

Research Article

The Cyclical Relationship of Growth and Distribution, Social Conflict, and Realization of Social Values

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Abstract

The virtuous and vicious cycle between economic growth and income distribution has been discussed for a long time. Especially, Korea, which has been divided into south and north Korea, has experienced serious ideological conflicts last several decades during the unprecedentedly rapid economic development since 1960s. Barro (2000) and others recently assert the inverted U-shaped hypothesis of Simon Kuznets between the two. This paper suggests the possibility of a ‘U’-shape relationship between growth and distribution is empirically estimated with recent OECD data which means more advanced countries to be represented than before. And a cyclical relationship is also assumed in the long-term changes of the Gini coefficient by income level, because Kuznets’ inverted ‘U’ hypothesis is also presumed to be appropriate in developing or less developed countries. This paper also emphasizes that social conflict between proponents for the two is unavoidable and thus we need a model to maximize national happiness to reduce the conflict by exchanging compensation values between losers and gainers using big data and AI technology. The AI technology seems to take very important role to find such social values in conflicting issues particularly complicated by political ideologies, because politicians have used to distort reasonable resources distribution, shrink growth potentiality and threaten the prosperity of the future generation.

Keywords

Growth and Distribution, Cyclical Relationship, Social Conflicts, Compensation Value, AI Technology

1. Introduction

The problem of distribution will be a phenomenon encountered in all spheres of life, but the inequality will appear more complex and diverse in a growing society. And the state of distribution is generally not recognized as being fair and accepted by someone, so social conflicts may be unavoidable. Economic growth promotes national happiness by increasing present and future national wealth. The development of new knowledge and technology through the free economic activities over the past few centuries has brought about social and cultural development

along with global economic prosperity by constantly creating new products and services and more enriching human life. With economic growth, even the poorest people are living better than the average people of the past. The problem is that although the absolute happiness of the people has increased, there is a class in which the relative happiness can decrease. Individuals’ free activity, despite its advantages, creates social conflicts by creating economic and social vulnerabilities and inferior classes in competitive market. In this process, various social values excluded from

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the market have been lost. This is a continuous study to search for social values as analyzed in previous studies. [8, 9] Thus, national happiness can be increased by restoring lost social values and increasing it.

2. History of Debate About Growth and Distribution

2.1. Theoretical Controversy

The virtuous and vicious cycle between growth and distribution has been discussed for a long time.¹ [6] The hypothesis that growth would also improve distribution has received much support in the process of economic development. Especially in the early stages of economic development, such a claim is persuasive, and Simon Kuznets' hypothesis that there is an inverse U-shaped relationship between the two has long been influential in the economics community. [23]

Social welfare system, a major means of distribution, has been developed and expanded through a high level of growth. We have experienced it has also effectively improved distribution state of fruit of growth in the long-run, and the share of social expenditure among government expenditures has increased. In addition, we have also experience that the share of labor income in national income, which is one of major indicators of distribution, is also possible to increase after achieving growth, and that the share of labor income rise from 30% in the late 1800s to around 60% in the mid-1900s, in advanced countries.²

Even though the hypothesis that the trickle-down effect of growth benefits might decrease in a highly developed economy has become more persuasive. Kuznets' inverted 'U' hypothesis is not automatic, and the hypothesis is correct or possible only when economic growth is accompanied by social efforts to improve distribution. If social effort is not involved or sufficient, Kuznets's hypothesis may be wrong. Such effects, that the industrial revolution raises labor productivity along with new technologies and late comers in the market eventually enjoy the benefits of growth, seem to become smaller as industrial revolution gets into the stage of broadly influencing the entire economy. Despite significantly increased national wealth due to continuous growth, the extreme wealthy and poor under the minimum living continue to coexist. In addition, the social welfare system in the wealthy countries has become very limited in improving distribution problem. Even if the fiscal magnitude of social welfare expenditure or its proportion among national income continues to increase, it does not help much to improve poverty and distribution problems in developed economies.

2.1.1. Microscopic Debate on the Relationship of Growth and Distribution Based on Changes of Individual Behavior

Opinions also differ about the effect of distribution on growth. As for the cases where distribution is conducive to growth, first, improving distribution reduces social conflicts among members of society and restores and maintains the growth engine. When the economic costs of social conflicts such as strikes and slowdowns are significant, distribution policies to resolve conflicts can reduce economic and social costs and restore growth capacity. Second, improvement in distribution eases social conflict by increasing human capital owing to increased education and medical services for the middle and low-income class. Third, there may be cases where the structure of distribution promotes growth. Economic growth of increasing investment in small and medium-sized enterprises will help improve distribution because they used to employ more laborers from the middle and low-income classes.

On the other hand, it has been argued that distributional policies accompany adverse effects on growth by reducing welfare recipients' motivation to work, save and invest, and by dismantling the family structure and increasing dependency on welfare.³

It is uncertain to compare which is more superior between the weakening effect of the social and economic structure due to the decrease in individual economic activity motivation and the strengthening effect by the increase in individual economic activity due to the distribution improvement. Barro empirically analyzes the inverse relationship between distribution and growth. [16] Recently, however, empirical studies have emerged that distributional strengthening is not conducive to growth.⁴

2.1.2. The Macroscopic Analysis on the Relationship According to the Time and Level of Economic and Social Development

First, the development of labor-saving technologies has a great influence on the distribution of growth fruits to workers and middle and low-income classes depending on the stage of economic development. Economic growth is generally a developmental process that expands employment of surplus workers in the labor market and increases labor productivity, so called, a trickle-down effect. It can be considered as an automatic adjustment effect of improvement in the distribution of growth. Kuznets' inverted U-shaped hypothesis is also applied to Korea's early economic development between 1965 and 1975. Since the mid-1970s, when surplus labor exhausted and wages rose rapidly, distribution improved and the overall standard of living of the people also improved significantly.

Second, when the automatic adjustment effect of economic

¹ Bark, Soon il, (2005) pp. 9-30

² Bark Soon il, *ibid*, pp. 14-15.

³ Bark Soon il, *ibid*, p. 22

⁴ Bark Soon il, *ibid*, pp. 18-20.

growth disappears and distribution improvement is slow, policies and institutional responses for improving distribution have been made to improve distribution. In Korea, the introduction of social insurance has expanded since the late 1970s and the social service system was introduced and expanded from the late 1980s to the 1990s,

However, institutional improvements for distribution occur with a time lag after growth, and the lag is not small between the speed of growth and the speed of economic and social institutional improvement. Dissatisfaction with distribution state in the process of growth causes social conflict.⁵

While growth theorists emphasize the effect of economic growth on distribution improvement, the distribution cannot improve only by the natural distribution mechanism of the market and furthermore institutional efforts for distribution also have time lags, thus limitations.

Therefore, the logical argument that there is a relationship between the two is very limited. Rather than claiming that it is an inevitable relationship, it is necessary to further strengthen the virtuous circle relationship between the two through political, economic, and social efforts, and to break the vicious circle relationship.⁶

2.2. History of the Empirical Analysis Controversy

In Korea, Serious debates have been going on over the past twenty years between those who prioritize growth or distribution. In the 1970s, when the relationship between growth and distribution was discussed frequently, a lot of critical studies were made on the results of growth because distribution had deteriorated and became problems after the high growth of developed countries until the 1960s. And empirical analyses were mostly conducted using cross-sectional data. Starting with those influential papers by Kuznets in 1955 and 1963 Kuznets (1955),⁷ [21, 22] many empirical analyses had been followed to support or disprove his 'inverted U' hypothesis. [15]

Among some specific results of these empirical analyzes, Cline (1975), [17] for example, supported the inverted U-shape hypothesis using cross-sectional data from 43 developing countries. According to the analysis, the Gini coefficient which has risen begins to decrease at the peaked level of per capita income, \$924.1.⁸ Paukert, using Gini coefficient data of 56 countries in the 1960s and GDP per capita in 1965, also empirically analyzed the effect on the Gini coefficient by classifying countries with income levels and proved the inverted

U-shaped hypothesis empirically where the Gini value decrease after the peaked PGNP, 501-1000\$.⁹

However, even at that time, the effect of per capita income on changes in the Gini coefficient was estimated to be very small. In the above two analyses, the explanatory power was only 0.12 and 0.22. Accordingly, Adelman and Morris (1973), Kuznets (1966) [23], and Fei and Ranis (1964) also analyzed that the Gini coefficient is affected by the type or level of economic development other than income.¹⁰

Recently, empirical analyses have been conducted using time series data. Barro (2000), asserts, as in Cline's example using the average values of 1965-1975, 1975-85, and 1985-1995,¹¹ the inverted U-shaped hypothesis, because the squared variable of GDP per capita is estimated as a negative sign through a panel analysis.¹² However, Barro acknowledges that this empirical result is inconsistent with the increase in the distribution coefficient in the United States and advanced European countries in the 1980s and 1990s. He interprets the reason as the effect of higher education. Also, in the study of Jaeyoung Moon and Dong Hyun Kim (2022), panel data are used from 1982 to 2019 in 77 countries around the world¹³ and the result similar to Barro's is found to support Kuznets' hypothesis. In addition, there are many analyses that substantiate Kuznets' inverted U hypothesis.

Their empirical analyses seem to be largely influenced by the occurrence of distribution deterioration in the early stage of economic development because their data sets include many less developed countries among 100 countries they used. Kuznets' inverted U-shape hypothesis seems to be very valid in the early stage of economic development, it is also characteristic of economic development at a time when the self-regulation of the market is weak due to large amount of unemployment and distribution-oriented social institutions are immature. However, they cannot explain the possibility that economic growth may have some limit in its contribution to improvement of distribution in the mature stage of economic development such as the rapid development of new technologies and the already matured social distribution system. Since the 1990s, the rapid development of information technology such as AI has reduced the effect of increasing employment and improving distribution by widening the gap between capitalists and workers in income and wages between new and traditional industries, and thus the distribution coefficient may deteriorate despite growth.

⁵ Bark Soon-il, *ibid*, p. 22

⁶ Bark Soon-il, *ibid*, p. 30

⁷ Kuznets (1955) and Kuznets (1963)

⁸ Cline, William R., in G. Field, *Ibid.*, p. 69.

$I = 7.23 + .0258 \text{ PGNP} - .000014 \text{ PGNP}^2$, $R = .12$
(.0096) (.000005)

I is the ratio of the income of the top quartile to the bottom quartile, () is the standard deviation. In the quadratic function, the coefficient value of parameter value, i.e., (-), results in an upper convex parabola.

⁹ Arne Bigsten (1983), pp. 65-69.

¹⁰ *Ibid*, p. 71.

¹¹ Barro (2000) study, 84 countries had at least one Gini coefficient and 68 countries had two or more.

¹² Barro, *ibid*, page 24 (table 6) above., Gini coefficient = $0.132 \log(\text{GDP}) - 0.0083 (\log(\text{GDP})^2) + \text{other variables}$

¹³ the Standardized World Income Database was created using Luxembourg income data and World Bank inequality data.

3. An Empirical Analysis of Long-term and Mid-term U Shaped Relationship in High-income Countries

This empirical analysis depends on per capita income and the Gini coefficient of disposable income as statistical indicators representing growth and distribution. And it is very popular way to study in the analysis of the relationship between two factors. However, both indicators have some limitations to represent distribution and growth. First, as an indicator of growth, per capita income level does not accurately reflect the quality of life, which is the goal of economic growth. Even if the disposable income is the same, the actual standard of living enjoyed by the people is not same due to the difference in the type and level of social security. Second, the fruits of

growth are distributed among different income classes, causing social conflicts, but the Gini coefficient does not accurately represent the problem of such conflicts. GDP per capita increased significantly from the average of 17 comparable countries of \$1400 in 1965 to \$43,468 in 2018, but the Gini coefficient only shrinks from 0.380 to 0.328. In addition, the Gini coefficient of market income is very large compared to the Gini coefficient of disposable income, and also shows smaller change as shown in (Table 1). The market income represents more correctly individual economic activity and result than the disposable income in evaluating distribution effect of economic growth. Moreover, the quantity and quality of human services, such as in health insurance, are not included in the Gini coefficient. The Gini coefficient also shows different characteristics according to development level, geographic location, political system, population size and aging state.

Table 1. Changes in the Average Gini Coefficient of 30 OECD Countries.

	Gini of market income (A)	Gini of disposable income (B)	per capita GDP (\$)	B/A (%)
2005-09		(0.312)	(33,042)	
2010-14	0.476	0.287 (0.325)	(37,762)	60.3
2015-19	0.471	0.306 (0.319)	(39,973)	65.0

Source 1: Korea National Statistics Office, Social Indicators of Korea 2021, 6-11 (international comparison) Gini Coefficient

Note 1: () is the integration of Korea's social indicators 2012, 2016, and 2021, and the Gini coefficients for 2007, 2011, and 2013 are adjusted and supplemented with the data of Table 1. A1.1 in OECD Korea Policy Center (2016), page 55, And, () is data from 37 OECD countries, so there is a difference with the data from 30 countries.

3.1. Empirical Analysis of the Distributional Impact of Growth

In order to empirically analyze the effect of economic growth on distribution, the following estimation formula is formed based on the logic discussed so far.

$G = G$ (GDP per capita, growth rate, Da, Dr, Dn, Dm, Dy, A)

Ds are dummy variables such as, Da; Development stage (developing countries, developed countries), Dr; regions (Northern Europe, Central Europe, Anglo-American, Asia, South America), Dn; population sizes (less than 5 million, 5-10 million, 10-20 million, 20 -50 million people, 50 million-100 million or more than 100 million people), Dm; types of market economy (liberalism, social democracy, mixed), A; elderly population ratio. The Dy, year dummies is introduced to remove characteristics that might exist between the years. But the elderly population ratio is omitted because it is difficult to

obtain the related data.

3.1.1. Result of Empirical Analysis to Verify Kuznets' Inverted U-Shaped Hypothesis Using Long-Term Data

In this empirical study, with the 1965 data of the G. Field study, which is similar to the Kuznets study period, the relationship is estimated, ¹⁴ [19] but his inverted U hypothesis is not supported. There is no significant relationship between GDP per capita and the Gini coefficient as shown in the estimated result in the box.¹⁵

In order to analyze the long-term and include as many countries as possible, the long-run relationship between growth and distribution is empirically analyzed adding OECD countries in 2004 and 2018 to 1965, In the estimation including variables of the stage of development (Da), year (D04, D18), population (Dn), and economic type (Dm), no significant relation-

¹⁴ Gary Field (1973), 1965 data was included.

¹⁵

$$G = .465 - 3.177E-8 (PGDP)^2 + 1.185 E-5 PGDP + 0.027 Dn$$

(19.81) (0.43) (0.15) (0.39) N=54,

$$R = .095,$$

() is the t value

ship was found between the Gini coefficient and GDP per capita. This seems to be the result of eroding the influence of GDP per capita on the Gini coefficient because GDP per capita is highly correlated with the Da and Dm variables, 0.665 and 0.637 respectively. And it also shows a very high correlation of 0.860 between Da and Dm variables. The regression analysis after removing Da and Dm results in significant estimation (t-value 2.69) of the per capita GDP variable. Therefore, in the long run, it is assumed that there will be an inverse relationship between the Gini coefficient and GDP per capita. And, even in a short-term view using only data from 2004 and 2018, it was estimated that as income increases, the value of the Gini coefficient decreases. Both estimations are as in the below box.

$$G = .456 - 1.556E-6 PGDP - 0.039 Dn - 0.062 D04 - 0.047 D18$$

(44.50) (2.69) (1.57) (2.46) (1.54)

N=104, R = .46 for long period

$$G = .395 - 1.676E-6 PGDP - 0.025 Dn + 0.016 D18$$

(24.81) (3.93) (1.13) (1.00)

N=50, R = .40 for short term

Even with a rough interpretation of the real data, the income level rises and the distribution index in the long run, i.e., the Gini coefficient, shows a decrease. Looking at 1965 data, the Gini value was 0.45 at US\$ 621, average GDP per capita of 56 countries, but the Gini value was 0.32 at US\$ 32,658, average GDP per capita in 25 OECD countries in 2004. And it showed 0.324 at \$45,726 in 2018. The same trend could be found when comparing 17 identical countries which appear together in the three different years. The average per capita GDP and Gini coefficient in 1965 of 17 countries were \$1400 and 0.38, but in 2004 they were \$35,250 and 0.333, respectively, and respectively \$43,468 and 0.328 in 2018.

However, Kuznets' 'U'-shaped hypothesis is not substantiated in the analysis using long-term data. Rather, it seemed to be U-shaped, differently from Kuznets' inverted U-shaped hypothesis. As a result of estimating using 104 countries data for three years, including the 1965, the bottom end is estimated as a convex parabola with a Gini coefficient value of 0.270 and per capita income of \$66,900, which can be calculated as in the below box.

$$G = .458 + 4.208E-11 (PGDP)^2 - 5.627 E-6 PGDP - 0.041 Dn$$

(46.96) (3.43) (4.31) (1.74)

+ 0.013 D04 + 0.025 D18

(0.40) (0.68) N=104 R = .515

Note : Parabolic vertex calculation formula; $y = ax^2 + bx + c$, $x = -b/2a$, $y = (4ac - b^2)/4a = c + (1/2a - 1)(b^2/2a)$

This means that although the value of the Gini coefficient decreases with the rise in the income level, it does not improve further below 0.27, indicating the limit of improvement in distribution. And when the income level rises above about \$66,900, the distribution deteriorates.

A 'U'-shaped relationship was estimated to be significant in OECD countries in 2004 and 2018, which are data reflect-

ing recent changes. The vertex of parabola has a Gini coefficient of 0.278 and an income level of \$68,590. The per capita GDP square variable is estimated here as (+), which is statistically significant and is the exact opposite to the result of Barro's estimation as (-) with the data of mid- to long-term after the 1980s. Looking at the difference between the two empirical analyses, both data sets have countries of different development stages. Barro includes 84 countries at various stages of development similar in character to Kuznets' data. However, in the other analysis, the 1965 data includes 57 countries, many of which are countries with low GDP per capita, the data sets of later two periods include only OECD countries, which are mainly high-income countries. This suggests that the relationship between growth and distribution may be different between OECD countries and whole countries.

3.1.2. Empirical Analysis of High-Income Countries Using Recent Data

In order to further analyze the relationship between the two in recent high-income countries, the relationship was estimated using the Gini coefficient and per capita national income data of OECD countries between 2005 and 2019 published by the National Statistical Office of Korea. The results are opposite to Kuznets' inverse 'U' hypothesis, as in the long-term analysis above. In order to avoid the problem of time series data containing a large number of deficient years, it was estimated using the average values for 5-year from 2005. The estimated results are as in the below box when using the average data of 36 OECD countries for 2005-2009, 2010-2014, and 2015-2019.

$$G = .591 + 7.279E-11 (PGDP)^2 - 9.00E-6 (PGDP)$$

(10.77) (3.71) (4.52) (estimation 1)

-.107DL -.027D59 -.020D04

(3.29) (1.49) (1.11)

$R^2 = .265$ N = 108

$$G = .525 + 5.66E-11 (RPGDP)^2 - 7.45E-6 (RPGDP)$$

(10.81) (3.00) (3.83)

-.077 DL -.013D59 -.011D04

(2.51) (.70) (.59)

$R^2 = .225$ N = 108 (estimation 2)

The variable of per capita income squared ((PGDP)²) shows a positive estimate at a statistically significant level, which negates Kuznets' inverted U-shape hypothesis. Similarly, when per capita income divided by the income deflator (2010=100) is used as a variable, real per capita GDP (RPGDP)² is estimated with the same result. ¹⁶ [14]

The two estimation equations mean that the estimated value of the variable of (PGDP) squared is (+) and that it is a 'U'-shaped curve rather than an inverted 'U'. And if you calculate the income level and Gini value at the inflection point with the result of (Estimation 1), the GDP per capita is 61,800 dollars and the Gini coefficient value is 0.313. From here, as income

¹⁶ data is acquired from the National Statistical Office, national statistics portal,

international statistics, by subject, and national accounts

increases, the Gini coefficient value increases. This is similar to the income level of \$66,900 using the result of the estimation formula in (footnote 21). Even though the value of the Gini coefficient at the inflection point increases slightly, it suggests that the Gini coefficient may increase around 0.30 with increases in income. Based on the real income in 2010 standard using (Estimation Equation 2), each is 37,987\$ and 0.383. In other words, if the real income level is close to \$40,000, it means that the Gini coefficient is likely to increase.¹⁷

The reason for the different results of both empirical studies seems to be mainly due to the inclusion of low-income countries and the difference in the analysis period. Therefore, the relationship between income level and distribution may differ according to country data sets and time period. In this respect, even if Kuznets' inverted U-shaped hypothesis has been verified in previous empirical analyses, there is a possibility that distribution may rather deteriorate along with the increasing income level in a society where economic development has been highly achieved to some extent, that is, in the stage of a mature and advanced economic development level. Korea's distribution index also shows the same characteristics. When it was in the early stages of a developing country with per capita GDP of only \$107 in 1965, the Gini coefficient was 0.26.¹⁸ [3, 4] Since then, the distribution has aggravated until 1980s during high economic growth period, and the social need for distribution has increased. The expansion of social systems has improved distribution since the late 1980s in addition to the trick-down effect of growth. But due to the 1997 foreign exchange crisis, development of information industry, polarization of the labor market, population aging, gap widening between low-wage and high-wage labor, and deterioration in the distribution of asset income distribution, the distribution has not improved, but rather is repeating deterioration and improvement.

Looking at the medium-term change between 10 and 20 years using actual statistics from 37 OECD countries, countries with incomes exceeding \$50,000 show a little more increase in the Gini coefficient than countries with incomes between \$40,000 and \$50,000 between 2015 and 2019 compared to the previous five years. In particular, it is mainly found in the Nordic countries of Denmark, Iceland, Luxembourg, Norway, Sweden and Switzerland. In addition, in Canada, Finland, Germany, the Netherlands, and the United Kingdom with income levels of \$40,000 to \$50,000, the Gini coefficient rises when the income increases. Thus, the increase in income has accompanied the 5-year average Gini coefficient increasing in

11 of the top 19 countries. Statistical analysis and interpretation are needed for this.

3.2. Empirical Analysis of the Effect of Distribution Improvement on the Economic Growth

The wages rise due to the increase in demand for intellectual labor in the process of technological innovation and also due to diffusion of intellectual and human service industries. Thus, rising wage will help economic growth in the long run. It will help growth because the economic impact of social and political instability due to deteriorating distribution could be eliminated. On the other hand, it has a negative effect on growth due to welfare dependence in obtaining income without effort of strengthening self-reliance. Therefore, it seems difficult to determine in the long run whether improved distribution would help income growth.

According to Barro's study, the net effect of distribution on the growth rate is econometrically '0', as the positive and negative effects cancel out.¹⁹ But Jeyoung Moon & Dong Heon Kim conducts an empirical analysis that the deterioration in distribution helps growth (income increase), although it is not statistically significant.²⁰ [20] Also, it is estimated in the econometric analysis of this study that a 0.1 point increase in the Gini coefficient raises income growth by about 5.5%.²¹ However, among countries included in the world income data set of this analysis, the general phenomenon of under developed countries with high Gini coefficients and high income growth rates may have had a significant impact on the estimation results. On the other hand, Förster (2016) argues that large income inequality entails low economic growth in the long run.²² [18] His argument fits with some hypotheses that low Gini coefficients lead to higher growth and then higher per capita income.

However, it is difficult to view the econometric results between the two as a causal relationship in the long run. In this sense, it may be unreasonable to interpret the result that low Gini coefficients lead to high growth rates as a causal relationship in econometric analysis. Whatever direction the relationship between the two is, it is a correlation of phenomena rather than a causal relationship, and so many other factors must be considered. Therefore, the effect of distribution on growth does not seem to be clear either theoretically or empirically, because the value of the explanatory variable is very small, and because there are no impact or statistical significance in

¹⁷ Real income of \$38,000 as of 2010 is \$46,056 in ordinary income when the average GDP deflator of 121.2 for 37 countries in 2019 is applied. When the current income is \$46,000, the Gini coefficient of OECD countries (Table 4) does not exceed 0.35, and it is close to 0.30 in advanced countries in the range of \$40,000 to \$50,000, which is very different from the estimated result of (estimation equation 2).

¹⁸ Bark Soon-il, Analysis of Social Welfare Demand of Low-income Classes, Korea Institute of Health and Social Affairs 1991, p. 3 (Table 2), But Gini coefficient was 0.389 in 1980 and 0.336 in 1988.

¹⁹ Barro, *ibid.*, page 16 (Table 4) and description on page 17.

²⁰ Je Young Moon & Dong Heon Kim, *ibid.*, p. 251 (estimation equation 11).

²¹ Growth rate of nominal income per capita

$$= -26.32 + 54.834 G (\text{Gini coefficient}) + .000 (\text{PGNP}) + 1.344 D1014$$

$$(2.22) \quad (2.00) \quad (2.88) \quad (.28)$$

$$N=74 \quad R=.123$$

²² Förster (2016) p. 21. And he argued that a 1-point increase in the Gini coefficient reduces GDP per capita by ~ 0.12 percentage points per year.

the above two analysis. And, as in the analysis of the relationship between income level and Gini coefficient, limitations that may differ by country and time period should be also considered.

A closer look at the actual data on growth and distribution leads to similar results. First, if you look at the average year data of OECD countries from 2015 to 2019, among 19 high-income countries with more than \$ 40,000, there are 11 countries with a Gini coefficient of less than 0.30 and 17 countries with a Gini coefficient of less than 0.35. On the other hand, countries with Gini values of 0.36 or higher are Central and South America, former socialist countries, and Mediterranean countries. From this point of view, the Gini coefficient is low in countries with good economic performance. Therefore, except for the United Kingdom and the United States, high-income countries have a Gini coefficient of less than 0.35, suggesting a high correlation between good distribution and high per capita income levels in the long run. On the other hand, countries emphasizing distribution such as mentioned have low Gini coefficients and low per capita income levels and it implies little sustained effect on growth of the distribution emphasis policies.

Second, looking at the long-term dynamic changes between income growth and improvement in distribution, the Gini coefficient values of the recent 5 years (2015-19) have inverse relationship with per capita income compared to the previous average Gini coefficient in 22 OECD countries out of 37 countries. However, looking at the 19 high-income countries with over \$40,000 as above, there are 11 countries that show a little increased Gini coefficient and also decreased per capita GDP, which is more than half. Among them, there are Switzerland (1st), Norway (2nd), Luxembourg (3rd), Denmark (6th), Sweden (8th), Netherlands (10th), Finland (12th), Germany (13th), Japan (19th), and Italia (21st). Austria (11th) is included with the same coefficient and lower income level. The United States (5th), New Zealand (17th) and Ireland. (7th) are also included in which income levels rise but the Gini coefficients decline, compared to the average of the previous five years (20110-14).

Among the six countries that show the same direction relationship between income growth and changes in the Gini coefficient, there are four countries with decreases in both GDP per capita and the Gini coefficient: Australia (9th), France (18th), Belgium (15th) and Canada (14th). There are two countries, the UK (16th) and Iceland (4th), which have increased in both GDP per capita and Gini coefficient.

However, it is unclear whether the Gini coefficient has a positive effect on income growth, whether it is a causal relationship or simply a correlation.

Third, nevertheless, the most obvious result of the empirical analysis is that in the recent empirical analysis of OECD countries, when the income level increases after 2005, the Gini coefficient initially decreases and increases above a certain level.

That is, in high-income countries, the distribution shows the possibility of deterioration, that is, a 'U' shaped rebound cycle. In addition, in the empirical analysis involving a large number of underdeveloped countries, Kuznets' inverted 'U' hypothesis is found to be statistically significant.

3.3. 'U'-Shaped Relationship and the Possibility of Long-Term L-Shaped Wave in Developed Countries

The possibility of a 'U'-shape relationship between growth and distribution is estimated here with data from OECD countries. And Kuznets' inverted 'U' hypothesis is also presumed to be appropriate in many analyses including those of developing countries. Putting the two sorts of estimation results together, the relationship between the two factors is assumed to differ by income levels, and a cyclical relationship is also assumed in the long-term changes of the Gini coefficient by income level.

The relationship moves in the reverse direction when it reaches a certain limit in either an inverted U shape or a U shape, and the value of the Gini coefficient shows the process of circulation along with the increase in the income levels. Just as Kuznets' 'inverted U' hypothesis means that there is a limit to the deterioration of the Gini coefficient, the 'U-shaped' hypothesis means that there is a limit to the improvement of the Gini coefficient.

First, even if the advantages of economic growth in liberal market are emphasized, the serious deteriorated distribution may become pressure to restrict growth engines and to improve distribution. For example, in the 1965 data, the large Gini coefficient was 0.64 at \$368 per capita GDP in Gabon, 0.62 at \$275 in Colombia and 0.61 at \$237 in Peru, and Tanzania, the lowest per capita GDP country among the 55 countries included in the data was 0.54 at \$61. In other words, a Gini coefficient of 0.6 may be the peak of the maximum distributional deterioration that society could tolerate. The distribution coefficients of North Korea or other socialist countries might be also around that level. Conversely, it is hypothesized that the Gini coefficient would not continue to decrease no matter how much the level of income rises. Even if we admit that there is a somewhat significant inverse relationship between the level of GDP per capita and the distribution index, the distribution seems not to go below the Gini coefficient value of around about 2.7. It looks to begin again to deteriorate when the GDP per capita is in the range of 60,000 to 70,000 dollars. However, the peak level of the Gini coefficient which will reach in high-income countries is expected to be lower than the peak level of the Gini coefficient in the low-income stage, because economic, social and political institutions are expected to prevent further deterioration in distribution in developed countries.²³

²³ And it is also difficult to determine that the Gini coefficient of 2.7 is an appropriate level for the growth and distribution goals that our society should aim at.

Considering the economic and social conditions of these countries, it would not be easy for people even in Nordic Countries to admit that it was a desirable level of

Based on the results of the empirical analysis so far, it can be assumed that there is a different relationship between growth and distribution at each stage of economic development. First, it assumes possibly a cyclical change in the Gini coefficient by stage of economic development, integrating Kuznets' inverted U-shaped hypothesis and the U-shaped hypothesis founded in this analysis. It also assumes that the Gini coefficient circulates between the lowest and highest values of the Gini coefficient that society could tolerate. Second, the values of high Gini coefficients exceeding 0.5 in the early stage of economic development tends to decrease to the level of around 0.3 as the economy has highly developed. From these two findings, the relationship between GDP per capita and the Gini coefficient appears to be an "L"-shaped relationship in the long run, as it shifts from a cycle with large amplitude in the early stages of economic development to a cycle with small amplitude when the income level reaches high levels. Also, in the short to medium term, the value of the Gini coefficient circulates, but when it reaches the stage of high-income countries, it seems to show a wider 'U'-shaped relationship.

In the first stage (rising in the ups and downs cyclical and then descending phase in (Figure 1), the maximum observed value of the Gini coefficient may be around 6, and the lowest observed value is above 2.5, around 2.7. It is the infant and early stage of economic development when Kuznets' inverted U-shaped hypothesis is established. In the 2nd stage (declin-

ing and then rising cycle), it belongs to the stage of the advanced economic and socio-political stage to which the 'U' hypothesis is applied. And in the latter half of this stage, economic, social and political adaptation seems to be constrained, compared with the pace of economic growth. When entering the recirculation stage, the maximum value of the Gini coefficient does not exceed 4.0, and the amplitude of the circular oscillation of the Gini coefficient reduces. In addition, as seen in the United States, Sweden, and Northern Europe, the Gini coefficient is rising again because of the effect of capital-intensive technology growth and insufficient time for individuals and the existing mature economic, social, and political systems to adapt to such economic changes. The limitation of the distribution system in improving and the slow speed of improvement lead to enter the re-rising phase of cycle. However, the value of the Gini coefficient may converge to the level below 4.0 or may choose a path exceeding 4.0. Based on this hypothesis, it is necessary to analyze the relationship between economic growth and distribution according to stages of development.

In the below Figure, A is the stage in early economic development and under development of social and political systems, and the inverse U hypothesis of Kuznets is working. B is the stage in maturing economic development and expanding socio-political systems, and U hypothesis is adequate, C is in mature stage of economic and social development, and constraints of social and political development.

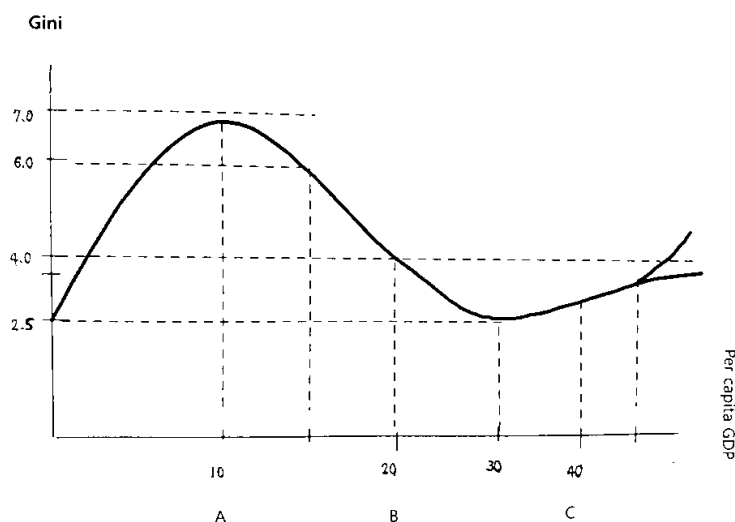


Figure 1. Cyclical Relation Between Changes of Gini Coefficient and GDP Per Capita.

Even if the hypothesis of a long-term cyclical relationship between income level and Gini coefficient is proven, more explanation is needed beyond the simple statistical characteristics.

First, the relationship between income level and Gini coefficient should not be recognized as very important and obsessed with it. The explanation for the change in the Gini coefficient of per capita GDP is only around 20%.²⁴ The reasons

distribution. We have to consider developed countries had a Gini coefficient value of around 0.4, but South Korea had a Gini coefficient of 0.26 with a GDP of 107 dollars per capita in 1965, and India had a Gini coefficient of 0.33 with a GDP of

95 dollars each in Gary Field data.

²⁴ Barro, in page 23, Table 6 and estimation equations 1 and 2 of this study.

might be various. Differences in social, economic, and political factors among countries will have greater impacts on the Gini coefficient even if the income levels are the same. The distribution status also appears to be influenced greatly by ways of managing national economic and social systems, political systems, and by customs of countries, differences in population size and differences in geopolitical location. Therefore, even if a significant relationship between growth and distribution is acknowledged, the relationship between the two should be analyzed in combination with various factors, rather than being considered automatic, inevitable, and absolute.

Second, it is necessary to explain why the distribution worsens again when the per capita income level exceeds around 60,000 dollars, and why the Gini coefficient does not fall below 0.27. For example, looking at the statistics of two years in 2004 and 2018, among the five countries with an ordinary income of over \$60,000 in 2018, the income level increased and the Gini coefficient value also increased. Luxembourg's income rose by over \$40,000 over 14 years. The Gini coefficient also increased from 0.279 to 0.318. And we can find the same phenomena in the United States, Denmark, Switzerland, and Norway. Among the five countries with an income level of \$50,000 in 2018, the Gini coefficient increased in Finland and Sweden with their income increased by more than \$20,000 over 14 years. And the decreases were very small in the other three countries where the Gini coefficient decreased.²⁵

3.4. Economic, Social and Political Relationships by Cyclical Stages of Distribution Coefficients

The Gini coefficient which assumes to have a circular relationship with per capita income, or economic growth as in (Figure 1), is divided into three stages. In the first cycle stage of the rising Gini coefficient, economic development is in infant stage and lacks of social institutions to improve distribution. It is common to move from a pre-modern economy to a modern industrial society, and the economic growth is driven by leading industries and companies. Therefore, the gap of income growth between the pre-modern and the modern industrial sector increases in this stage of increasing Gini value. During the downturn period of later stage of the first Gini coefficient cycle, the labor market reaches full employment, demand for high-skilled and specialized labor increases in new industries, and the major sectors of employment structure shifts to basic living goods and various knowledge service industries such as leisure and culture. Overall, there is an increase in human capital and an increase in the demand for knowledge labor. Thus, the unemployment rate decreases due

to the external expansion of economic development. And social systems for distribution used to be introduced and extended. The economy growth and improved distribution coexist. In the 1950s and 1960s, there were many countries at this stage, and so it seems that an inverted U-shaped analysis, the Kuznets hypothesis, is possible. In the course of Korea's economic development until the mid-1970s, it can be seen that a positive relationship between growth and distribution was dominant due to the rapid absorption of the unemployed.

In the later period of the first cycle stage, the Gini coefficient cycle declining period, the improvement effect of growth to distribution does not continue. It arrives at the stage of economic development accompanied by transformation of socioeconomic structure and development of social system. But new industries that will absorb the unemployed are not developed quickly in general at the right time and at the right scale, resulting in a structural lag between technological development and the creation of new labor demand, and thus structural conflicts between the two cannot be avoided.

At this stage, the level of absolute poverty decreases significantly, but the relative deprivation of the unemployed and low-wage workers becomes larger increasing the level of relative poverty. Moreover, not only the wage gap between workers increases, but also the income gap between workers and capitalists, and between innovative capitalists and traditional capitalists. As the Korean economy passed through the period of high growth until the 1980s, more adoption of capital-intensive technologies increased, and the employment effect rapidly decreased.²⁶ [5] Therefore, Korean society also faced a major turning point in the history of economic and social development.

In the second stage of the Gini coefficient recirculation, economic growth and distribution enter the competition stage in which the cycle of Gini coefficient rises again. Factors that aggravate distribution increase during economic growth because new technologies are innovated rapidly but the adaptability of social institutions relatively weak to such structural economic changes due to the maturation of social systems.

Firstly, the wage gap between knowledge labor and simple labor widens in the labor market due to the lack of time for workers to adapt to industrial restructuring caused by technological innovation and its rapid spread.

Secondly, improvement of the distribution index also faces limitations because social and political institutions have relatively few means to quickly improve the distribution of market income. In countries with more equal distribution, rapid change in technology and industry is exacerbating distribution. From 2010 to 2019, the Gini coefficient value of market income in OECD countries is about 65% of that of disposable income²⁷. The social and political institutions appear to have the effect of improving distribution by an average of 35%.

²⁵ Overall, 17 of the 19 high-income countries show increasing income, and only 7 of these countries show a decrease in the Gini coefficient. As a result, it seems that the 'U' type of empirical results comes out.

²⁶ Bark Sun-il, Ham Si-Chang, Lee Pil-do, et al., Analysis of factors contributing

to poverty in Korea and direction of countermeasures, Korea Institute for Health and Social Affairs, 92-30, 1993, p. 66 (Table 32).

²⁷ Korea Statistical Office Statistics Portal International Statistics - Subject - Data from National Accounts

Eight out of 27 countries have Gini coefficients of disposable income above 50% of the market income Gini coefficient. The distribution of market income is worse in the so-called Nordic and Continental European countries which have developed relatively more egalitarian social systems. Therefore, it seems difficult to create more the means of distribution in their countries. This seems to have made it possible to estimate the 'U'-shaped curve of per capita income and Gini coefficient in developed countries.

On the other hand, in countries with relatively insufficient political and social distribution systems, the ratio of the Gini coefficient value of disposable income to that of market income is 70-80%. Among these countries, the market is working relatively well in reducing Gini coefficient, including Switzerland (0.30), Canada (0.31), Australia (0.33), Korea (0.35), and Israel (0.35) between 2015 and 2019. The UK and USA are near with the values of 0.36 and 0.39, respectively. This means that the income distribution function of the market is working relatively well in these countries. A study analyzing data from 43 countries, including some OECD countries and others, estimates that economic growth rates increase as the gap between market income and disposable income widens.²⁸ [11] In other words, it means that the countries showing high economic growth rates while increasing polarization could grow faster than countries with less possibility of distributional improvement due to economic, social and political system transformation. It means also the economy which allows more flexible management of industries is more superior to raise economic growth. Therefore, the gap between the speed at which economic growth deteriorates distribution and the change that social and political institutions improve distribution is important in determining the level of distribution. And if the mid-0.30s of Gini value is in a good distribution state and economic growth is in more competitive conditions, countries with high economic preferences will be able to choose economic and social systems in this direction. On the other hand, countries emphasizing distribution may take the path of economic and social systems with a far lower ratio of Gini coefficient of disposable income to Gini coefficient of market income. The empirical relationship between growth and distribution can be summarized as a forward, neutral or reverse relationship for each stage of economic development and employment.²⁹ [2] In Korea, social insurance and welfare systems have been introduced and expanded since the mid-1970s, but the problem of poverty and distribution has been distorted to a considerable extent as the social demand for social welfare is riding on the bandwagon of political populism. [10]

Thirdly, in the second stage of cyclical changes of Gini coefficients values, social conflicts are inevitably taking place.

The substitution effect of existing technologies and industries by new ones increases the poverty in already worsened distribution state. Especially, the recent pace of technological development is so rapidly ongoing within one generation, and the number of maladjusted people is greatly increasing. And, changes in social institutions tend to follow slowly and intermittently due to the conflict between the forces that maintain the existing system and the forces that try to change the system. Moreover, even if a reasonable compromise is made to reduce social conflict, the speed of improvement is delayed due to conflicts of interest among political groups. In order to reduce the delay in social change due to conflicts of interest between political groups, it is necessary to transfer various opinions of current and future members of society to rational ones by creating big data and using the comprehensive capabilities of artificial intelligence to persuade the members and legislate scientific conclusions to make politicians follow them.

4. Searching for Economic and Social Exchange Between Growth and Distribution

In a society where altruism is very large, exchange value to solve social conflicts is unnecessary. However, altruism does not appear to be large enough to resolve social conflicts in the real world. In a society dominated by selfishness, conflicts would be inevitable between proponents for both growth and distribution. We must find the perfect harmony between the two conflicting minds. This could be only possible in a society of beautiful empathy where selfishness, the basic nature of life, is harmonious or balances with altruism which requires self-control and concession to opposite members of society. Finding the greatest happiness of the members of society is the most supreme but difficult task of the living world.³⁰ If it is impossible to achieve this, an optimal state must be searched, persuading members, in which it would be a loss to anyone to get out of this state of harmony. Reaching the optimum state of great harmony requires an exchange of economic and social values. It is called here as an exchange of values. This would be an optimal state in which members' happiness is greater than in the optimal state in the commodity market. [7] In the optimal state of value exchange for harmony, the optimal value could be created in the transaction of values excluded from the optimum market price selection. In the optimal state of the market, the equilibrium price of exchange between material supply and demand is achieved, and in the optimal state for harmony, the psychological equilibrium value is achieved. The optimal equilibrium value is the balance of psychological values obtained from the exchange of material and immaterial

²⁸ Yong jung Park (2017), p. ii,

²⁹ Bark Soon-il, Analyzing the Turning Point of the Korean Economy and Policy Direction, Economic Technology Research Center of the Federation of Korean Industries, 1979

³⁰ Of course, this state is not the highest paradise in which all individuals are in the

best state of satisfaction as mentioned in major religions. But if such satisfactions are different from the basic desires of the life world and if they demand giving up of life in the present state, the contradiction of having to give up the natural value of life given to us would occur.

things among traders.

The conflict between growth and distribution becomes larger mainly when it becomes a competitive relationship between the two. The first stage of distributional conflict usually arises from job insecurity. The National Happiness Model needs to find a way to achieve full employment in order to eliminate such unemployment and underemployment. Employment capacity must be expanded by creating social values in order to overcome the limitations of employment capacity in market that only pursues market value. And the exchange value for realizing social value can be found in the potential market value expected in economic transactions under similar conditions. But if such potential market price cannot be found, the exchange value for the transaction of values could be discovered approximately by simulating similar hypothetical market transactions.

Next, in a society with strong ideological tendencies, it is absolutely necessary to discover exchange values to promote national happiness which could remove social cost of conflicts and expand potential values unrealized in markets. The government could take a role to derive the exchange value in a society of conflict where beneficiaries and victims are unclear. But, if such efforts are not effective, it is necessary to discover the exchange value in which both sides of the conflict understand and compromise the position of the other side through fair and rational management of society. Exchange value is difficult to establish in a society that tries to exclude the other party. On the other hand, if even a part of the other person's desire is acknowledged, the exchange of values will begin to be sought.³¹

4.1. Discovery of Exchange Value to Promote National Welfare

First, it is assumed that members of each group are homogeneous groups with similar tendencies to simplify our approach and it is because the conflict between growth and distributional relationships arises between growth-emphasizing groups and distribution-emphasizing groups in a competitive society and the general public tends to have vague sympathy toward two groups. The social conflict between both supporters used to arise from their different interests. When the object of interest is economic value, price works more easily as an exchange value and could compromise the conflicts. But when it is social value, a logical model that exchanges other mutual benefits than price is necessary. The exchange value between growth and distribution could be established when groups mutually acknowledge the importance of the value claimed by the other party. As in (Equation 1), it is assumed that national welfare (NW) consists of welfare caused by growth (G) and that by distribution (D), and that the continuous increase in growth

and continuous improvement in distribution is assumed to reduce marginally the degree of contribution to national welfare. In these assumptions, the expansion should continue to the level where the marginal contributions to national welfare of the two components match in order to achieve maximization of national welfare. In other words, as shown in the equation below, growth must continue to a level where both are balanced, as shown in (1) in Equation 1). However, if only growth is more valuable as in (2) in Equation 1), then only laissez-faire in market is preferred. As shown in (3) in Equation 1), if the marginal contribution of distribution to national welfare is always greater than the marginal contribution of growth, the value of exchange between the two groups does not occur. And distribution-oriented management is needed rather than growth.

$$NW = W(G, D) \quad (1)$$

- 1) if $\partial W/\partial G = \partial W/\partial D$, conflict society
- 2) if $\partial W/\partial G > \partial W/\partial D$, growth priority without consideration of distribution. in other words, $NW = W(G, D(G))$
- 3) if $\partial W/\partial G < \partial W/\partial D$, socialism centered on distribution

If we mutually acknowledge the importance of growth and distribution together in national welfare, exchange value will be found to compromise the dissatisfaction arising from both sides. Even if the free market contributes more to national welfare, it is necessary to discover exchange values other than market prices in order to reduce secondary dissatisfaction arising from it, In the above formula, (1) in Equation 1)) expresses the equilibrium value of such a compromise.

In market, people who are dissatisfied with the transaction can be excluded by price. But in the transaction of conflict between different values, there is no price that can exclude the persons who are dissatisfied, so compensation is needed to alleviate his dissatisfaction. If there is a reward value to relieve the dissatisfaction, this will be the exchange value. However, it is not easy to determine the compensation value because complainants could or do not currently express clear financial losses. Even if there is no actual material loss, his alleged complaints will arise from the loss of the expected profits from the existing policy. Thus, it is difficult to determine compensation value because expected profits can be uncertain and subjective. If the loss from the existing policy is ideological defeat such as distribution preference, the compensation value will be more subjective and extreme. In extreme case, where ideologists ignore growth and insist only distribution, equal distribution is the only solution.

Second, individual interests are always very different in real world even in the similar preference groups. Therefore, it is necessary to reflect the compensation value of heterogeneous members within the same interest group while also reflecting

³¹ Even in the providence of nature, that is, in a nature system in which A motion naturally responds to the opposite activity, each individual planets have its own universal gravitational force to maintain their position. But they coexist in great harmony. That is the middle way that balances the universal gravitational force

with those of the other planets. If you dominate the gravity of another planet, the other planet will eventually reach an extreme state where it has to disappear. And if you find a middle way to coexist with the other planet, you will form a universe that coexists forever.

the value of the group. Since the sizes of profit and loss are different among internal members who show heterogeneous desires in both groups, it is necessary to find the compensation value that the persons who have gained more within the same group should compensate the persons who have less gained. In addition, the welfare of future generations should be included in the national welfare decision as well as the current generation. The pursuit of national welfare that increases the interests of the majority of the present generation excluding future generations would incline to turn into populism.

What can be thought of in this way is the decentralization system where various policies are possible, including the dictatorial but unbiased social decision of exchange value and compensation by public interest and stake holders. And we also find also the rational and autonomous decision mechanism to reduce the harmful effects of dictatorial and populist decision depending big data techniques and artificial intelligence.

4.2. The Possibility of Using Big Data and Artificial Intelligence to Estimate the Exchange Value

If human rational desire can be found socially by using big data techniques and artificial intelligence, it is likely to find the compensation value that might very importantly contribute to persuading individuals to reduce their emotional (hopeful) desires that are subjective and so too excessive. Furthermore, it will enable to create a system for automatic decision of society that minimizes the harmful effects of political and dictatorial decision. It may be impossible to solve the conflicts only with efforts of public interest entities including governments because human desires are too diverse and variable. Human desires can be divided into free hopeful (or emotional) ones and rational ones. In order to converge emotional ones into rational desires, it might be impossible or require a long time to enlighten each individual to make such a decision autonomously.

But it seems that rational or reasonable desires can be discovered, reducing time by more scientific process, collecting past data as well as current research, and by using big data techniques and artificial intelligence.³² [1] And then the compensation value could be estimated according to the discovered desires. If there is insufficient information data, a big data model could be created by setting and adding hypothetical desires and the appropriate levels of desire are estimated by putting the conditions of each stakeholder in the model. Then, the assumed desires estimated in hypothetical big data model are presented to each person to persuade them to reveal their rational desires. For instance, the hypothetical big data

may be created about various social security types and levels, economic growth and strategies that members can choose. Given dozens of independent variables such as type and level of social security, growth rate, and strategy, the task is to find hundreds of dependent variables, desired choices, which represent the type and level of more specific living security, which are the final goal most preferable to them. And if not found, artificial intelligence algorithms with a big data technique seems to be created imitating real preference of social members.³³ Assuming that future generations have the same preferences as the current generation, we could find a solution that encompasses all generations.

The selection decision system has to be created that conforms to the decision of big data and artificial intelligence in order to reduce the size and width of the error of subjective choice according to the dictatorship and populism in the selection process. With the recent development and spread of social media, messages about politics, economy, and culture left online have emerged as a source of understanding the emotions and sentiments of the current peoples. Many countries and companies are actively working to solve social problems and predict the future by analyzing and utilizing social big data produced through SNS. [13] In particular, unstructured big data produced in online channels, including SNS, has a high value as information because of its very large influence on the actual economy and society. [12] In the choice of distribution and growth, along with these techniques of big data, artificial intelligence could be used even in a state where causalities are very diverse.

Abbreviations

PGNP	Per Capita GNP
G	Gini Coefficient
D	Dummy Variable

Conflicts of Interest

The authors declare no conflicts of interest.

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³² Kang, Ku Young(2023), He suggests a possibility of deriving a solution by coding data depending on AI program Python and by using Pandas, the technology of collecting and analyzing big data

³³ In Korea, the selected life security type that minimizes conflicts between growth and distribution and maximizes national happiness will be one of several types of basic livelihood security beyond the minimum standard of living. For example,

according to a 2009 survey of experts in the field of economy, sociology and politics, the revised liberalism like British-style was the most preferred. 50% of the 82 respondents preferred this, 24.3% (20 people) of Swedish social democracy, and 23.1% (19 people) of liberalism. refer to Bark Sun-il, Hwang Jun-seong, Park Won-chul, 21st century integration of Korean society and the direction of policy ideology, 2009, Korea Social Policy Research Institute

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