

Do the learning opportunities from university experiences affect preferences for redistribution? – The case of Japan

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Do the learning opportunities from university experiences affect preferences for redistribution? - The case of Japan

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Abstract

This study used Japanese microdata for specific examination of the relation between learning opportunities provided by university experiences, and PFR, reflecting Japan's recent trend of strict selection of priority universities. Estimation results have revealed that graduates of national or public universities, particularly those who specialize in humanities and social sciences, and graduates of high-rank universities such as G30 universities (accepted by the MEXT's Global 30 project), and universities for which learning support levels are high tend to represent an agreement with redistribution on education, even after controlling for other covariates such as household type, SES, and childhood cultural capital. Opportunities for higher benefits through redistribution in the field of higher education might affect evaluations of government redistribution related to education. Research on PFR undertakes the discovery and reconsideration of people's traits and behavioral principles that have been heretofore overlooked in society.

Keywords: learning opportunity, redistribution, university education

1. Introduction

In recent years, analyses of people's preferences for redistribution (PFR) have been conducted actively in various countries and at international institutions. Several studies have examined the presence or absence of the adequate welfare state size for sustainable economic growth (Reinhart et al. 2012). The trends of PFR of people are important factors affecting future government size. They might affect also the future socio-economic environment indirectly. Identifying trends of people's PFR for important items can lead to guidelines to manage future redistribution policy and economic performance. Furthermore, it can be expected to engender the discovery and reconsideration of people's traits, and social norms that were previously overlooked in society.

Earlier studies have revealed that various factors influence support for government redistribution. For

example, Benabou and Ok (2001), and Alesina and Giuliano (2011) reported that, under certain conditions, prospects of upward mobility reduce demand for redistribution. Those results provide a contrasting perspective from that of the basic Meltzer-Richard (median voter theorem) case (Meltzer and Richard, 1983). Burunori (2017), using a dataset from European countries, also underscored the importance of perception of inequality of opportunity. Fong (2001) demonstrated that the degree of belief in the relative importance of luck as a determinant of economic success influences support for government redistribution. Alesina et al. (2012) emphasized the role of partisan ideology and relative income level in affecting PFR¹⁾.

Although analyses of the effects of variables such as years of education and educational experiences on PFR are politically important, their effects appear to be very limited and unclear. The exceptions are Busemeyer's several papers, which described the diverse effects of education on PFR (Busemeyer, 2012, 2013; Busemeyer et al, 2011). In one study, Busemeyer (2013) mainly examined the association between the division of labor between public and private sources in funding human capital formation, and PFR using the International Social Survey Programme (ISSP) for OECD countries. According to the main results, individuals in countries with high levels of private spending on education are less willing to support government redistribution. In addition, when income gaps are large and access to higher education is restricted, high-income earners tend to increase support for more education spending (Busemeyer, 2012).

Furthermore, Busemeyer et al. (2011) investigated factors affecting support for monetary assistance for vocational training and academic education in various fields, using a survey conducted in Switzerland in 2007. Results demonstrated that individuals prefer to concentrate resources on those educational sectors which are closest to their own educational background. Political ideology can not explain these differences in support for vocational training versus academic education.

What are the effects of educational attainment on PFR in Japan? Hashino (2015) reported that individuals with higher educational attainment tend to support public expenditure on education. Nevertheless, he did not consider graduates' major courses of study or graduation from school.

In recent years, Japan's government policies reinforce strict selection of priority universities, as represented by the establishment of designated national universities, and G30 programs. Government will provide large amounts of additional funding to selected universities, facilitating their attraction of top researchers and students and to foster collaboration with industry. We can readily predict that several differences in learning opportunities exist among university students, along with several levels of government support. Results indicate that gaps of PFR on income and education among university graduates will expand in the future.

The current study specifically examines effects on PFR of university type, major course of study, and ranking of institution from which people graduated. Japan's higher education system, well known for its low levels of public expenditure, has a place at the bottom among main OECD countries, as Figure 1 shows.

1) According to the results of earlier studies, women and elderly persons tend to support government redistribution (Alesina and Giuliano, 2011; Goerres, and Jæger, 2016; Alesina et al. 2018).

During the 30 years of 1975–2005, tuition at national universities was raised dramatically to 535,800 yen, nearly 15 times the tuition of 1975: 36,000 yen. Tuition at private universities showed a nearly 4.5-fold rise from 182,700 yen to 818,000 yen, representing a sharp increase in both cases (see “Changes in Tuition Fees at National and Private Universities” (Japanese) on the website of the Ministry of Education, Culture, Sports, Science and Technology). Unlike the UK and other European countries, the Income Contingent Student Loan System has not been established sufficiently in Japan (Kobayashi, 2012). A student life survey conducted by the Japan Student Services Organization (JASSO) in 2012 revealed that approximately 30% of the students held part-time jobs to pay their own tuition.

2. Theory and Hypothesis

Busemeyer explained why his study yielded the results presented above, based on the two standard theories. First, it is called *Self-interest-based theory*. For this theory, we assume that individual preferences for redistribution are affected mainly by self-interest, i.e. the individual’s SES (income, employment status, etc. and status as a beneficiary of or contributor to welfare state services (Becker, 1993; Busemeyer, 2012). Based on the theory presented above, an individual who has paid for a large share of a personal human capital endowment independently can be more opposed to redistribution (Busemeyer, 2013).

“This is because high levels of redistribution depress the wage premium of skill investments and make

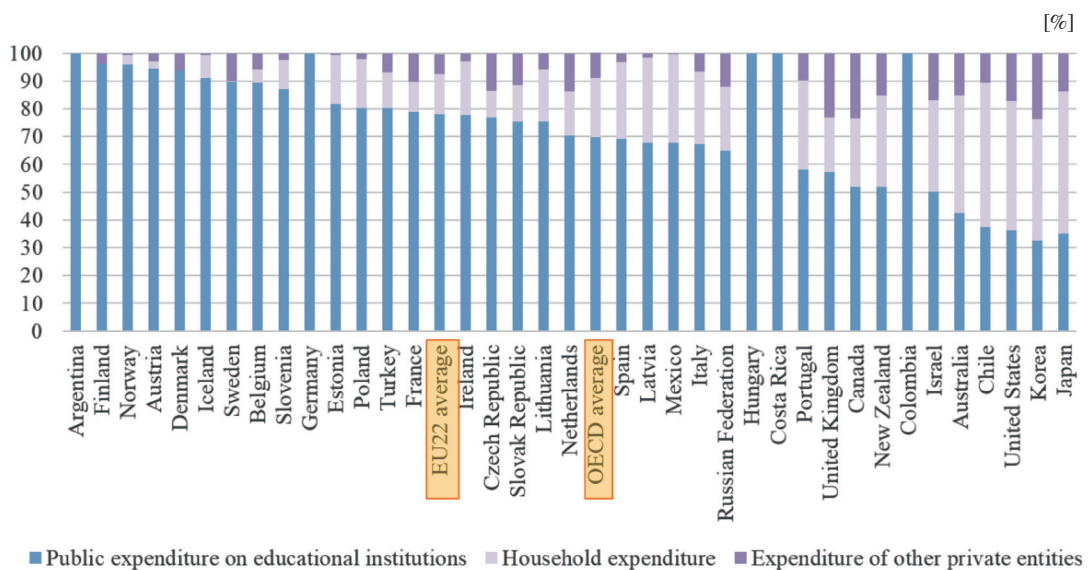


Figure 1: Distribution of public and private expenditure on educational institutions in 2013 (Tertiary education)

Source: OECD (2016), *Education at a Glance*, “Distribution of public and private expenditure on educational institutions (2013): By level of education”, OECD Publishing, Paris. <https://doi.org/10.1787/eag-2016-graph115-en>

it harder for individuals to recoup their own skill investments.”

(Busemeyer, 2013, p.1124.)

Second, Busemeyer (2012, 2013) introduced *Norms and culture-based theory*, which describes that the institutional setup of the education system also shapes persons' cultural norms and values related to social policy beyond each person's self-interest. According to that theory, universal provision of social services such as education itself increases public support for the universal welfare state model because individuals receive benefits from public services and because individual have higher expectations of the role of the state. By contrast, a high level of private spending for education might promote a general culture of emphasizing individual responsibility in social and education policy, i.e. a lower willingness to support government redistribution (Busemeyer, 2013, pp.1124-1125).

Based on the two theories presented above, the following hypothesis was set for this study:

H1: National university graduates will support government redistribution, particularly for education, to a greater degree than private university graduates in Japan.

As described earlier, the household burden on higher education in Japan differs greatly according to the management setup and education research competence of each university. To examine effects of sources in higher education funding in Japan, for example, we can specifically examine differences between national universities and private universities from the viewpoint of government subsidies/grants, student tuition fees and university expenditures. The Federation of Private Colleges and Universities Association data of 2017 briefly summarize differences of universities of both types for them. According to the figure, the amount of government subsidies and grants per student for private universities is just a thirteenth of that reported for national universities, on average. However, the amounts of student payments such as tuition fees per student at private universities are about twice those reported for national universities. Furthermore, the amount of current expenditure (per student) at private universities is just approximately half that reported for national universities. Based on both theories (Self-interest-based theory (SI theory), or Norms and culture-based theory (NC theory)), PFR related to education will differ significantly between national university and private university graduates.

Importantly, Busemeyer's study insufficiently identified which of the theories above is more adequate. Even for the present study, distinguishing two effects (self-interest, and norms and culture) exactly is very difficult because of limitations of available data related to private educational spending. However, if one could confirm a tendency by which experiences of higher levels of private spending on higher education engender less willingness to support government redistribution on education, we regard self-interest theory as appropriate because norms and culture on education are fundamentally universal in Japan, and not so different

among regions in Japan.

H2: High-rank university graduates will support government redistribution, particularly on education more than non-high-rank university graduates.

Table 1 presents management expense grants for national universities in 2016 in order of the total amount. From the table, one can confirm that large gaps exist in the scale of public financial sources among national universities. It is impossible to define them exactly by a method that is acceptable to all, but eventually, what are called high-rank universities tend to receive more funding through several financing methods. About four times the gaps of management expense grants per student exist between the top and the bottom. Therefore, the study specifically examines effects of university choice itself to the greatest degree possible by defining high-ranking universities based on several standards.

H3: When university graduates evaluate that educational contents they have received in higher education are useful for current life, they will support government redistribution more, particularly for education more.

Motivation for and engagement in learning improve the welfare standards of people who have received education (Noddings, 2003). Results of a study conducted by Salmela-Aro et al. (2011) underscored the increased probability of achieving “work engagement” in the labor market after higher education as a result of “study engagement (adapting to a learning or social environment)” during higher education. “Work engagement,” defined in the field of human resource management as the state of willingly engaging in work and constantly feeling satisfaction, is regarded as important along with job involvement, expressing the level of one’s involvement in a job, and organizational commitment, indicating the intensity of one’s emotional attachment to an organization (Hallberg and Schaufeli, 2006). As that definition suggests, work engagement is related closely to people’s subjective perceptions of redistribution related to education.

3. Data

3.1. Survey design

Our research group conducted a nationwide internet survey in Japan during February 16-22, 2011, yielding 11,556 responses in total (68.3% response rate), in collaboration with NTTCom Online Marketing Solutions Corp²⁾. The survey provides ample information about an individual’s demographic and

2) This survey was sponsored by the Japan Society for the Promotion of Science (JSPS). Oshio and Urakawa (2014) used the same survey for the study of relations between perceived income inequality and subjective well-being.

Table 1: Management expense grants for national universities (2016)

大学名	University	Amount of the allocation (one thousand yen)	Rank	Number of Student	Amount of the allocation per student (one thousand yen)	Rank
東京大学	The University of Tokyo	80,456,992	1	14,002	5,746	5
京都大学	Kyoto University	54,831,754	2	13,222	4,147	11
東北大学	Tohoku University	45,603,506	3	11,012	4,141	12
大阪大学	Osaka University	43,679,737	4	15,358	2,844	19
九州大学	Kyushu University	41,665,921	5	11,746	3,547	14
筑波大学	University of Tsukuba	40,654,109	6	9,944	4,088	13
北海道大学	Hokkaido University	36,226,803	7	11,436	3,168	17
名古屋大学	Nagoya University	31,662,196	8	9,790	3,234	15
広島大学	Hiroshima University	24,888,297	9	10,388	2,396	23
東京工業大学	Tokyo Institute of Technology	21,355,029	10	4,803	4,446	10
神戸大学	Kobe University	20,562,289	11	11,589	1,774	48
岡山大学	Okayama University	18,131,528	12	9,888	1,834	45
千葉大学	Chiba University	17,929,151	13	10,670	1,680	53
長崎大学	Nagasaki University	16,081,703	14	7,196	2,235	28
新潟大学	Niigata University	16,041,382	15	10,121	1,585	57
金沢大学	Kanazawa University	15,713,314	16	7,851	2,001	34
鹿児島大学	Kagoshima University	15,664,740	17	8,970	1,746	51
熊本大学	Kumamoto University	14,878,625	18	7,922	1,878	41
信州大学	Shinshu University	13,711,951	19	9,127	1,502	61
東京医科歯科大学	Tokyo Medical and Dental University	13,238,801	20	1,486	8,909	1
富山大学	University of Toyama	13,122,214	21	7,863	1,669	54
徳島大学	Tokushima University	12,547,832	22	5,817	2,157	31
愛媛大学	Ehime University	12,442,196	23	7,712	1,613	56
琉球大学	University of the Ryukyus	12,177,975	24	6,791	1,793	47
山口大学	Yamaguchi University	11,917,677	25	8,702	1,370	65
群馬大学	Gunma University	11,631,391	26	5,117	2,273	27
三重大学	Mie University	11,627,270	27	6,066	1,917	39
岐阜大学	Gifu University	11,350,792	28	5,705	1,990	36
山形大学	Yamagata University	10,923,675	29	7,328	1,491	62
鳥取大学	Tottori University	10,791,416	30	5,203	2,074	33

Source: Obunsha (2017) *Management Expense Grants for National University Corporation 2016*.

socioeconomic statuses, such as educational attainment. It also includes an abundance of information related to perceptions of inequality, and preferences for distribution. Particularly for university graduates, the survey asked about the schools from which they graduated, learning opportunities provided by university experiences, and evaluations for higher education itself.

To ensure that the sample was representative of the actual population of Japan, we constructed targeted proportions of 15 population groups in advance: five age groups of 20s, 30s, 40s, 50s, and 60s; and three household income classes of less than 3 million yen, 3-6 million yen, and more than 6 million yen. We referred data from two official statistical publications: the Population Census of 2005 and the Comprehensive Survey

of Living Conditions of the People on Health and Welfare of 2009. The distributions of age and household income do not differ markedly from the actual distributions³⁾.

3.2. Variables

3.2.1 Dependent variable

The study set dummy variables show preference for redistribution as key dependent variables in the econometric model. We used a question from the survey: “What do you think of increased government expenditure for the following items?” The items are eight: public works, public pension, medicine, education, defense, police, disaster planning, and income redistribution. The present study uses only two items: income and education. Respondents chose a response from a six-point scale: 1 = It must be reduced; 2 = If pressed to say, then I would say it should be reduced; 3 = cannot say either way; 4 = If pressed to say, then I would say it should be increased; 5 = It must be increased; 6 = I do not know. Based on the answers offered by respondents, a dummy variable (=1 (4,5), =0 (otherwise)) was made.

3.2.2 Key independent variables

As key independent variables, the study constructs variables reflecting the respondents’ latest academic background. We produced dummy variables of four types according to educational attainment: 1. Junior high school or high school graduate, 2. Junior or technical college graduate, 3. University graduate, and 4. Graduate school graduate.

Furthermore, regarding university graduates and graduate school graduates, the differences of university management systems, major courses of study, and rankings are considered. Concretely, dummy variables of a national university graduate, a public university graduate, and a private university graduate were made. In the case of Japan, classification of the major course of study was fundamentally divided into two categories: humanities and science. Therefore, we briefly made two types of academic major dummy variables. Humanities students are graduates who had attended a school (faculty) of Letters, Education, Law, Economics, etc. Science students are graduates who had attended a school (faculty) of Science, Medicine, Dentistry, Pharmaceutical Sciences, Engineering, Agriculture, etc.

Then, for additional analyses, we produced dummy variables showing a high-rank university graduate based on several standards such as World University Rankings (Japan University Rankings 2017) conducted by the Times Higher Education. More detailed contents are presented in the next section.

Additionally, regarding evaluations for higher education, dummy variables were constructed based on responses obtained for the following question: “Regarding reasons why educational contents you have received in higher education are useful for your current life, please select the any of the following items that

3) Oshio and Urakawa (2014) present a more detailed explanation of our sampling method.

apply.” The item contents are of four types: 1. improved specialized knowledge, 2. improved communication skills, 3. improved learning attitude, and 4. improved job hunting. Therefore, we made dummy variables for each item based on responses of university graduate respondents.

3.3 Definition of high-ranking universities

As procedures for determination of high-ranking universities, this study used four standards: Category A-D. First, in Category A, the author selected the top 36 universities based on the latest 2017 results of Japan University Rankings by Times Higher Education. This ranking method used 11 individual performance indicators. It combines these values into an overall score that reflects the broad strength of an institution. Four key areas can be regarded as pillars: for example, in the pillar of resources, indicators such as financial size per student, the number of faculty staff members per student, research grants per staff member, and other points are estimated as comprising the overall index, using pre-established weights.

Table 2-A presents a list of high-rank universities extracted based on the Japan University Rankings (Table 2-A). The 40 top universities were chosen originally; 4 universities for which the years since establishment were fewer than 50 years were dropped. Consequently, 36 universities were selected.

In Category B, the author calculated the average values of deviation scores of nationally standardized tests by each faculty, conducted by Kawai- Jyuku (Kawai Educational Institution): a large preparatory school in Japan operating Sundai Preparatory School and Yoyogi Seminar. These data were summarized and included in University Rankings 2011/2012 by Asahi Shimbun Press. Many universities overlapped with high-rank universities of Category A, but several universities such as Kyoto Prefectural University and Rikkyo University are newly ranked (Table 2-B). Regarding private universities chosen as high-ranking university in Category B, all universities but Doshisha University are located in Tokyo.

In Category C, 13 universities were chosen based on universities accepted by the Global 30 programs (research-type) introduced by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan⁴⁾ (Table 2-C). In Category D, designated national universities were selected through the strict screening of Japan’s government (As of 2018/10/01, five universities had been chosen)⁵⁾ (Table 2-D).

3.4 Other variables

In later econometric analyses, the study controlled other important covariates which can be assumed to

4) Since 2014, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has been carrying out the Top Global University Project (called G30 project) to provide prioritized support to those university leading the internationalization of Japan’s education, reforming personnel and educational systems, enhancing educational systems to help students develop the ability to act globally and accelerating other globalization initiatives. Under the Top Global University Project, 13 universities were selected as Type A (Top Type) universities that were chosen (MEXT website).

5) In 2017, Japan’s government planned the Designated National University initiative and chose five universities. The government provides large amounts of additional funding (about five million dollars), for making it easier for universities to attract top researchers and students and to collaborate with industry.

Table 2-A: Highly-ranked universities (Category A)

Name	Location	Rank	Name	Location	Rank
The University of Tokyo	Tokyo	1	Nagasaki University	Nagasaki	29
Tohoku University	Miyagi	2	Niigata University	Niigata	30
Kyoto University	Kyoto	3	Tokyo University of Agriculture and Technology	Tokyo	31
Nagoya University	Aichi	4	Yokohama National University	Kanagawa	33
Tokyo Institute of Technology	Tokyo	5	Tokyo Medical and Dental University (TMDU)	Tokyo	38
Osaka University	Osaka	6	Ochanomizu University	Tokyo	39
Kyushu University	Fukuoka	7	Tokyo Metropolitan University	Tokyo	24
Hokkaido University	Hokkaido	8	Waseda University	Tokyo	10
University of Tsukuba	Tokyo	9	Keio University	Tokyo	11
Hiroshima University	Hiroshima	12	International Christian University	Tokyo	15
Kobe University	Hyogo	13	Sophia University	Tokyo	18
Hitotsubashi University	Tokyo	14	Tokyo University of Science	Tokyo	32
Chiba University	Chiba	16	Meiji University	Tokyo	34
Nagaoka University of Technology	Aichi	17	Doshisha University	Kyoto	35
Kanazawa University	Ishikawa	19	Kwansei Gakuin University	Hyogo	40
Okayama University	Okayama	21	Ritsumeikan University	Kyoto	22
Kumamoto University	Kumamoto	26	Ritsumeikan Asia Pacific University (APU)	Ohita	24
Tokyo University of Foreign Studies	Tokyo	27			
Kyushu Institute of Technology (Kyutech)	Fukuoka	28			

Source: Japan University Rankings 2017 by Times Higher Education (THE).

Table 2-B: Highly-ranked universities (Category B)

Name	Location	Name	Location
The University of Tokyo	Tokyo	Yokohama National University	Kanagawa
Tohoku University	Miyagi	Ochanomizu University	Tokyo
Kyoto University	Kyoto	Tokyo Metropolitan University	Tokyo
Nagoya University	Aichi	Kyoto Prefectural University	Kyoto
Tokyo Institute of Technology	Tokyo	Osaka Prefecture University	Osaka
Osaka University	Osaka	Osaka City University	Osaka
Kyushu University	Fukuoka	Waseda University	Tokyo
Hokkaido University	Hokkaido	Keio University	Tokyo
University of Tsukuba	Tokyo	Sophia University	Tokyo
Kobe University	Hyogo	International Christian University	Tokyo
Hitotsubashi University	Tokyo	Tokyo University of Science	Tokyo
Chiba University	Chiba	Meiji University	Tokyo
Okayama University	Okayama	Doshisha University	Kyoto
Kumamoto University	Kumamoto	Chuo University	Tokyo
Tokyo University of Foreign Studies	Tokyo	Aoyama Gakuin University	Tokyo
Tokyo University of Agriculture and Technology	Tokyo	Rikkyo University	Tokyo

Source: Asahi Shimbun (2011), *University Rankings 2012*.

Table 2-C: Highly-ranked universities (Category C)

Name	Location	Name	Location
The University of Tokyo	Tokyo	Kyushu University	Fukuoka
Tohoku University	Miyagi	Hokkaido University	Hokkaido
Kyoto University	Kyoto	Tokyo Medical and Dental University (TMDU)	Tokyo
Nagoya University	Aichi	University of Tsukuba	Tokyo
Tokyo Institute of Technology	Tokyo	Waseda University	Tokyo
Osaka University	Osaka	Keio University	Tokyo

Source: Website of Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan.

Table 2-D: Highly-ranked universities (Category D)

Name	Location
The University of Tokyo	Tokyo
Tohoku University	Miyagi
Kyoto University	Kyoto
Nagoya University	Aichi
Tokyo Institute of Technology	Tokyo

Source: Website of Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan.

be correlated with PFR. As continuous independent variables, we use the number of children and equivalent household income (logarithm) [$e=0.5$]. In addition, as other dummy variables, age class, marital status, resident area, occupational status, prospect of mobility, family environment in childhood (Cultural capital) are set and controlled.

3.5 Cultural capital

Based on the Bourdieu concept of cultural capital of three types (1986), Kataoka (2001) constructed a path-analysis model to analyze relations between the family background and the children’s educational attainments during junior high school, particularly addressing differences of the family’s educational strategies. Childhood cultural capital might influence access to higher education, ways of working after graduation, and eventually ways of thinking for government redistribution for a long period of time. This study also used the same three variables as indicators of cultural capital: 1. Early childhood cultural experiences at home, 2. Cultural goods at home in early childhood, and 3. Parental educational attainment status⁶.

Variables of the embodied cultural capital representing cultural experiences in early childhood were constructed by two responses about whether parents often took respondents to art museums/art galleries, the theater, and classical music in early childhood (cultural experiences), and whether family members often read books to respondents during childhood or not (reading experiences). The dummy variable according to

6) Each indicator is based on Bourdieu’s theory of cultural capital. Cultural experiences apply to ‘Embodied’ capital, cultural goods apply to ‘Objectified’ capital, and parents’ educational attainment corresponds to ‘Institutionalized’ capital.

the reply to the question takes a value of one when a respondent had cultural and reading experiences that were better than average.

The variables of cultural goods at home in early childhood presents objectified cultural capital. The dummy variable was constructed using response results related to items on cultural resources in the home when the respondent grew up (piano/ collections of literature, encyclopedias, and picture books / complete series of art works when the respondent was 15 years old). It is set to one if a respondent's answers apply to two or more items.

Third, the dummy variables of educational attainment of each parent representing institutionalized cultural capital are set to one if a parent graduated from undergraduate or graduate school.

4. Empirical Analysis

4.1 Descriptive statistics

In the analysis, we omitted students and the samples who didn't answer related questions. Table 3 presents basic characteristics of respondents by gender. First, men in the original sample accounted for more than half: 59.7%. Second, the educational attainment of the male respondents was very high, with approximately 61.6% of all respondents having a four-year university or higher degree. Therefore, results of estimation in this study must be interpreted in light of such biases.

Regarding valuation assigned to higher education, approximately 40% of male respondents answered "very useful" or "somewhat useful" to the question: "Do you think educational contents you have received in higher education are useful for your current life?" About 30% of male respondents show improvement of specialized knowledge related to reasons why educational contents received during higher education are useful. However, women's assessment of higher education was lower than that of men in all items.

4.2 Income, education, preference for redistribution

Figure 2 portrays the relation of preference for redistribution on education and income, and income class. Respondents are categorized into four groups (1-4) based on the quartile point of the equivalent household income. From the figure, one can confirm that household income levels are mainly positively related to PFR on education, but negatively related to PFR on income. This trend resembles those found from results of Busemeyer's research.

Table 4 presents preference for redistribution by several degrees of educational attainment. The table reveals that university graduates and graduate school graduates tend to support redistribution on education. Moreover, national and public university graduates tend to support redistribution on education. Graduate school graduates who have specialized in humanities or social sciences tend to support income redistribution. Furthermore, respondents who graduated from high-ranking universities tend to support redistribution on

Table 3: Descriptive statistics of samples

	Male (n=4392)		Female (n=2958)	
	Mean	Std. Dev.	Mean	Std. Dev.
[Household attribute/Income]				
<i>spouse</i>	0.694	0.461	0.640	0.480
<i>children</i>	1.268	1.122	1.073	1.067
<i>personal income (million yen)</i>	5.002	3.430	1.623	1.962
<i>household income (million yen)</i>	5.788	3.945	5.200	3.692
<i>ln_eq_hh_income (million yen)</i>	0.950	1.090	0.826	1.102
[Age class]				
<i>20s</i>	0.059	0.236	0.163	0.370
<i>30s</i>	0.200	0.400	0.248	0.432
<i>40s</i>	0.203	0.402	0.218	0.413
<i>50s</i>	0.245	0.430	0.244	0.430
<i>60s and older</i>	0.292	0.455	0.126	0.332
[Job status]				
<i>company/organization executives</i>	0.053	0.223	0.008	0.090
<i>regular worker</i>	0.509	0.500	0.215	0.411
<i>nonregular worker</i>	0.137	0.344	0.299	0.458
<i>self-employed</i>	0.117	0.321	0.040	0.196
<i>non-working</i>	0.184	0.387	0.439	0.496
[Latest educational attainment]				
<i>junior high or high school graduate</i>	0.269	0.443	0.299	0.458
<i>junior or technical college graduate</i>	0.118	0.323	0.355	0.479
<i>university graduate (humanities)</i>	0.323	0.468	0.257	0.437
<i>university graduate (science)</i>	0.210	0.407	0.059	0.237
<i>graduate school graduate</i>	0.083	0.275	0.029	0.169
[Evaluation for higher education]				
<i>evaluation for education (high)</i>	0.378	0.485	0.216	0.412
<i>effect of HE (specialized knowledge)</i>	0.280	0.449	0.147	0.354
<i>effect of HE (communication skill)</i>	0.122	0.328	0.080	0.272
<i>effect of HE (learning attitude)</i>	0.120	0.324	0.063	0.242
<i>effect of HE (job hunting)</i>	0.065	0.246	0.044	0.205
[Cultural capital]				
<i>art experience in childhood</i>	0.576	0.494	0.608	0.488
<i>reading experience in childhood</i>	0.403	0.491	0.468	0.499
<i>cultural goods in childhood</i>	0.494	0.500	0.661	0.473
<i>university graduate (father)</i>	0.232	0.422	0.265	0.442
<i>university graduate (mother)</i>	0.064	0.244	0.081	0.273
<i>social class (high)</i>	0.229	0.420	0.279	0.449
<i>good teacher (primary, junior high and/or high school)</i>	0.469	0.499	0.424	0.494
<i>sense of disparity</i>	0.687	0.464	0.639	0.480
<i>preference for redistribution on education</i>	0.487	0.500	0.450	0.498
<i>preference for income redistribution</i>	0.367	0.482	0.327	0.469

education in every classification. However, regarding preference redistribution on income, only a slight gap separated the two groups above.

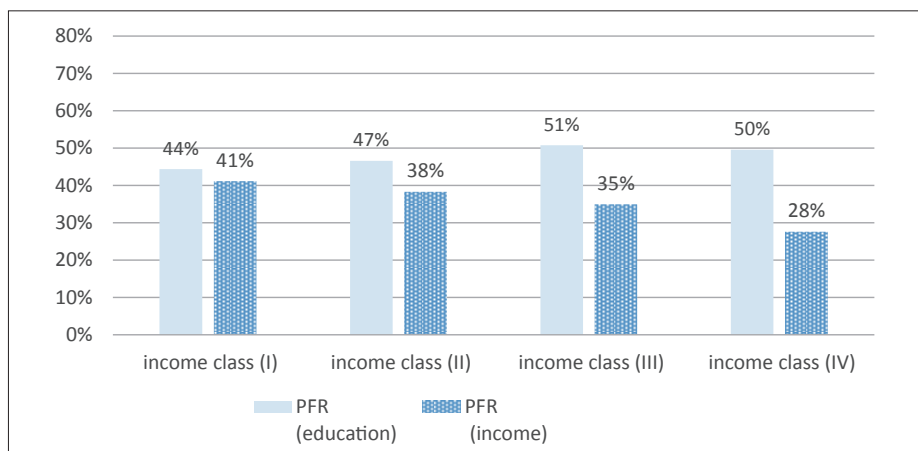


Figure 2: Preference for redistribution by income class

Table 4: Preference for redistribution by educational attainment

[Educational attainment]	Sense of disparity	PFR (education)	PFR (income)
<i>junior high or high school graduate</i>	63.9%	41.2%	34.7%
<i>junior or technical college graduate</i>	66.9%	43.7%	35.8%
<i>university graduate (humanities)</i>	68.2%	52.5%	36.3%
<i>university graduate (science)</i>	68.2%	49.7%	33.8%
<i>graduate school graduate (humanities)</i>	71.9%	54.8%	41.5%
<i>graduate school graduate (science)</i>	67.3%	55.2%	27.9%

[Educational attainment]	Sense of disparity	PFR (education)	PFR (income)
<i>national university graduate</i>	69.3%	56.3%	34.6%
<i>public university graduate</i>	70.6%	57.8%	36.3%
<i>private university graduate</i>	67.8%	50.2%	35.2%

[Educational attainment]	Sense of disparity	PFR (education)	PFR (income)
<i>high rank university (category A) [n=1081]</i>	66.8%	52.9%	32.1%
<i>other university</i>	66.8%	46.2%	35.6%

[Educational attainment]	Sense of disparity	PFR (education)	PFR (income)
<i>high rank university (category C) [n=540]</i>	65.7%	54.6%	32.4%
<i>other university</i>	66.9%	46.6%	35.3%

[Educational attainment]	Sense of disparity	PFR (education)	PFR (income)
<i>high rank university (category D) [n=218]</i>	60.1%	57.3%	33.0%
<i>other university</i>	67.0%	46.9%	35.2%

4.3 Logit analysis of determinants of preference for redistribution

Table 5 presents estimated results of logit analysis of preference for redistribution obtained by gender. Regarding the odds ratios of control variables, it shows that the dummy variable of “spouse” and the variable of “number of children” for both male and female respondents show positive correlations with PFR on education. However, neither variable showed relevance to PFR on income for either male or female respondents. Results show that the household income level is negatively correlated to PFR on income, which is similar to results reported from Busemeyer’s estimation (Busemeyer, 2013). No prospective upward mobility enhances support for income redistribution. This result coincides with results reported by Alesina and Giuliano (2011).

To the model, variables of educational attainment were added. Also, graduate school graduates were integrated into university graduates. For university graduates, dummy variables of four types are considered: private university graduate (humanities), national or public university graduate (humanities), private university graduate (science), and national or public university graduate (science). The reference group is middle school and high-school graduates. The table presents confirmation that, regarding PFR on education, odds ratios of national and public university graduates are high. Regarding PFR on income, odds ratios of private university graduates (humanities) are positively high for both male and female cases.

In addition, regarding dummy variables related to reasons for high evaluation for higher education, variables representing improvement of some items are positively high with PFR on education and income. Particularly, the dummy variable of improvement of communication skills for male respondents is positively high with PFR on education and income. Even after controlling the evaluation variables for higher education from the respondents, the dummy variables of national or public university graduates are statistically positive. Therefore, it can be inferred that government support levels and monetary costs for higher education are correlated to PFR related to education.

In summary, both male and female university graduates tend to support redistribution on education. In terms of the size of odds ratios of the four dummy variables of university graduates, the variable of national or public universities (humanities) is the largest. The variable of national or public universities (science) is the second largest. Private universities (science) were found to have no significant relation for either male or female respondents. Persons with specialized study in humanities or social sciences tend to support redistribution of income and do not seem to support the self-interest theory. As expected from results of earlier studies, signs of the coefficients of low household income, no prospects of upward mobility are mainly positive for PFR (income), which are similar to results reported by Busemeyer (2013) and Hashino (2015).

5. Conclusion

Even in same country, management methods of higher education vary widely along numerous dimensions such as the general levels of government aid, student payments, and university expenditures

(Busemeyer, 2013). This study, using Japanese microdata, specifically examined effects of the levels of public support and private burdens in the financing of higher education reflecting Japan's recent trends of strict selection of priority universities.

Estimation results revealed that graduates of national and public universities, particularly those who specialize in humanities or social sciences, and graduates of high-ranking universities such as G30 Universities (accepted by the MEXT's Global 30 project), and universities for which learning support levels are high tend to agree with redistribution, even after controlling other covariates such as household type, SES, and childhood cultural capital. Opportunities for higher benefits through redistribution in the field of higher education might affect evaluation of government redistribution related to education.

Table 5: Logit analysis of determinants of preference for redistribution

	(1) PFR (education)				(2) PFR (income)			
	Male [n=4392]		Female [n=2958]		Male [n=4392]		Female [n=2958]	
	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.	Odds Ratio	Std. Err.
<i>spouse</i>	1.25**	0.11	1.30**	0.15	0.99	0.09	0.89	0.11
<i>children</i>	1.07*	0.04	1.22***	0.05	0.98	0.04	1.00	0.05
<i>ln_eq_hh_income (million yen)</i>	1.02	0.04	1.09*	0.05	0.88***	0.03	0.92**	0.04
<i>20s</i>	1.00	0.15	0.86	0.11	0.90	0.15	0.86	0.12
<i>30s</i>	1.22**	0.12	0.93	0.11	1.28**	0.13	1.10	0.13
<i>50s</i>	0.92	0.09	0.60***	0.07	1.19*	0.12	1.11	0.13
<i>60s and older</i>	0.84	0.09	0.77*	0.11	1.49***	0.17	1.34**	0.19
<i>company/organization executives</i>	1.30*	0.19	0.88	0.38	0.93	0.14	0.66	0.32
<i>nonregular worker</i>	0.82*	0.09	0.99	0.11	1.20*	0.13	1.09	0.13
<i>self-employed</i>	1.02	0.11	0.77	0.17	1.24**	0.13	0.69	0.16
<i>non-working</i>	0.95	0.11	0.91	0.11	1.06	0.13	0.86	0.11
<i>junior or technical college graduate</i>	0.84*	0.09	1.14	0.11	1.06	0.11	1.33***	0.13
<i>private university graduate (humanities)</i>	1.26***	0.10	1.49***	0.17	1.17*	0.10	1.29**	0.15
<i>national or public university graduate (humanities)</i>	1.71***	0.24	1.98***	0.37	1.34**	0.19	1.21	0.24
<i>private university graduate (science)</i>	1.07	0.10	1.15	0.25	1.04	0.11	0.84	0.21
<i>national or public university graduate (science)</i>	1.29**	0.16	1.66**	0.41	1.09	0.14	0.83	0.24
<i>improved specialized knowledge</i>	1.34**	0.10	1.21*	0.15	0.97	0.08	0.99	0.13
<i>improved communication skills</i>	1.46***	0.16	0.98	0.16	1.37***	0.15	0.91	0.15
<i>improved learning attitude</i>	1.36***	0.15	1.20	0.21	1.16	0.13	1.51**	0.28
<i>improved job hunting</i>	0.90	0.12	1.10	0.22	0.82	0.12	1.05	0.22
<i>large city (Tokyo 23 awards)</i>	0.92	0.10	1.08	0.14	0.93	0.11	0.95	0.14
<i>large city (designated city)</i>	1.01	0.12	1.04	0.13	1.00	0.12	1.17	0.16
<i>small city</i>	0.94	0.09	1.16	0.13	1.07	0.11	1.31**	0.16
<i>town or village</i>	0.95	0.14	0.89	0.15	1.19	0.18	1.58***	0.27
<i>No POUM</i>	1.04	0.07	0.89	0.08	1.41***	0.10	1.35***	0.13

This study has produced some evidence that effects of educational background on redistributive preferences support the self-interest (SI) based theory. However, the current study's measure for the stock of human capital is somewhat crude because of data limitations. No test to ascertain which hypotheses of self-interest (SI) based theory and norms and culture (NC) based theory is predominant has been conducted similarly to those used for Busemeyer's research. Therefore, to support future research, more detailed data must be obtained such as micro-level data of how much individuals and their families themselves have paid for their education, and time-series data of the degree to which educational policies have differed from past to present.

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