

Visualization of Cognitive Process about Income Gap in Japan: Model Constructions Using SEM and Mutual Relations among Respondents' Attributes

Yuichi Marumo[†]

Abstract: Based on a questionnaire-based survey in Japan, we created a model to visualize the cognitive process regarding the income gap using Structural Equation Modeling (SEM). According to our results, in a four-factor structural model, the exogenous valuable “Social unfairness in economic attributes” significantly influences the latent valuable “Cognition of income gap.” The path coefficient for married respondents was significantly smaller than that for unmarried. In our analysis of each attribute of respondents, marital status was the attribute with the most distinct effect on the model. We constructed models that showed the mutual relations between the respondents' attributes of (1) age and marital status and (2) personal income and marital status. According to the results for (1), the path coefficients of “Social unfairness in economic attributes” to “Cognition of income gap” for married respondents were smaller than those for unmarried at all years of age. For (2), the path coefficients of “Social unfairness in economic attributes” to “Cognition of income gap” for married respondents were smaller than those for unmarried except when personal income was 10 million yen or more. Thus, the significance of spouses as advisors was negligible in the case of respondents whose personal income was 10 million or more.

Keywords: income gap, cognitive process, marital status, Structural Equation Modeling

1. Introduction

A research project is being conducted at Senshu University entitled “Forming a Social Well-being Research Consortium in Asia” with funding from the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The project chair is Professor Hiroo Harada. In this project, questionnaire-based surveys have been planned for Asian nations from the viewpoint of social well-being. A web survey named “International Comparative Survey on Lifestyle and Values—Social Well-being Japan Survey 2015 Questionnaire” was conducted in Japan in February 2015 ahead of its implementation in Asian nations.

[†] Research Fellow, Center for Social Well-being Studies, and School of Law, Senshu University. adm001002@yahoo.co.jp

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Based on the questionnaire-based survey in Japan, Structural Equation Modeling (SEM) was used in the data analysis. The first aim of this paper is to visualize the cognitive process about income gap through construction of a concise model. The second aim is to clarify how cognitive process differs depending on respondent attributes and to make clear the mutual relationships among respondent attributes.

2. Preceding Studies

Machimura (2009) summarized various views of the reasons for the increasing income gap as follows: (1) hypothesis of post-industrialization and post-fordism, (2) hypothesis of globalization, (3) hypothesis of neoliberalism and (4) hypothesis of fluctuations of population composition. Ohtake (2008) stated that the main cause of the growing income inequality in Japan as a whole was the aging of the population and that among age groups income disparities for older people were larger than for younger people. Nevertheless, Machimura (2009) noted that there were few studies that demonstrated how income inequality in Japan as a whole would differ depending on specific areas or respondent attributes.

3. Hypothesis

We could say that various types of social unfairness exist in Japanese society, according to the questionnaire used in this project. Among them are social unfairness in economic attributes such as assets and income and social unfairness in social attributes such as occupation and educational background. Social unfairness in economic attributes and social unfairness in social attributes are thought to influence each other. Thus, this paper proposes the following hypotheses, under the assumption that various types of social unfairness exist in the undercurrent of Japanese society.

Hypothesis 1: The latent variable “Social unfairness in economic attributes” and the latent variable “Social unfairness in social attributes” are covariates¹. The latent variable “Social unfairness in economic attributes” influences significantly the latent variable “Cognition of income gap.”

Among all respondent attributes, the role of the spouse has a large influence on the model. A spouse is an in-home advisor. The stress of married respondents is thought to be smaller than that of unmarried respondents. For married respondents, the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap” is expected to be significantly smaller than that for unmarried respondents.

¹ The covariance is set between structural exogenous variables in general.

Hypothesis 2: For married respondents, the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap” is significantly smaller than that for unmarried respondents.

4. Outline of Questionnaire in Japan

4.1. Survey Design

The web survey named “International Comparative Survey on Lifestyle and Values” was composed of (1) Face Sheet, (2) Social Well-being, (3) Social Capital and (4) Risk and Social Safety Network. Under (2) Social Well-being, the respondents were asked if they feel that Japanese society as a whole discriminates based on various items including 1) occupation, 2) educational background, 3) assets, 4) income, 5) region of origin and 6) area of residence. These six items are further discussed in this paper.

4.2. Outline of Observed Variables Used for Analysis

Questions used to analyze the hypotheses were all single answer. The following table shows the descriptive statistics.

Table 1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Current_income_gap	10521	0	10	6.400	2.511
Income_gap_in_ten_years	10521	0	10	7.209	2.391
Unfairness_in_occupation	10521	0	10	6.517	2.297
Unfairness_in_educational_background	10521	0	10	6.402	2.325
Unfairness_in_assets	10521	0	10	6.954	2.434
Unfairness_in_income	10521	0	10	7.075	2.342
Unfairness_in_regions_of_origin	10521	0	10	4.884	2.465
Unfairness_in_areas_of_residence	10521	0	10	5.617	2.465
Valid N (listwise)	10521				

5. Analysis

5-1. Model Construction

Figure 1 was produced by plotting a four-factor path diagram with SEM using the eight observed variables. AMOS23 was the software used, estimating iterations with maximum likelihood estimation (the same applies hereafter). Path coefficients showed unstandardized estimates.

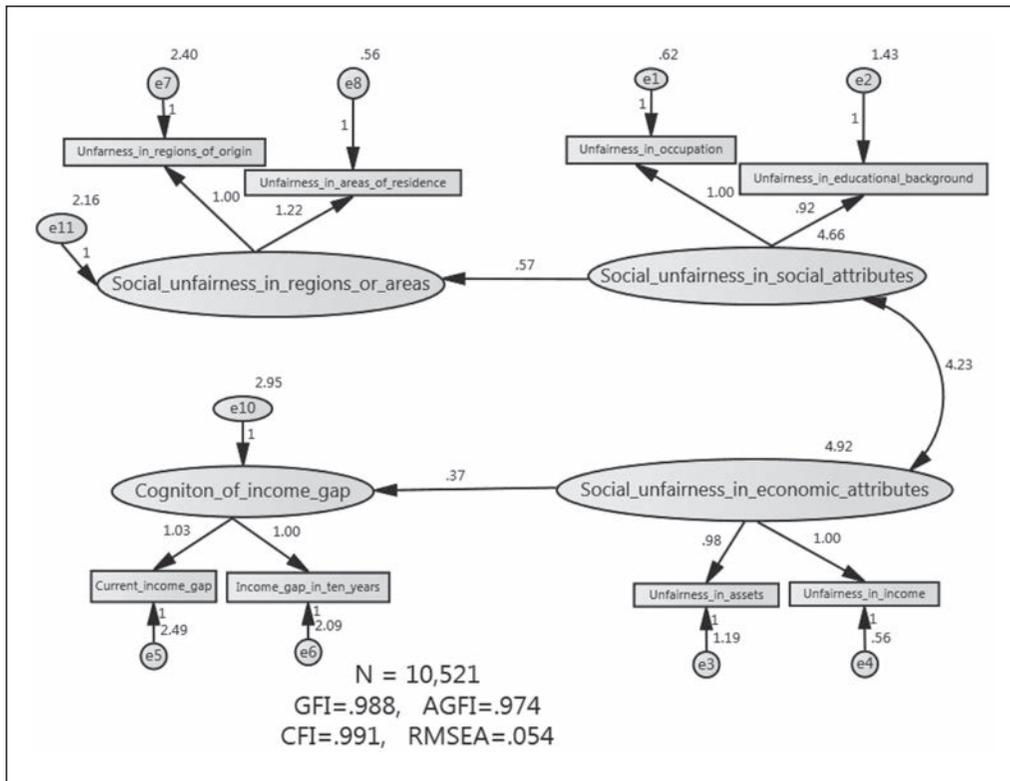


Figure 1 Four-Factor Structural Model concerning Hypothesis 1

In this model, (1) in the background of the observed variable “Unfairness in assets” and the observed variable “Unfairness in income,” the latent variable “Social unfairness in economic attributes” was assumed, (2) in the background of the observed variable “Unfairness in educational background” and the observed variable “Unfairness in occupation,” the latent variable “Social unfairness in social attributes” was assumed, (3) in the background of the observed variable “Current income gap” and the observed variable “Income gap in ten years,” the latent variable “Cognition of income gap” as assumed, and (4) in the background of the observed variable “Unfairness in regions of origin” and the observed variable “Unfairness in areas of residence,” the latent variable “Social unfairness in regions or areas” was assumed.

In this four-factor structural model, the latent variable “Social unfairness in economic attributes” and the latent variable “Social unfairness in social attributes” are covariates. Both

latent variables were exogenous variables. In terms of causal relationships, the exogenous variable “Social unfairness in economic attributes” had a path coefficient of 0.37 with the latent variable “Cognition of income gap,” and the exogenous variable “Social unfairness in social attributes” had a path coefficient of 0.57 with the latent variable “Social unfairness in regions or areas.” The multiple correlation coefficient R^2 of “Cognition of income gap” was 0.185, and R^2 of “Social unfairness in regions or areas” was 0.413. Excluding paths with coefficients fixed at 1, all path coefficients were significant at the 1% level. The indicators for degree of compatibility were GFI=0.988, AGFI=0.974, CFI=0.991 and RMSEA=0.054. A compatibility indicator of RMSEA indicated a good model, and the other three compatibility indicators showed it to be a very good model².

The latent variable “Social unfairness in economic attributes” and the latent variable “Social unfairness in social attributes” are covariates. The exogenous variable “Social unfairness in economic attributes” influences significantly³ the latent variable “Cognition of income gap.” Thus, Hypothesis 1 was verified.

5-2. Analysis of Each Attribute

Next, we analyzed how the influence (path coefficient) of “Social unfairness in economic attributes” to “Cognition of income gap” differed depending on respondent attributes.

² As for indicators for degree of compatibility, see *The Senshu Social Well-being Review No. 2* (March 2016) p. 56.

³ The path coefficient was 0.43 at standardized estimates.

(1) Gender

Based on the path diagram in Figure 1, we constructed gender-specific attribute models for both male and female. We then constructed measurement invariance models, allocating the same values in order to ensure invariance of measurement weights among groups and homogeneity of latent variables. With the measurement invariance models, we could compare path coefficients of the structural equations. Path diagrams were plotted with SEM to produce Figure 2 and Figure 3. Figure 2 is the path diagram for males, and Figure 3 is for females. The path coefficients showed unstandardized estimates.

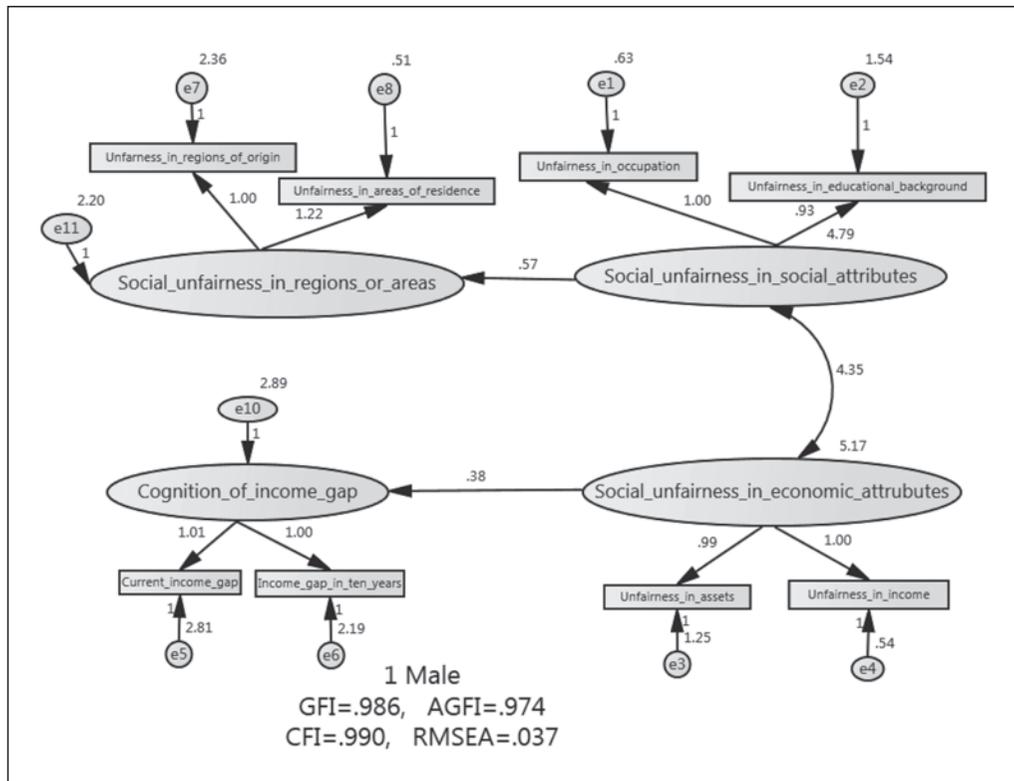


Figure 2 Four-Factor Structural Model for Male

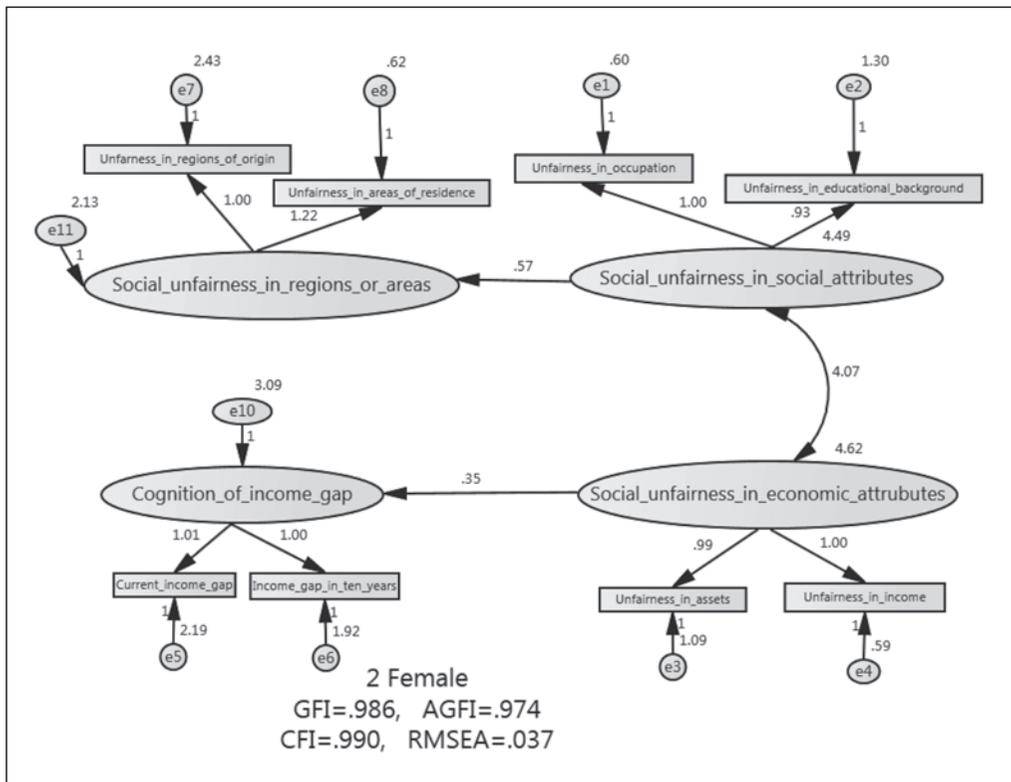


Figure 3 Four-Factor Structural Model for Female

We compared the two coefficients of the structural equations in Figure 2 and Figure 3. The following table shows the results.

Table 2 Comparison of path coefficients of structural equations of gender group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Male	5,365	0.38	0.57
Female	5,156	0.35	0.57

Focusing on the path coefficients⁴ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. There were no path combinations between the genders that were statistically significant.

⁴ All coefficients were significant at the 1% level.

(2) Level of Urbanization

In the survey, level of urbanization was classified into four categories: (1) town or village, (2) city with population of less than 200,000, (3) city with population of 200,000 or more and (4) government-designated major city. Based on the path diagram in Figure 1, we constructed attribute models for each of the four levels of urbanization. After constructing the measurement invariance models, we were able to compare the path coefficients of the structural equations (the path diagram was omitted).⁵ The following table shows the results.

Table 3 Comparison of path coefficients of structural equations among level of urbanization group

Group	Sample size (N = 10,500)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Town or village	863	0.38	0.59
City of population less than 200,000	3,960	0.37	0.57
City of population of 200,000 or more	2,600	0.38	0.55
Government-designated major city	3,077	0.35	0.58

Focusing on the path coefficients⁶ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. There were no path combinations among the levels of urbanization that were statistically significant.

⁵ Indicators for the degree of compatibility: GFI=0.986, AGFI=0.975, CFI=0.991 and RMSEA=0.025.

⁶ All coefficients were significant at the 1% level.

(3) Regions in Japan

We classified Japan into six regions: (1) Hokkaido and Tohoku, (2) Kanto, (3) Chubu, (4) Kinki, (5) Chugoku and Shikoku and (6) Kyushu. Based on the path diagram in Figure 1, we constructed attribute models for each of the six Japanese regions. After constructing the measurement invariance models, we were able to compare path coefficients of the structural equations (the path diagram was omitted).⁷ The following table shows the result.

Table 4 Comparison of path coefficients of structural equations among regions in Japan group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Hokkaido and Tohoku	1,185	0.41	0.60
Kanto	3,628	0.36	0.57
Chubu	1,757	0.35	0.57
Kinki	1,909	0.40	0.57
Chugoku and Shikoku	909	0.32	0.61
Kyushu	1,133	0.35	0.53

Focusing on the path coefficients⁸ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. The following table shows the results.

Table 5 Critical ratios for table 4

Social unfairness in economic attributes→Cognition of income gap	Hokkaido and Tohoku	Kanto	Chubu	Kinki	Chugoku and Shikoku	Kyushu
Hokkaido and Tohoku	0					
Kanto	-1.609	0				
Chubu	-1.604	-0.252	0			
Kinki	-0.186	1.712	1.647	0		
Chugoku and Shikoku	-2.110	-1.101	-0.819	-2.161	0	
Kyushu	-1.672	-0.456	-0.205	-1.700	0.597	0

In the table, absolute values of larger than 1.96 mean that the path coefficient differences are significant at the 5% level. Absolute values larger than 2.33 mean that path coefficient differences are significant at the 1% level. Absolute values larger than 2.58 mean that path coefficient differences are significant at the 0.1% level.

The path coefficient of 0.32 for Chugoku and Shikoku was smaller than (1) the 0.41 for Hokkaido and Tohoku and (2) the 0.40 for Kinki, each significant at the 5% level.

⁷ Indicators for degree of compatibility: GFI=0.984, AGFI=0.971, CFI=0.990 and RMSEA=0.021.

⁸ All coefficients were significant at the 1% level.

(4) Age

Based on the path diagram in Figure 1, we constructed attribute models for age at intervals of 10 years. After constructing the measurement invariance models, we were able to compare the path coefficients of the structural equations (the path diagram was omitted).⁹ The following table shows the result.

Table 6 Comparison of path coefficients of structural equations among age group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
20s	1,671	0.39	0.57
30s	2,316	0.41	0.57
40s	2,115	0.34	0.57
50s	2,080	0.36	0.59
60s	2,339	0.31	0.55

Focusing on the path coefficients¹⁰ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. The following table shows the results.

Table 7 Critical ratios for table 6

Social unfairness in economic attributes→Cognition of income gap	20s	30s	40s	50s	60s
20s	0				
30s	0.522	0			
40s	-1.866	-2.517	0		
50s	-1.113	-1.694	0.713	0	
60s	-2.681	-3.388	-0.830	-1.517	0

The path coefficient of 0.31 for the 60s was smaller than (1) the 0.41 for the 30s and (2) the 0.39 for the 20s, each significant at the 0.1% level. The path coefficient of 0.34 for the 40s was smaller than the 0.41 for the 30s, significant at the 1% level. Age was an attribute with much effect on the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap.”

⁹ Indicators for degree of compatibility: GFI=0.984, AGFI=0.971, CFI=0.989 and RMSEA=0.024.

¹⁰ All coefficients were significant at the 1% level.

(5) Marital Status

Based on the path diagram in Figure 1, we constructed two attribute models for marital status: married and unmarried. After constructing the measurement invariance models, we were able to compare the path coefficients of the structural equations (the path diagram was omitted).¹¹ The following table shows the result.

Table 8 Comparison of path coefficients of structural equations of marital status group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Married	6,310	0.33	0.57
Unmarried	4,211	0.42	0.58

Focusing on the path coefficients¹² of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. The following table shows the results.

Table 9 Critical ratios for table 8

Social unfairness in economic attributes →Cognition of income gap	Married	Unmarried
Married	0	
Unmarried	5.142	0

The path coefficient of 0.33 for married was smaller than the 0.42 for unmarried at the 0.1% significance level, verifying Hypothesis 2. Marital status was an attribute with much effect on the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap.” This result shows the significance of spouses as advisors.

(6) Academic Background

Respondents were classified into seven categories in terms of their highest level of education attended: (1) junior high school, (2) high school or secondary school, (3) vocational school, (4) junior college or vocational high school, (5) 4-year university, (6) master’s course or professional graduate school and (7) doctorate course. Based on the path diagram in Figure 1, we constructed attribute models for each of the seven academic background levels. After constructing the measurement invariance models, we were able to compare path coefficients of the structural equations (the path diagram was omitted).¹³ The following table shows the result.

¹¹ Indicators for degree of compatibility: GFI=0.986, AGFI=0.974, CFI=0.990 and RMSEA=0.037.

¹² All coefficients were significant at the 1% level.

¹³ Indicators for degree of compatibility: GFI=0.982, AGFI=0.969, CFI=0.989 and RMSEA=0.020.

Table 10 Comparison of path coefficients of structural equations among academic background group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Junior high school	132	0.62	0.70
High school or secondary school	2,460	0.36	0.56
Vocational school	1,000	0.40	0.56
Junior college or vocational high school	1,277	0.34	0.56
4-year university	4,810	0.36	0.57
Master's course or professional graduate school	670	0.37	0.64
Doctorate course	172	0.50	0.57

Focusing on the path coefficients¹⁴ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. The following table shows the results.

Table 11 Critical ratios for table 10

Social unfairness in economic attributes→Cognition of income gap	Junior high school	High school or secondary school	Vocational school	Junior college or vocational high school	4-year university	Master's course or professional graduate school	Doctorate course
Junior high school	0						
High school or secondary school	-3.284	0					
Vocational school	-2.709	1.053	0				
Junior college or vocational high school	-3.469	-0.682	-1.490	0			
4-year university	-3.392	-0.180	-1.279	0.611	0		
Master's course or professional graduate school	-3.036	0.239	-0.668	0.768	0.385	0	
Doctorate course	-1.159	1.668	1.158	1.901	1.749	1.493	0

The path coefficient of 0.62 for junior high school was larger than (1) the 0.36 for high school or secondary school, (2) the 0.40 for vocational school, (3) the 0.34 for junior college or vocational high school, (4) the 0.36 for 4-year university and (5) the 0.37 for master’s course or professional graduate school, each significant at the 0.1% level.

¹⁴ All coefficients were significant at the 1% level.

(7) Personal Income

Personal income was classified into five categories: (1) less than 2.5 million yen, (2) 2.5 million yen to 5 million yen, (3) 5 million yen to 7.5 million yen, (4) 7.5 million yen to 10 million yen and (5) 10 million yen or more. Based on the path diagram in Figure 1, we constructed attribute models for each of the five personal income levels. After constructing the measurement invariance models, we were able to compare path coefficients of the structural equations (the path diagram was omitted).¹⁵ The following table shows the result.

Table 12 Comparison of path coefficients of structural equations among personal income group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Less than 2.5 million yen	5,202	0.39	0.59
2.5 million yen to 5 million yen	2,921	0.38	0.53
5 million yen to 7.5 million yen	1,404	0.35	0.60
7.5 million yen to 10 million yen	600	0.21	0.58
10 million yen or more	394	0.35	0.58

Focusing on the path coefficients¹⁶ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. The following table shows the results.

Table 13 Critical ratios for table 12

Social unfairness in economic attributes→Cognition of income gap	Less than 2.5 million yen	2.5 million yen to 5 million yen	5 million yen to 7.5 million yen	7.5 million yen to 10 million yen	10 million yen or more
Less than 2.5 million yen	0				
2.5 million yen to 5 million yen	-0.253	0			
5 million yen to 7.5 million yen	-1.508	-1.23	0		
7.5 million yen to 10 million yen	-4.708	-4.415	-3.213	0	
10 million yen or more	-1.055	-0.899	-0.062	2.517	0

¹⁵ Indicators for degree of compatibility: GFI=0.985, AGFI=0.973, CFI=0.990 and RMSEA =0.023.

¹⁶ All coefficients were significant at the 1% level.

The path coefficient of 0.21 for 7.5 million yen to 10 million yen was smaller than (1) the 0.39 for less than 2.5 million yen, (2) the 0.38 for 2.5 million yen to 5 million yen, (3) the 0.35 for 5 million yen to 7.5 million yen, each at the 0.1% significance level and (4) the 0.35 for 10 million yen or more at the 1% significance level. This result shows that respondents whose income was 7.5 million yen to 10 million yen were the least cognizant of the income gap. Personal income was an attribute with much effect on the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap.”

(8) Years of Residence

Years of residence was classified into three categories: (1) less than 10 years, (2) 10 to 30 years and (3) 30 years or more. Based on the path diagram in Figure 1, we constructed attribute models for each of the three categories for years of residence. After constructing the measurement invariance models, we were able to compare path coefficients of the structural equations (the path diagram was omitted).¹⁷ The following table shows the result.

Table 14 Comparison of path coefficients of structural equations among years of residence group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
Less than 10 years	2,928	0.38	0.58
10 years to 30 years	4,339	0.36	0.57
30 years or more	3,254	0.35	0.57

Focusing on path coefficients¹⁸ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. There were no path combinations among years of residence that were statistically significant.

¹⁷ Indicators for degree of compatibility: GFI=0.986, AGFI=0.975, CFI=0.991 and RMSEA=0.029.

¹⁸ All coefficients were significant at the 1% level.

(9) Number of Cohabiting Family Members

The number of cohabiting family members was classified into four categories: (1) one person, (2) two persons, (3) three to four persons and (4) five persons or more. Based on the path diagram in Figure 1, we constructed attribute models for the four categories for the number of cohabiting family members. After constructing the measurement invariance models, we were able to compare path coefficients of the structural equations (the path diagram was omitted).¹⁹ The following table shows the result.

Table 15 Comparison of path coefficients of structural equations among number of cohabiting family members group

Group	Sample size (N = 10,521)	Path coefficient (Unstandardized estimates)	
		Social unfairness in economic attributes→Cognition of income gap	Social unfairness in social attributes→Social unfairness in regions or areas
One person	1,747	0.41	0.57
Two persons	2,849	0.34	0.58
Three to four persons	4,928	0.37	0.56
Five persons or more	997	0.39	0.60

Focusing on the path coefficients²⁰ of “Social unfairness in economic attributes” to “Cognition of income gap,” we inspected critical ratios for differences between parameters. The following table shows the results.

Table 16 Critical ratios for table 15

Social unfairness in economic attributes→Cognition of income gap	One person	Two persons	Three to four persons	Five persons or more
One person	0			
Two persons	-2.350	0		
Three to four persons	-1.636	1.096	0	
Five persons or more	-0.545	1.352	0.674	0

The path coefficient of 0.34 for two persons was smaller than the 0.41 for one person at the 1% significance level. This result is consistent with the analysis of marital status.

5.3. Mutual Relationships among Respondent Attributes

Marital status was the attribute with the most distinct effect on the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap.” Age and personal income were the next biggest influences. Thus, we tried to construct models that showed the mutual relationships between respondents’ attributes for (1) age and marital status, (2) personal income

¹⁹ Indicators for degree of compatibility: GFI=0.985, AGFI=0.973, CFI=0.990 and RMSEA =0.026.

²⁰ All coefficients were significant at the 1% level.

and marital status based on the path diagram of Figure 1. Because the analysis result of the number of cohabiting family members is extremely approximated with that of marital status, a further analysis is not done. As for academic background, the number of samples whose final academic background is junior high school is extremely small,²¹ so a further analysis is not done.

(1) Mutual Relations between Age and Marital Status

After constructing the measurement invariance models, we were able to compare the path coefficients of the structural equation (the path diagram is omitted²²). The path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap” is shown in the figure below. All of the path coefficients were significant at the 1% level in this figure.

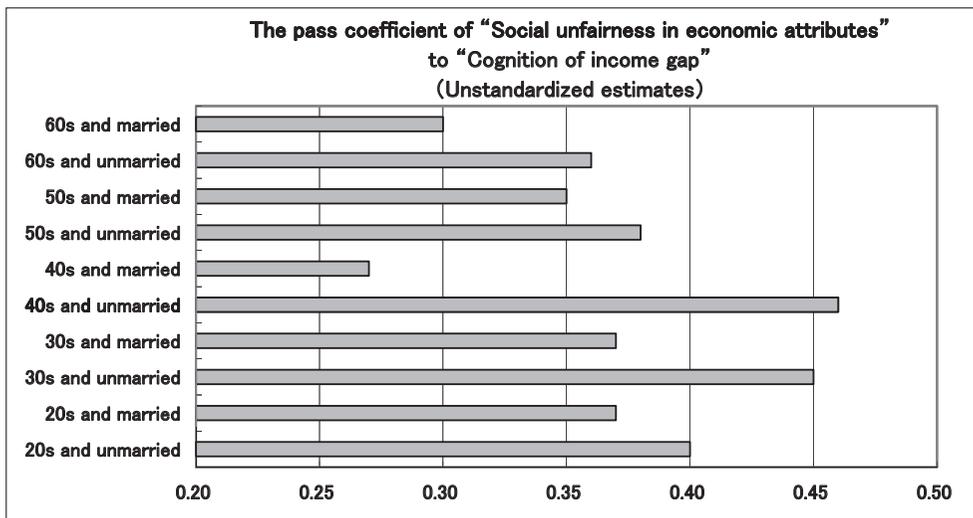


Figure 4 Mutual Relationship between Age and Marital Status

According to the analysis result, the path coefficients of “Social unfairness in economic attributes” to “Cognition of income gap” for married were smaller than those for unmarried at all years of age. Thus, at all years of age, married respondents were less cognizant of the income gap even if there was social unfairness by the same economic degree as the attributes for the unmarried respondents. Examining age at intervals of 10 years, the gap for a spouse’s presence was the largest for respondents in their 40s.

²¹ N = 132

²² As for indicators of the degree of compatibility, GFI=0.979, AGFI=0.964, CFI=0.988 and RMSEA=0.018. N = 10,521.

(2) Mutual Relations between Personal Income and Marital Status

After constructing the measurement invariance models, we were able to compare the path coefficients of the structural equation (the path diagram is omitted²³). The path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap” is shown in the figure below. All of the path coefficients were significant at the 1% level in this figure.

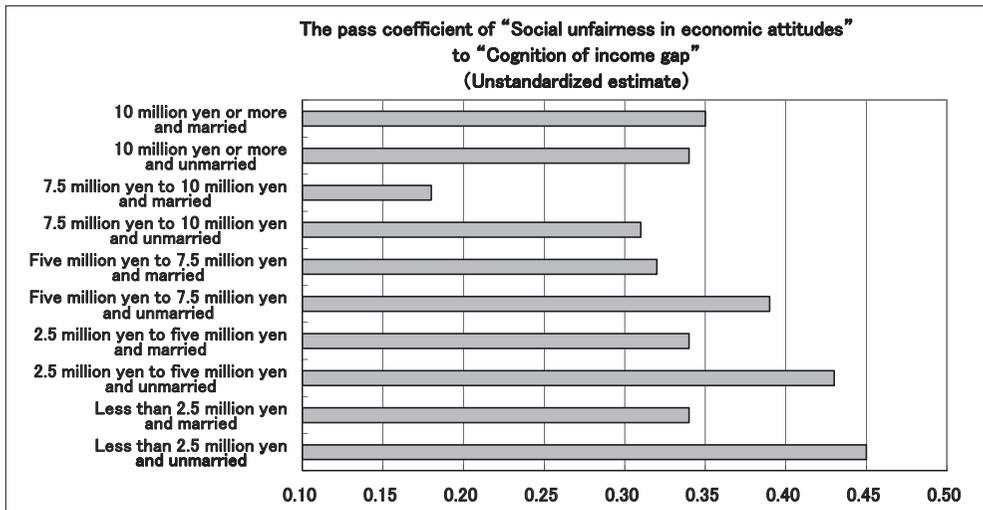


Figure 5 Mutual Relationship between Personal Income and Marital Status

According to the analysis result, the path coefficients of “Social unfairness in economic attributes” to “Cognition of income gap” for married were smaller than those for unmarried except when personal income was 10 million yen or more. The path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap” for unmarried was slightly larger than that for married at intervals of 10 million yen or more. The significance of spouses as advisors was negligible in the case of respondents whose personal income was 10 million or more.

6. Summary and Future Tasks

In this paper, using Structural Equation Modeling (SEM), we tried to make a model to visualize the cognitive process about income gap. Moreover, we tried to clarify how the cognitive process differs depending on respondent attributes and to make clear the mutual relationships among respondents’ attributes in this model.

According to the results, in a four-factor structural model, the latent variable “Social unfairness in economic attributes” and the latent variable “Social unfairness in social attributes” are covariates. Both latent variables were exogenous variables. The exogenous variable “Social

²³ As for indicators of the degree of compatibility, GFI=0.980, AGFI=0.965, CFI=0.988 and RMSEA=0.018. N = 10,521.

unfairness in economic attributes” influences significantly the latent variable “Cognition of income gap,” verifying Hypothesis 1. Next, the path coefficient for married was significantly smaller than that for unmarried, verifying Hypothesis 2.

Marital status was the attribute with the most distinct effect on the path coefficient of “Social unfairness in economic attributes” to “Cognition of income gap.” Age and personal income were the next biggest influences. We constructed models that showed the mutual relations between the respondents’ attributes of (1) age and marital status and (2) personal income and marital status. According to the results, the path coefficients of “Social unfairness in economic attributes” to “Cognition of income gap” for married respondents were smaller than those for unmarried at all years of age. The path coefficients of “Social unfairness in economic attributes” to “Cognition of income gap” for married respondents were smaller than those for unmarried except when personal income was 10 million yen or more. Thus, the significance of spouses as advisors was negligible in the case of respondents whose personal income was 10 million or more.

There have been tacit assumptions that research in this field is based on the Western European cultural sphere. Similar questionnaire-based surveys have been executed in Asian nations such as Vietnam. If, as a result of a multiple group SEM analysis, the Japanese model is also deemed to be applicable to Asian countries, new and valuable findings can be expected about social well-being.

7. References

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