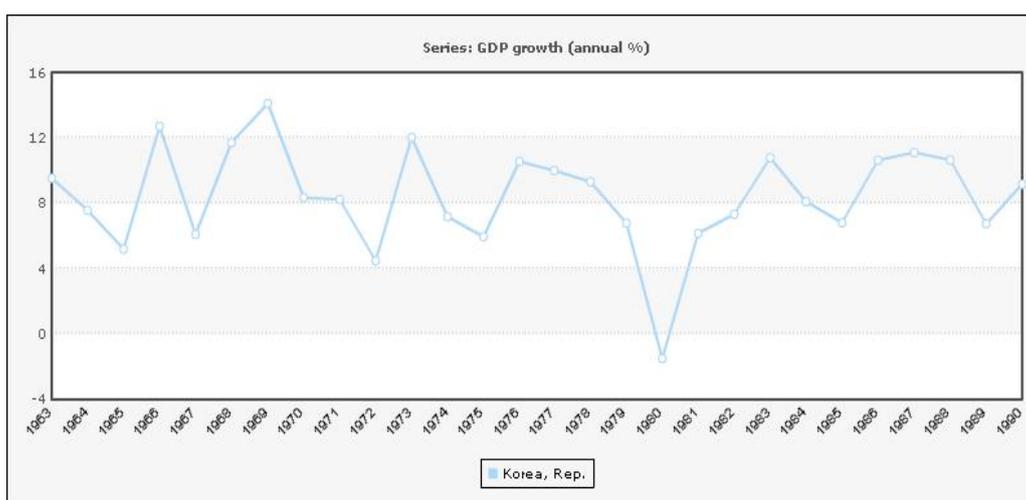


Figure 1. Annual Growth Rate in South Korea (in %)

Source : World Bank Database

Historically, the economic development of South Korea goes back since early sixties. After South Korea was liberated from under Japanese colonial rule for 36 years, soon the Korean War began (1950-1953). As a result of the Korean War, the country was divided into North and South. The most of the natural sources and industrial facilities of Korean Peninsula were concentrated in the

northern part which means that South Korea had difficulties not only by the after-war period but also the lack of resources relative to the northern part so that it has poor condition to growth economically. According to the government, the estimated total damage was about 3 billion dollars. The causes of the Korean War made the problem of food shortages because of its limited production and increase in consumption and its economy was mainly dependent on foreign aid and agricultural production until after 1960. South Korea received about 3 billion dollars of foreign aid from 1945 through 1961.

Nevertheless, with many handicaps to overcome, South Korea went into a long-term economic development plan in 1962. President Park Chung Hee's the Third Republic designed a five-year economic plan, looking forward to modernization in South Korea, to overcome poorness. The government believed that the most important factor of development was in growth of export industries. South Korea's economic growth was largely depending upon expansion of exports and domestic savings.

With the above policy, the Park's government started, so called, "*Saemaul Movement*¹". In the early 1970s when the Saemaul Movement launched, South Korean rural communities trapped in the vicious cycle of poverty with the government's drive for export-led economic growth. At that time, some special programs for rural development were implemented by the government, such as anti-drought measures and special projects for rural income increase. Despite these efforts, "*the barley hump*²" was dominating over most South Korean

¹ *Saemaul Movement* can be translated as "*New Community Movement*" which is to promote local development.

² Rural famine before the barley harvest in the late spring.

farmers³. But during the periods of Saemaul Movement, remarkable changes were shown in South Korea rural communities.

1.1 Purpose of the Paper

This paper basically is to analyze the causality of economic growth in South Korea, especially from 1970 to 1979 when Saemaul Movement was implemented. By doing this, we can share the development experience of countries that have made a successful transition from poverty to an industrialized economy with other developing countries.

As I reviewed the literatures about Saemaul Movement, I found that there were many papers about this Movement in the field of sociology and political science but not much of economic analyses. Especially, there were no theoretical model explanations of Saemaul Movement. Therefore in this paper, I would like to model Saemaul Movement for economic analyses. Started in April. 22, 1970, Saemaul Movement led to rural sector development and raised per capita income level as well. In the model of this paper, I will focus on “Social Capital” as a key factor of Saemaul Movement. The result of the model was that by adding social capital, marginal product of capital and the growth rate of the economy increased more compared with the absence of social capital. This means that core spirit of Saemaul Movement, *Self-help, Diligence, and Cooperation*, which can be translated as social capital, made the Movement successful.

³ See SMU 40th Anniversary International Symposium Keynote Speech.

The remaining of this paper proceeds as follows. In section 2, I will review related literatures about Saemaul Movement and social capital. In section 3, I will explain about Saemaul Movement and look at the success factors of the Movement. Section 4, I will analyze Saemaul Movement Model. Conclusion will follow in the last section.

2 Literature Review

As I reviewed about Saemaul Movement papers, I found that many papers were focusing on the social and political aspects of the Movement. Most of the studies were to find a way to sustain the Movement in the future by analyzing success factors. They developed a method to reap the full benefits to enhance greater outcomes for the communities.

Moore (1985) explains the background and the fundamental spirit of Saemaul Movement by showing the specific characters of South Korean people. He suggests that urban and rural income disparities allow this Movement to start off. He also analyzes about the negative aspect that the government mobilized the rural populace with political power and intention. He highlighted the historical background of South Korea before the implementation of Saemaul Movement and draw attention to political reason and disparity in urban and rural development.

Park (2009) underlines the contributions of narrowing down the developmental gap between urban and rural communities over a decade. Its success can be attributed to its implementation of basic strategies of poverty reduction adapting to and making use of the South Korean contexts, promoting opportunities and facilitating empowerment for rural people. She focuses that the most important lessons are that it devised appropriate strategies and measures reflecting and making use of the specific political, economic and social contexts. She also emphasize that developing countries should carefully study their own situation and devise workable and practical solutions of their own.

Kwon (2010) examines Saemaul Movement with the contention that it can provide a missing link between market- and state-oriented development policy.

He stresses Saemaul Movement contributed to social and economic development not only as a self-help community movement but also as a mechanism of social inclusion. Its success was based on a social structure that was made more open to upward mobility by the land reform in 1950s. He also explains the negative aspect as Moore (1985) that the government mobilized political support for authoritarian President Park.

Claassen (2011) published a paper about applying Saemaul Movement in the Democratic Republic of the Congo. He thinks Saemaul Movement is an appropriate model for DRC because of the similar environment such as lack of abundant natural resources, unity of the community people, and social interaction. This paper summarizes the possibility of rapid rural development within the DRC through a discussion of the success of Saemaul Movement initiative with eradicating rural poverty in South Korea. Recently, parts of the DRC have adopted the initiative and produced some progress.

Shreejana (2011) reviewed Saemaul Movement and abstracts the lesson to developing countries. This paper attempts to portray how South Korean experience of rural transformation be a lesson to other developing countries in order to overcome their rural poverty and concludes that blindly adopting Saemaul Movement model definitely does not produce successful result so developing countries should carefully study their own enabling environment and devise workable and practical solutions of their own.

Focusing on the social capital as a key factor of Saemaul Movement model, many papers were linking between social capital and economic development. Woolcock (1998) argues that bottom-up development depends on intra-community ties labeled “integration” and inter-community networks labeled

“linkages”. This leads to suggestions that regional development should be based on integration within a group and linkages with other groups. Traditional capital has limitations in improving the efficiency of all society whereas social capital can be accumulated on the basis of society. Thus, social capital is the quality of relationships between people or groups. Physical capital contributes to the creation of opportunities, and social capital contributes to the findings of opportunities. In this manner, social capital would enhance the productivity of their society.

Putnam (1993) refers social capital as features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions. Like other forms of capital, social capital is productive and making possible to achieve certain results that would not be attainable in its absence. Robison, Schmid and Siles (2000) define social capital as a sympathy toward another person or group that may produce a potential benefit, advantage, and preferential treatment for another person or group beyond that expected in an exchange relationship. They argue that this definition separates what social capital is sympathy from what social capital does potential benefit and focuses on the transformative capacity of capital residing embodied in human relationships.

Serageldin and Grootaert (2000) summarize various concepts of social capital into three views. The first view includes mostly informal and local horizontal associations, while the second view adds hierarchical associations. The third interpretation builds on the first two, adding formalized national structures such as government and the rule of law. They also notice the three views have several common features i.e. all link the economic, social, and political spheres. They share the belief that social relationships affect and are

affected by economic outcomes. And all focus on relationships among economic agents and the ways in which formal and informal organizations of these agents can improve the efficiency of economic activities. All imply that desirable social relationships and institutions have positive externalities. Since individuals cannot appropriate these externalities, agents tend to under-invest in social capital, creating a role for public support.

So (1999) emphasizes that in the field of economic development studies, it is very important to know what social capital can do with practical issues, because it can help to bridge the public good or benefits and public costs. Thus social capital may be defined as “the dynamic mechanism involving sympathy or trust among members of a community, by which the ultimate end and means can be jointed, through which the changing process can be shared. Social capital can help residents concerned with regional development to form networks and to participate in the planning process. Social capital can also connect the means to the ultimate end more efficiently with limited resources and change the situation to a better one.

Kim (2006) shows social capital contributes to sustainable development in the process of globalization and regionalization. Social capital raises economic performance through knowledge spillovers, reduction of transaction costs, and favorable condition to innovation and cooperation in the integrated economies. It also contributes to solving problems from globalization through the coordinating function of confident networking. He proved that the increased level of social capital in the integrated economy can improve knowledge externalities. It contributes positively to the total factor productivity and economic growth in the economically integrated region. Therefore high level of social capital strengthens the dynamic effect of economic integration such as economy of scale,

competition, and technology progress.

Following these contexts, this paper will analyze Saemaul Movement model including “social capital” dynamics as the three main spirit of the Movement, *Self-help, Diligence, and Cooperation*. This means that without these social capitals, Saemaul Movement could hardly success. I benchmarked Lucas (1988) model of human capital accumulation and devised a new model for Saemaul Movement.

3 Saemaul Movement : 1970 - 1979

3.1 What is Saemaul Movement⁴?

Until the late 1960s, the South Korean society was uprooted by differences in ideas and ravished by poverty. The per capita GDP at that time was about 87\$, as mentioned earlier. The majority of Korean people did not have enough to eat their daily meals. Situations were worse in the rural areas. Farming houses accounted for 70% of the national population, but most of them could not afford to buy food. Young children had to give hands for farming instead of going to school, and yet, they did not have enough to eat. The gap between urban and rural areas kept broadening, so many people swarmed in cities, and it made the urban area unstable.

South Korea could not expect any progress of the nation. But national resources were not abundant and the government could not take the responsibility of supporting rural communities. The only possible breakthrough was awakening and participation of people. But farmers were tired and exhausted of poverty and alienation, and hardly had any will of reformation. Thus President Park proposed *Saemaul Movement* in rural communities to inspire people and lead them into the progress of rural areas. Basically, *Saemaul Movement* is a movement seeking community development and modernization. Of all things, it is a movement to escape from poverty. This ideal is not limited to individual

⁴ I quoted from the website, www.saemauldb.com. As I mentioned earlier, *Saemaul Movement* was aimed not only at rural development but also at various enlightenment activities implemented in industrial factories, the military and cities. But in this paper, *Saemaul Movement* refers only to the rural development activities and projects from 1970 to 1979 under President Park Chung Hee's regime.

lifestyles and living conditions, but encompasses the whole community.

Under the Saemaul Spirit of ‘*Self-help*⁵’, ‘*Diligence*⁶’, and ‘*Cooperation*⁷’, the absolute poverty rate decreased in 1970 and especially in 1978, when the proportion of rural people in total absolute poverty was less than that of urban people. Table 1 shows change in the poverty rate and the number of people living in poverty. As I quoted from the previous work of Seo (1981)⁸, absolute poverty is defined as a monthly household income which is below 20,000 won for an urban household and 17,000 won for a rural household. Also relative poverty is defined as a household income lower than one third of the average national household income level.

| | 1965 | | | 1970 | | | 1978 | | |
|---|-------|-------|--------|-------|-------|-------|-------|-------|-------|
| | Urban | Rural | Total | Urban | Rural | Total | Urban | Rural | Total |
| Number of people in absolute poverty (thousands) | 4,244 | 7,505 | 11,749 | 2,006 | 5,548 | 7,554 | 2,552 | 1,995 | 4,547 |
| Distribution of people in absolute poverty (percentage) | 36.1 | 63.9 | 100.0 | 26.6 | 73.4 | 100.0 | 56.1 | 43.9 | 100.0 |
| Absolute poverty rate | 54.9 | 35.8 | 40.9 | 16.2 | 27.2 | 23.4 | 13.8 | 10.8 | 12.3 |
| Relative poverty rate | 17.9 | 10.0 | 12.2 | 7.0 | 3.4 | 4.8 | 16.6 | 11.2 | 13.9 |

Table 1. Change in the Poverty rate and the Number of people living in Poverty (Unit : thousands of people, percentage)

Source : Seo (1981), Park (2009)

⁵ The will to independently define one’s fate based on personal efforts, setting the basis of self-control and independence.

⁶ The realization of efforts to make the most of what is available. This entails the development of the society.

⁷ The realization of self expansion that guarantees higher efficiency and development.

⁸ Seo, Sang-Mok (1981), “Definition of Poverty and Time Series Analysis”

The government's materials support for Saemaul Movement projects provided incentives to help rural villagers participate voluntarily in the Movement. Thus it made them put their labor, land and other resources in the joint projects. The government's materials support, when combined with villagers' self-help mobilization of resources, brought about a snowball effect. The movement began first in a limited program of supplying rural communities with construction materials. Under this projects, the government supplied each of 33,000 villages with 335 packs of cement and iron rods (Goh 2010). In 1971, one year after the Movement started, the government support for the 33,000 villages produced an impressive result amounting to three times the support. In the following 1972, the government provided the materials support to only about a half or 16,000 villages, which were evaluated as good performers, out of the initial 33,000 villages. This reflected strict application of a self-help development principle titled "the better village the first support" which was designed to stimulate lagging villages. This approach had a ripple effect of attracting into the movement more than 6,000 villages with their own resources only. During 1970-1979, the total government investment amount was 55.2 billion won and the project performance amount was about 1,99.9 billion won.

Saemaul Movement ranged from projects for improvement in physical environment such as farm roads, village entrance roads, sanitary water systems, rural electrification, village halls, etc. From this comprehensive project list, the general assembly of each village was to select and implement the programs most urgent with their own situation. During the initial phase of the Movement, almost all villages put their priority on improving their environment and infrastructure. The results of the infrastructure improvement they completed through their own cooperative efforts had become immediately visible. A total of 85,000 kilometers

of roads were newly built in the neighborhoods of Saemaul villages across the country or 2.6 kilometers of roads per village. Table 2 shows the major achievements of some Saemaul Movement projects in 1970s.

| Project | Unit | Target | Performance | Ratio (Percentage) |
|--|-----------|-----------|-------------|--------------------|
| Village roads expansion | Km | 26,266 | 43,558 | 166 |
| Farm feeder roads construction | Km | 49,167 | 61,797 | 126 |
| Small bridge construction | Ea | 76,749 | 79,516 | 104 |
| Small reservoirs construction | Ea | 10,122 | 10,742 | 106 |
| Traditional small irrigation(channel) | Ea | 22,787 | 28,352 | 124 |
| Traditional small irrigation(raceway) | Km | 4,043 | 4,442 | 109 |
| Traditional small irrigation(embankment) | Km | 17,239 | 9,180 | 53 |
| Village center construction | Ea | 35,608 | 37,012 | 104 |
| Public warehouse construction | Ea | 34,665 | 22,143 | 64 |
| Housing improvement | Ea | 544,000 | 225,000 | 42 |
| Village layout renovation | Ea | – | 2,747 | – |
| Sewage system upgrade/construction | Km | 8,654 | 15,559 | 179 |
| Electricity supply system installation | Household | 2,834,000 | 2,777,500 | 98 |
| Telephone lines | | – | 345,240 | |
| Saemaul factory construction/operation | Ea | 950 | 717 | 75 |
| Reforestation | Ha | 744,354 | 347,153 | 47 |

Table 2. Major achievements of some Saemaul Movement projects in the 1970s

Source : Park (2009)

The strategic materials support by the government provided incentives for rural people's voluntary participation in the Movement, which led to their own investments of labor, land, cash and other resources. This represented a drastic turnabout from the past practices in which they relied entirely on government aid and outside support only. Farmers became more and more activated in carrying out larger-scale Saemaul projects through collective self-help spirit. This was one of the prime reasons for the success of the Movement as model of self-help rural development in the 1970s.

The Saemaul Movement can be qualified to be the South Korean model of an integrated rural development in terms of its input, output and procedure. People's participation and strategic support from the government were the main factors for the Movement's triple success : consciousness reform of the rural populace, improvement of the rural economy, and infrastructural development. The process of the Movement was organized around close interaction and cooperation between government agencies and rural people. The Saemaul Movement was a veritable public and private partnership program. The Movement has brought about three significant results : (1) changes in rural people's way of thinking, (2) dynamics of participatory organization and leadership development, (3) improvement of rural economy and infrastructure.

While all these positive evaluation of Saemaul Movement exist, there are another view of evaluating Saemaul Movement such as Adelman (1997) and Oh (2002). Adelman (1997) sees that economic development in South Korea in 1970s was mainly driven by industrialization, with a smaller contribution by the agricultural sector. He suggests the number of employees in the agricultural sector decreased steadily and Saemaul Movement, which mainly took place in rural agricultural communities, had only limited impact on overall economic development in South Korea (Kwon 2010). Oh (2002) also argues that more people left rural communities to urban cities in the 1970s (3.7%) than in the 1960s (1.3%). These perspectives look Saemaul Movement as unsuccessful movement.

The critics should be followed whenever evaluating Saemaul Movement but they only look at a part of the Movement. It is true that many people moved from rural to urban cities but this phenomenon cannot be a proof of unsuccessful movement. The main point of the Movement is, in spite of such migration to

cities, narrowing gap between urban and rural communities and eradicating poverty. In this point of view, Saemaul Movement was successful with the industrialization went on in 1970s. The industrialization and Saemaul Movement worked as complementary relation of developing South Korea economy.

3.2 What are the Key Factors of Saemaul Movement⁹?

3.2.1 Village as the Strategic Unit of Community Action

The government chose rural village as the strategic unit for rural modernization projects instead of individual farmers. Historically, the South Korean rural villages had organizations for mutual cooperation among farmers called *Du-re* and *Hyang-yak*.¹⁰ In the view of these features, villages were designed for the main engines to push ahead Saemaul projects, and were thus to directly receive the government's materials support.

The government supplied each village with 2,100 bags of cement and 2.6 tons of iron rods for eight years of the Movement. At the market price of 1974, this aid was translated into a cash value of 2,000 US dollars for each village per year, the sum which was equal to 40 US dollars for each household as it was estimated that one village had about 50 households. However if the government had distributed each household the 40 dollars directly, the aid would have yielded no meaningful results. The government already knew about the economy

⁹ This part draws extensively on previous work of Goh (2010).

¹⁰ *Du-re* refers farmers' fraternity for mutual aid, *Hyang-yak* refers autonomous regulatory charter.

of scope. This collective aid could help generate villagers' enthusiasm for self-help and voluntary cooperation.

3.2.2 Integrated Rural Development Program

The movements to modernize South Korean rural communities were attempted earlier in 1960s. However, the initial attempt, called National Reconstruction Movement, which put emphasis upon reforming rural mentality, ended in failure as the government failed to provide economic incentives enough to make the movement took off the ground. Another attempt, called Special Projects for Rural People's Income Increase was made in the latter part of the 1960s. This could not achieved considerable results mainly because it put emphasis on economic aspect only, neglecting the spiritual elements involved. These two failures provided an empirical foundation in which both spiritual and economic aspects could be integrated into Saemaul Movement.

The first objective of Saemaul Movement envisioned to reform rural people's mentality so that they might put into practice the spirit of self-help, diligence and cooperation. The second objective was to introduce changes in community organization toward the more active participation of rural villagers and the fostering of community-based leadership. The third objective was to improve rural infrastructure and to increase economic returns for farmers. In short, the movement stood for a package program to achieve the three objectives in an integrated fashion.

3.2.3 Catalytic and Effective Support

The success of Saemaul Movement was related to some significant socio-economic transformations which had taken place in South Korea. It included land reform, national education and economic development before Saemaul Movement had started. The successful land reform in 1950s provided mental as well as socio-economical foundation in which all people could participate in rural development as equal partners. Most South Korean farmers possessed their own farmland and this led to increased homogeneity among farmers which is an important factor facilitating equitable participation in cooperative programs.

Moreover, the remarkable success of the *First and Second Five-Year Economic Development Plans* implemented from 1962 to 1971 enabled the government to secure resources enough to support Saemaul Movement. Many governments in developing countries face difficulties in pursuing their development policies due to budget constraints. Because of limited financial sources and poverty to overcome, developing countries could not commit themselves to sustainable development programs.

But strong and continuous economic growth in South Korea increased tax revenue, which allowed the government to continuously support and lead the Movement with little budget concern. Sustained economic growth also helped to increase the market for agricultural products by raising the income of urban industrial workers who were major consumers of rural products (Park 2009). Table 3 shows tax revenue and GDP increase in South Korea during 1970s.

| Year | Community Contribution (A) | Government Assistance (B) | Others (C) | Total Contribution (A)+(B)+(C) | Revenue (D) | Government Assistance/ Revenue (B)/(D) | GDP (E) | Community Contribution / GDP (A)/(E) | Government Assistance/ GDP (B)/(E) | Total Contribution / GDP |
|-----------|----------------------------|---------------------------|------------|--------------------------------|-------------|--|---------|--------------------------------------|------------------------------------|--------------------------|
| 1971 | 8 | 4 | 0 | 12 | 1,065 | 0.39% | 3,412 | 0.24% | 0.12% | 0.36% |
| 1972 | 27 | 4 | 2 | 33 | 1,374 | 0.26% | 4,218 | 0.65% | 0.09% | 0.77% |
| 1973 | 77 | 17 | 2 | 96 | 1,376 | 1.24% | 5,454 | 1.41% | 0.31% | 1.76% |
| 1974 | 84 | 31 | 18 | 133 | 1,993 | 1.55% | 7,778 | 1.08% | 0.40% | 1.71% |
| 1975 | 129 | 165 | 2 | 296 | 3,197 | 5.17% | 10,386 | 1.24% | 1.59% | 2.85% |
| 1976 | 150 | 165 | 7 | 323 | 4,392 | 3.76% | 14,305 | 1.05% | 1.15% | 2.26% |
| 1977 | 217 | 181 | 69 | 467 | 4,927 | 3.67% | 18,356 | 1.18% | 0.98% | 2.54% |
| 1978 | 295 | 233 | 106 | 634 | 6,416 | 3.63% | 24,745 | 1.19% | 0.94% | 2.56% |
| 1979 | 328 | 227 | 203 | 758 | 8,541 | 2.66% | 31,732 | 1.03% | 0.71% | 2.39% |
| Total Ave | 1,316 | 1,027 | 409 | 2,751 | 33,281 | 2.48% | 120,385 | 1.01% | 0.70% | 1.91% |

Table 3. Annual Expenditure of Saemaul Movement, Tax Revenue and GDP
(Unit : billions of Korean Won)

Source : Park and Ahn (1999), Park (2009)

The government support was most critical in sparking and stimulating continuously Saemaul Movement. In most other Asian countries, rural development could hardly take place without the financial and technical support from their governments. However, governmental support is likely to make farmers more dependent on outside help. In view of this, the supporting role of the government in Saemaul Movement was designed to motivate farmers' participation in self-help rural development, not to foster their dependency on the government. The government support was provided in a careful, strategic and steady manner for the entire period of the Movement. This intervention was not only increasing in agricultural productivity or launching income generating projects but also improving people's attitudes and encouraging their participation.

The application of the self-help principle resulted in a widening gap between villages, which stimulated lagging villages to double their efforts to

catch up. As the following table shows, the government classified rural villages into three categories on the basis of the degree of development : basic, self-help and self-reliant. This led to increased competition among villages to upgrade themselves.

| year | basic villages (%) | self-help villages (%) | self-reliant villages (%) | total (%) |
|------|--------------------|------------------------|---------------------------|-----------|
| 1972 | 53 | 40 | 7 | 100 |
| 1973 | 31 | 57 | 12 | 100 |
| 1975 | 11 | 60 | 29 | 100 |

Table 4. Distribution of Basic, Self-help, Self-reliant Villages

Source : Goh (2010)

3.2.4 Incentive System and Competition

The selective approach taken by the government acted as strong motivation for the people to be actively involved. Based on performance evaluation, the government disqualified 6,108 villages out of a total of some 30,000 villages from receiving further assistance for the following year. The principle of “more assistance to more successful villages” acted as an effective stimulator, increasing competition among villages and promoting more participation for better achievement (Kim 2000). Later, the government classified all the rural villages into three categories and selectively provided villages with assistance, favoring those advancing towards a “self-sustainable community” while spurring the lagging villages to catch up with others.

4 Modeling Saemaul Movement

4.1 Saemaul Movement Model

Following the concepts of Lucas (1988), I am going to model Saemaul Movement for explaining successful economic development program using “social capital” function, instead of human capital and then proceed. The reason I want to model the Movement is to provide some kind of framework for organizing facts about Saemaul Movement. The production of social capital might be a complement factor to improvements in development as a mechanism to generate long-term growth.

4.1.1 Model Setup

There are L unit of people¹¹ and they all faces homogenous utility function $U(C)$. Preferences over consumption streams are given by

$$\int_0^{\infty} U(C) \cdot e^{-\rho t} dt$$

where aggregate consumption C and the time discount rate ρ are both positive. For the simplicity, assume that $U(C) = \ln C$.

The production function is Cobb-Douglas that exhibits constant returns to K and A , and assumed to depend on the levels of physical capital and on the level of $A(t)$ of the ‘mutual relationship’.

¹¹ In this model, I am going to proceed neglecting the population growth, which is $\dot{L}(t)/L(t) = n$.

$$Y(t) = K(t)^\alpha A(t)^{1-\alpha}$$

Here $A(t)$ is the function of social capital h and defined by $A(t) = uh$ assuming that productivity relates working hours with social capital. Rewriting the Cobb-Douglas production function yields,

$$Y(t) = K(t)^\alpha (uh)^{1-\alpha}$$

where the coefficient u is the portion of social capital devoted to the production of output, Y . Suppose that $0 \leq u \leq 1$, and let $1-u$ be the portion of social capital devoted to the more production of social capital.

Physical capital accumulation dynamics is,

$$\dot{K}(t) = Y(t) - C(t) - \delta K(t) - \tau Y(t)$$

where δ and τ denotes depreciation rate and aggregate taxation rate, respectively.

For simplicity, assume that government tax revenue is equal to the total government budget constraint, which means

$$G = \tau Y$$

And the portion of ϕ of G is devoted to support Saemaul Movement directly¹² (S_1) and $1-\phi$ be the portion of G to support other rural labor productivity¹³

¹² For example, the portion of ϕ of G allocates to the village level community as to enhance their cooperation and diligence by encouraging their mutual relationship.

¹³ The portion of $(1-\phi)$ of G goes to support rural labor productivity increase such as renewing the equipment and so on.

(S_2). The reason why I divided the government support into two sectors is to focus on the effect of supporting Saemaul Movement.

$$\phi \cdot G = \phi \cdot \tau Y = S_1$$

$$(1 - \phi) \cdot G = (1 - \phi) \cdot \tau Y = S_2$$

Then the equation of motion for the social capital stock is defined by

$$\dot{h} = \frac{S_1}{G}(1 - u)h + \frac{S_2}{G}\mu uh = \phi(1 - u)h + (1 - \phi)\mu uh$$

where $\frac{S_1}{G}$ denotes the productivity of social capital by direct support from the government and $\frac{S_2}{G}$ denotes the productivity of social capital by other rural labor sector support. Also u and $1-u$ denotes time of labor and time of making mutual relationships between community people, e.g. community membership meeting, respectively. Through the labor-augmenting work, the more weight is allocated to social capital productivity at the rate of μ . Therefore the more they work, the more social capital will increase at the rate of $(1 - \phi)\mu$.

Now, the village will maximize their utility by optimizing their consumption and capital investment as well. The resource allocation problem faced by this simple economy is to choose a time path of $C(t)$ and $u(t)$. A central construct of optimal allocations that maximize utility is the current-value Hamiltonian H .

$$\text{Max}_{C,u} \int_0^{\infty} U(C) \cdot e^{-\rho t} dt$$

$$\text{s.t. } \dot{K}(t) = Y(t) - C(t) - \delta K(t) - \tau Y(t), \quad \dot{h} = \phi(1-u)h + (1-\phi)\mu uh$$

Using Hamiltonian expression, we have

$$H = \ln C \cdot e^{-\rho t} + \lambda_1[Y(t) - C(t) - \delta K(t) - \tau Y(t)] + \lambda_2[\phi(1-u)h + (1-\phi)\mu uh] \quad (1)$$

which is the sum of current-period utility and the rate of increase of physical capital valued at λ_1 , and the rate of social capital accumulation valued at λ_2 . Here λ_1 and λ_2 are the shadow prices associated with the two state variables, K and h , respectively. An optimal allocation must maximize the expression H at each date. To solve this dynamic optimization problem, it is necessary to follow six *Maximum Principle*¹⁴ conditions :

$$\textcircled{1} \quad \frac{\partial H}{\partial C} : e^{-\rho t} \cdot \frac{1}{C} - \lambda_1 = 0$$

$$\textcircled{2} \quad \frac{\partial H}{\partial u} : (1-\alpha)(1-\tau)K^\alpha u^{-\alpha} h^{1-\alpha} \lambda_1 - (\phi h - (1-\phi)\mu h)\lambda_2 = 0$$

$$\textcircled{3} \quad \frac{\partial H}{\partial K} : [\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta]\lambda_1 = -\dot{\lambda}_1$$

$$\textcircled{4} \quad \frac{\partial H}{\partial h} : (1-\alpha)(1-\tau)K^\alpha u^{1-\alpha} h^{-\alpha} \lambda_1 + [\phi(1-u) + (1-\phi)\mu u]\lambda_2 = -\dot{\lambda}_2$$

$$\textcircled{5} \quad \frac{\partial H}{\partial \lambda_1} : (1-\tau)K^\alpha (uh)^{1-\alpha} - C - \delta K = \dot{K}$$

$$\textcircled{6} \quad \frac{\partial H}{\partial \lambda_2} : \phi(1-u)h + (1-\phi)\mu uh = \dot{h}$$

¹⁴ A property of solutions to certain partial differential equations in Hamiltonian expression. See Chiang and Wainwright Ch.20

In this model, there are two decision variables, consumption $C(t)$, and the time devoted to production, $u(t)$ and these are selected to maximize H . The first-order conditions for above equation (1) is as follows,

$$\frac{\partial H}{\partial C} : e^{-\rho} \cdot \frac{1}{C} = \lambda_1 \quad (2)$$

$$\frac{\partial H}{\partial u} : (1-\alpha)(1-\tau)K^\alpha u^{-\alpha} h^{1-\alpha} \lambda_1 = \lambda_2(\phi h - (1-\phi)\mu h) \quad (3)$$

which is to say that goods must be equally valuable in their two uses, consumption and physical capital accumulation [equation (2)], and time must be equally valuable in its two uses, production and social capital accumulation [equation (3)].

The rates of change of the shadow prices λ_1 and λ_2 of the two kinds of capital are given by

$$\dot{\lambda}_1 = -\frac{\partial H}{\partial K} = -\lambda_1[\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta] \quad (4)$$

$$\dot{\lambda}_2 = -\frac{\partial H}{\partial h} = -(1-\alpha)(1-\tau)K^\alpha u^{1-\alpha} h^{-\alpha} \lambda_1 - \lambda_2[\phi(1-u) + (1-\phi)\mu u] \quad (5)$$

These equations describe the optimal evolution of $K(t)$ and $h(t)$ from any initial mix of these two kinds of capital.

Now using F.O.Cs, let us construct the system's balanced growth path which is the particular solution. From equation (2) and (4), we get

$\dot{\lambda}_1/\lambda_1 = -\dot{C}/C - \rho$, $\dot{\lambda}_1/\lambda_1 = -\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} + \delta$, respectively¹⁵. Combing these two equations, we get

$$\frac{\dot{C}}{C} = \alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta - \rho \quad (6)$$

From the social capital accumulation function, we can derive the growth rate of social capital on a balanced path.

$$\frac{\dot{h}}{h} = \phi(1-u) + (1-\phi)\mu u \quad (7)$$

By the definition of a balanced growth path, the equation of motion for physical capital is

$$\frac{\dot{K}}{K} = (1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta - \frac{C}{K} \quad (8)$$

For the simplicity, assume that $\omega = \frac{K}{h}$, $\eta = \frac{C}{K}$. Rewrite equation (6) and (8) yields,

$$\frac{\dot{C}}{C} = \alpha(1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \rho \quad (9)$$

$$\frac{\dot{K}}{K} = (1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \eta \quad (10)$$

¹⁵ From equation (2), $\dot{\lambda}_1 = \partial\lambda_1/\partial t = -\rho e^{-\rho t} \cdot 1/C(t) + e^{-\rho t} \cdot \{-\dot{C}(t)\}/\{C(t)\}^2$

$$= e^{-\rho t} \cdot 1/C(t)[- \rho - \dot{C}(t)/C(t)] \quad \therefore \dot{\lambda}_1/\lambda_1 = -\rho - \dot{C}/C$$

Then we can get $\frac{\dot{\omega}}{\omega}$ and $\frac{\dot{\eta}}{\eta}$.

$$\frac{\dot{\omega}}{\omega} = \frac{\dot{K}}{K} - \frac{\dot{h}}{h} = (1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \eta - \phi(1-u) - (1-\phi)\mu u \quad (11)$$

$$\frac{\dot{\eta}}{\eta} = \frac{\dot{C}}{C} - \frac{\dot{K}}{K} = -(1-\alpha)(1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \rho + \eta \quad (12)$$

From equation (3), we can derive the ratio of shadow prices of each capitals, $\frac{\lambda_1}{\lambda_2}$.

$$\frac{\lambda_1}{\lambda_2} = \frac{\phi - (1-\phi)\mu}{(1-\alpha)(1-\tau)} \omega^{-\alpha} u^\alpha \quad (13)$$

Turning to the determinants of the rate of growth of social capital, combining equation (13) and (5) and simplifying the equation yields,

$$\begin{aligned} \frac{\dot{\lambda}_2}{\lambda_2} &= -(1-\alpha)(1-\tau)K^\alpha u^{1-\alpha} h^{-\alpha} \cdot \frac{\lambda_1}{\lambda_2} - [\phi(1-u) + (1-\phi)\mu u] \\ &= -(1-\alpha)(1-\tau)\omega^\alpha u^{1-\alpha} \cdot \frac{[\phi - (1-\phi)\mu]}{(1-\alpha)(1-\tau)} \omega^{-\alpha} u^\alpha - [\phi(1-u) + (1-\phi)\mu u] \\ &= -[\phi - (1-\phi)\mu]u - [\phi(1-u) + (1-\phi)\mu u] \\ &\therefore \frac{\dot{\lambda}_2}{\lambda_2} = -\phi \end{aligned} \quad (14)$$

Recall that $\omega = \frac{K}{h}$ represents the ratio of the physical capital stock to the social capital stock. The steady-state equilibrium condition that requires the growth rate of the physical capital stock and the social capital stock to be equal is

satisfied when the ratio ω is at rest : $\frac{\dot{K}}{K} = \frac{\dot{h}}{h} \Rightarrow \frac{\dot{\omega}}{\omega} = 0$.

Also, the steady-state equilibrium features an optimal choice for u , the portion of social capital to be devoted to the production of output. Since this optimal choice implies a particular value for u , u should come to rest at this optimal value, and therefore u should display zero growth in the steady-state equilibrium as well : $\frac{\dot{u}}{u} = 0$.

To solve the growth rate of each shadow price of λ_1 and λ_2 , let us start with equation (3), $(1-\alpha)(1-\tau)K^\alpha u^{-\alpha} h^{1-\alpha} \lambda_1 = \lambda_2[\phi h - (1-\phi)\mu h]$. This equation can be changed into $(1-\alpha)(1-\tau)\omega^\alpha u^{-\alpha} \lambda_1 = \lambda_2[\phi - (1-\phi)\mu]$. By taking logs and time derivatives both sides yields,

$$\alpha \frac{\dot{\omega}}{\omega} - \alpha \frac{\dot{u}}{u} + \frac{\dot{\lambda}_1}{\lambda_1} = \frac{\dot{\lambda}_2}{\lambda_2}$$

Since the steady-state equilibrium features that $\frac{\dot{\omega}}{\omega} = \frac{\dot{u}}{u} = 0$, each shadow price of

physical capital and social capital grows at equal rate : $\frac{\dot{\lambda}_1}{\lambda_1} = \frac{\dot{\lambda}_2}{\lambda_2}$.

From equation (13)¹⁶,

$$\frac{\dot{u}}{u} = \frac{\dot{\omega}}{\omega} + \frac{1}{\alpha} \left(\frac{\dot{\lambda}_1}{\lambda_1} - \frac{\dot{\lambda}_2}{\lambda_2} \right) = [\phi - (1-\phi)\mu]u + (\phi + \delta) \left(\frac{1-\alpha}{\alpha} \right) - \eta \quad (15)$$

And from equation (12), the steady-state equilibrium condition involving equal growth rates in consumption and the physical capital stock is satisfied

when the ratio η is at rest : $\frac{\dot{C}}{C} = \frac{\dot{K}}{K} \Rightarrow \frac{\dot{\eta}}{\eta} = 0$.

In sum, the steady-state equilibrium is characterized by $\frac{\dot{u}}{u} = \frac{\dot{\omega}}{\omega} = \frac{\dot{\eta}}{\eta} = 0$.

But before searching the above equations, note one more implication of steady-state equilibrium in this model that from the production function, $Y = K^\alpha (uh)^{1-\alpha}$.

Taking logs and the time derivatives yields,

$$\frac{\dot{Y}}{Y} = \alpha \cdot \frac{\dot{K}}{K} + (1-\alpha) \cdot \frac{\dot{u}}{u} + (1-\alpha) \cdot \frac{\dot{h}}{h}$$

Since $\frac{\dot{u}}{u} = 0$ from the previous discussion, the preceding result simplifies

as follows in the steady-state equilibrium.

$$\frac{\dot{Y}}{Y} = \alpha \cdot \frac{\dot{K}}{K} + (1-\alpha) \cdot \frac{\dot{h}}{h}$$

¹⁶ We can derive equation (15) by $u^\alpha = \frac{(1-\alpha)(1-\tau)}{\phi - (1-\phi)\mu} \omega^\alpha \frac{\lambda_1}{\lambda_2} \rightarrow u = \left(\frac{(1-\alpha)(1-\tau)}{\phi - (1-\phi)\mu} \right)^{\frac{1}{\alpha}} \omega \left(\frac{\lambda_1}{\lambda_2} \right)^{\frac{1}{\alpha}}$

$$\rightarrow \frac{\dot{u}}{u} = \frac{\dot{\omega}}{\omega} + \frac{1}{\alpha} \left(\frac{\dot{\lambda}_1}{\lambda_1} - \frac{\dot{\lambda}_2}{\lambda_2} \right)$$

And since $\frac{\dot{K}}{K} = \frac{\dot{h}}{h}$ in the steady-state equilibrium, $\frac{\dot{Y}}{Y} = \frac{\dot{h}}{h}$. Finally, since the steady-state equilibrium features $\frac{\dot{C}}{C} = \frac{\dot{K}}{K}$ as well, we can fully characterize the steady-state equilibrium as follows.

$$\frac{\dot{Y}}{Y} = \frac{\dot{h}}{h} = \frac{\dot{K}}{K} = \frac{\dot{C}}{C}$$

From equation (11), (12), and (15), intensive variables which is u , ω , η , are constant in the steady-state equilibrium :

$$u^* = \frac{\rho}{\phi - (1 - \phi)\mu} \quad (16)$$

$$\omega^* = \left[\frac{\alpha(1 - \tau)}{\phi + \delta} \right]^{\frac{1}{1 - \alpha}} \cdot \frac{\rho}{\phi - (1 - \phi)\mu} \quad (17)$$

$$\eta^* = (\phi + \delta) \left(\frac{1 - \alpha}{\alpha} \right) + \rho \quad (18)$$

The marginal product of physical capital in the steady-state is as follows¹⁷,

$$MP_K = \frac{\phi + \delta}{1 - \tau} \quad (19)$$

which means that when productivity of social capital ϕ increases, then the

¹⁷ Recall that from equation (4), $-\frac{\dot{\lambda}_1}{\lambda_1} = (1 - \tau)\alpha K^{\alpha-1}(uh)^{1-\alpha} - \delta$ is equal to $-\frac{\dot{\lambda}_2}{\lambda_2} = \phi$. Therefore

$$MP_K = \alpha K^{\alpha-1}(uh)^{1-\alpha} = \frac{\phi + \delta}{1 - \tau}.$$

marginal product of physical capital also increases. As the corresponding steady-state growth rate of Y, C, K, h is same, we can derive the steady-state growth rate of the economy (κ) in equation (20).

$$\kappa = \alpha(1 - \tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \rho = \phi - \rho = \frac{S_1}{G} - \rho \quad (20)$$

When $\phi > \rho$, which means when the productivity rate of social capital is greater than the time preference rate, the economy will grow sustainably. It can be also explained that if the government's tax revenue is higher so that more support could be possible, the economy will grow rapidly. Also when people develop social capital more efficiently, it will give positive externality to the growth rate.

Now, let us prove if there is no support from the government to Saemaul Movement. The production function and physical capital accumulation function are same as previous model setup. The difference is that from social capital dynamics, $\frac{S_1}{G}$ is changed into a positive parameter β which means the government no more subsidizes to encourage Saemaul Movement spirit but only embodied external productivity holds. But still the government continues to support rural labor sector. Therefore we can write the social capital dynamics as follows.

$$\dot{h} = \beta(1 - u)h + (1 - \phi)\mu h$$

where $0 < \beta < 1$. When we follow the same procedure with previous model¹⁸, we can derive the marginal productivity of physical capital as

¹⁸ See Appendix for the proof.

$$MP_{\kappa} = \frac{\beta + \delta}{1 - \tau}$$

and the steady-state growth rate of the economy is

$$\kappa = \beta - \rho$$

4.1.2 Analysis of the Result

As we have the result of economic growth rate in equation (20), social capital works as an engine of economic development. It means that when the government supports Saemaul Movement actively by subsidizing more to increase social capital, it directly connects to economic growth. This social capital is what we call Saemaul Spirit, i.e. *Self-help, Diligence, and Cooperation*. In other words, with these social capitals, productivity of outcomes increases. Intuitively, if the government urges people to renovate the community, it would be impossible to raise the level of society because people do not have incentives to renovate or to maximize their utility. But by the cooperation and self-help spirits, people do what they want and voluntarily work for themselves. This makes things more efficient and profitable.

Actually in Lucas (1988) model, S is a fixed technological parameter which denotes the productivity of human capital. But in this model, ϕ is a portion of government expenditure devoted to support Saemaul Movement and also denotes the productivity of social capital. Therefore if the government puts more weight to support the Movement (ϕ increases), growth rate of the economy will increase. That is these social capitals could be accumulated by sustainable government support. In this manner, it is crucial that the government

must have fully enough budgets. It could be accomplished by industrialization or export-oriented trade policy. With the continuous financial support from the government, people might compete with each other for better results and make members of the community feel more united. This is reason why Saemaul Movement could succeed in South Korea in 1970s.

5 Conclusion

This paper analyzed Saemaul Movement theoretically. As I mentioned earlier, there were few studies about this Movement in the field of economics. It is because due to complexity in modeling Saemaul Movement as an economic theory. Therefore this paper focuses on certain facts that what are the key factors of the Movement. One of the main success factors is raising social capital by supporting the village from the government. If the government could not support the Movement sustainably, the performance of Saemaul Movement would not be successful. The government expenditure came from tax revenue which was increased due to development of industry sector. No concern about budget constraint made the government to fully encourage rural village people. Throughout the theoretical analysis, I proved that if the portion of supporting Saemaul Movement gets larger, the rate of economic growth will increase. The financial support from the government makes incentives to better off within the village level. This makes their social capital to increase. Also the village members cooperate to compete with other villages to get more incentives from the government.

New theoretical framework was established to model Saemaul Movement. By benchmarking Lucas (1988) model, I added social capital dynamics into the model. Also, the productivity of social capital is not a fixed parameter but a function of government expenditure which makes social capital increase more when the government puts more weight to support the Movement. Nevertheless the model here is just a particular version of Saemaul Movement. It only focuses on Saemaul Spirit, which is assumed as social capital. By assuming social capital, the model could explain some parts of Saemaul Movement and only addresses the effect of government support to increase social capital. Of course, more

remains to be done. It remains to be seen what characteristics of a more general model, with more elaborate explanatory variables. Not only social capital dynamics, but also the background of South Korea industrialization environment could be added to explain the success factor of the Movement.

An empirical test of Saemaul Movement also might be meaningful research project. Many developing countries imported our Saemaul Movement model as their priority policy, such as Taiwan, Democratic Republic of the Congo, and other African countries. Therefore if possible, we can easily collect the data to test whether this theoretical model could be applied to explain those countries' economic growth.

Finally, it is my hope that this paper will stimulate additional research about Saemaul Movement in field of economics. Many limitations exist to model Saemaul Movement as economically but this Movement surely could be established as a core growth model. Perfect mixed strategy of top-down approach and bottom-up approach made the Movement to reap the full benefit of economic success.

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7 Appendix

< Solutions to the Model without Government Financial Support >

First, the Hamiltonian expression is

$$H = \ln C \cdot e^{-\rho t} + \lambda_1[Y - C - \delta K - \tau Y] + \lambda_2[\beta(1-u)h + (1-\phi)\mu uh]$$

Then following maximum principles, we have

$$\frac{\partial H}{\partial C} : \frac{1}{C} \cdot e^{-\rho t} = \lambda_1 \quad \rightarrow \quad \dot{\lambda}_1 = \frac{\partial \lambda_1}{\partial t} = -\rho \cdot e^{-\rho t} + e^{-\rho t} \cdot \frac{-\dot{C}}{C^2} = e^{-\rho t} \cdot \frac{1}{C} \left(-\rho - \frac{\dot{C}}{C}\right)$$

$$\frac{\partial H}{\partial u} : (1-\alpha)(1-\tau)K^\alpha u^{-\alpha} h^{1-\alpha} \lambda_1 = \lambda_2[\beta h - (1-\phi)\mu h]$$

$$\dot{\lambda}_1 = -\frac{\partial H}{\partial K} = -[\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta] \cdot \lambda_1$$

$$\therefore \frac{\dot{\lambda}_1}{\lambda_1} = -\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} + \delta$$

$$\dot{\lambda}_2 = -\frac{\partial H}{\partial h} = -[(1-\alpha)(1-\tau)K^\alpha u^{1-\alpha} h^{-\alpha} \lambda_1 + \lambda_2(\beta(1-u) + (1-\phi)\mu u)]$$

From $\frac{\dot{\lambda}_1}{\lambda_1}$,

$$-\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} + \delta = -\frac{\dot{C}}{C} - \rho$$

$$\therefore \frac{\dot{C}}{C} = \alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta - \rho$$

Let $\omega = \frac{K}{h}$, $\eta = \frac{C}{K}$ then $\frac{\dot{C}}{C} = \alpha(1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \rho$.

$$\frac{\dot{h}}{h} = \beta(1-u) + (1-\phi)\mu u$$

$$\frac{\dot{K}}{K} = (1-\tau)K^{\alpha-1}(uh)^{1-\alpha} - \delta - \frac{C}{K} = (1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \eta$$

$$\frac{\dot{\omega}}{\omega} = \frac{\dot{K}}{K} - \frac{\dot{h}}{h} = (1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \eta - \beta(1-u) - (1-\phi)\mu u$$

$$\begin{aligned} \frac{\dot{\eta}}{\eta} &= \frac{\dot{C}}{C} - \frac{\dot{K}}{K} = \alpha(1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \rho - (1-\tau)\omega^{\alpha-1}u^{1-\alpha} + \delta + \eta \\ &= -(1-\alpha)(1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \rho + \eta \end{aligned}$$

From $\frac{\partial H}{\partial u}$, $\frac{\lambda_1}{\lambda_2} = \frac{[\beta h - (1-\phi)\mu h]}{(1-\alpha)(1-\tau)K^\alpha u^{-\alpha} h^{-\alpha}} = \frac{[\beta - (1-\phi)\mu]}{(1-\alpha)(1-\tau)} \omega^{-\alpha} u^\alpha$

From $\dot{\lambda}_2$,

$$\begin{aligned} \frac{\dot{\lambda}_2}{\lambda_2} &= -(1-\alpha)(1-\tau)K^\alpha u^{1-\alpha} h^{-\alpha} \cdot \frac{\lambda_1}{\lambda_2} - [\beta(1-u) + (1-\phi)\mu u] \\ &= -(1-\alpha)(1-\tau)\omega^\alpha u^{1-\alpha} \cdot \frac{[\beta - (1-\phi)\mu]}{(1-\alpha)(1-\tau)} \omega^{-\alpha} u^\alpha - [\beta(1-u) + (1-\phi)\mu u] \\ &= -[\beta - (1-\phi)\mu]u - [\beta(1-u) + (1-\phi)\mu u] \\ &= -\beta \end{aligned}$$

As $\frac{\dot{\lambda}_1}{\lambda_1} = \frac{\dot{\lambda}_2}{\lambda_2}$ in the steady-states,

$$\frac{\dot{\lambda}_1}{\lambda_1} = -\alpha(1-\tau)K^{\alpha-1}(uh)^{1-\alpha} + \delta = -\frac{\dot{C}}{C} - \rho \quad \text{and} \quad \frac{\dot{\lambda}_2}{\lambda_2} = -\beta$$

$$\therefore -\alpha(1-\tau)\omega^{\alpha-1}u^{1-\alpha} + \delta = -\beta \quad \rightarrow \quad (1-\tau)MP_K - \delta = \beta$$

$$\therefore MP_K = \frac{\beta + \delta}{1-\tau}$$

$$\text{Also } \frac{\dot{C}}{C} = \alpha(1-\tau)\omega^{\alpha-1}u^{1-\alpha} - \delta - \rho = \beta - \rho = \kappa$$

국문 초록

한국의 1970년대 새마을운동을 통한 경제성장 분석

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경제학부 경제학 전공

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이 논문에서는 1970년대 한국의 경제성장 및 발전에 있어 새마을운동이 가지는 함의에 대해 논의하고 경제학적 모형을 만들어 분석하였다. 새마을운동이 가지는 여러 가지 내재된 요소 중에서 3대 정신이라고 불리는 자조, 근면, 협동을 사회적 자본(social capital)으로 가정한 후, 정부의 지속적인 재정지원이 이들 사회적 자본 형성에 미치는 영향을 비교 분석하였다. 분석 결과, 정부의 새마을운동에 대한 재정 지원 비율이 높아질수록 사회적 자본이 더 크게 증가되고 그것이 경제성장률을 높이는 것으로 나타났다. 이는 곧 단순히 정부가 물적 자본(physical capital)만을 증대시키는 방법으로는 경제발전이 한계가 있음을 의미하며, 사회적 자본을 함께 증가시킬 때 그 국가의 경제성장 및 발전에 성공적인 결과를 가져온다는 것을 증명한 것이다. 1970년대 한국의 경제성장에 있어 새마을운동이 가지는 의미는 상당했던 결과, 오늘날 많은 개발도상국에서 한국의 발전 경험을 배우고자 한다. 따라서 이 논문은 성공적인 결과를 가져온 새마을운동이 경제학적 분석 모형에서도 동일한 결과를 가져온다는 것을 증명한 것이다.

주요어 : 새마을운동, 사회적 자본, 경제성장, 경제발전

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