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# An Analysis of the Factors Influencing Public Attitudes toward Implementing Basic Income (BI) from an Individual Perspective: A Case Study of Hokuriku Region, Japan

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**Abstract:** With increasing interest in basic income (BI) in recent years around the world, a precise understanding of public attitudes toward this policy can provide valuable evidence for discussions on its feasibility among scholars and policymakers. This study quantitatively investigates what factors influence public attitudes toward implementing BI, taking the Hokuriku region of Japan as an example. The hypothesis and variables were designed based on the theories of retrenchment and social innovation, and a detailed consideration of the theoretical impacts of BI on human society, and of the social, economic and cultural characteristics of Japan. A questionnaire containing a BI proposal for Japan was developed, then a survey was conducted of 1028 local residents in the Hokuriku region. The logistic regression model was employed for the empirical analysis. The results showed that age, individual income level, family structure and interest in participating in non-market activities tend to influence respondents' attitudes toward BI, due to concerns about the gains and losses from a trade-off selection between BI and the existing policies that it would replace. From the perspective of individual value, it was also found that the perception of the future vision of a society reshaped by BI also significantly influences public attitudes toward the policy. This research emphasized that the retrenchment of the existing policies accompanied by the implementation of BI lead potential beneficiaries of the current welfare system to weigh the change to their benefits, which consequently forms their attitudes toward BI.

**Keywords:** basic income; public attitude; self-interest; individual value; policy; retrenchment; social innovation

## 1. Introduction

Basic income (BI) is defined as a periodic cash payment unconditionally delivered to all on an individual basis, without means-testing or work requirements [1]. While different proposals for BI have continuously been made in political debates on welfare reform in western countries—including, for example, the United Kingdom [2], Germany [3], Finland [4] and Spain [5]—since the 1980s, none of them has made it a national policy. Nevertheless, empirical cases of so-called BI have occasionally been implemented in some countries since the 1960s. Still, all of them were either pilot projects or experiments lasting merely several years, or policy programs with similarities to the definition of BI.

Under the policy implementation process in any democratic governance system, whether BI can be realized first depends on the extent of public support for a proposed BI. Concern over this

crucial point has emerged in the resurgent movement in recent years to promote BI in some countries. For example, one of the latest attempts was in Switzerland, where a national referendum was held in 2016 on whether a nationwide BI of a monthly income of 2500 Swiss francs (equivalent to 2351 euro) for every adult should be implemented. It was rejected by 77 percent of all voters (2,466,188 valid voters [6]). BI has also been proposed by Andrew Yang, one of the presidential candidates of the Democratic Party, as part of his campaign goals for the 2020 presidential nomination in the United States, suggesting evidence for the popularity of BI in the US.

Understanding how the public perceives BI and what factors influence their attitude is of importance for the further promotion of BI into a political or economic agenda in any given context. A limited number of empirical studies have touched upon the topic of who supports BI and what factors influence attitudes toward it in the European context. For example, through a comparison of the results of the 2016 European Social Survey, Lee [7] examined the relationship between public attitudes toward BI and country-level social-economic conditions in 21 European countries. He found that countries with relatively weak social welfare systems are likely to be more favorable toward BI. Similarly, using the same data source, the study conducted by Roosma and van Oorschot [8] identified that BI is more supported among people in a weak social-economic position, or in countries with higher levels of material deprivation. Andersson and Kangas [9] investigated public attitudes toward BI from an individual perspective in the Scandinavian context by conducting a phone survey of 1000 people aged between 15 and 80 years old in Finland, and 1000 people above 16 years old in Sweden. They found that factors such as labor market status, party affiliation, age and income level affected the respondents' attitudes toward BI. Bay and Pedersen [10] found that a negative attitude toward immigration would result in a significant position change for those who support BI initially, according to the results of a telephone survey on the opinions of 1000 respondents in Norway.

Gaps remain in the previous studies on this topic. The first gap concerns the theoretical limitation. BI is often argued for in the earlier studies as an alternative to a national-level welfare state. The implementation of BI is accompanied by the rearrangement of existing welfare policies, and their associated bureaucracies would be either disbanded or combined [11]. That is to say, launching this policy could be perceived as a practice of welfare state retrenchment instead of welfare state expansion [12]. Individuals would face a trade-off selection between BI and the existing policies that are considered to be replaced. Furthermore, BI can also be perceived as a kind of social innovation [4] which is essential for rural development [13]. The potential impacts on boosting local small business [14], on expanding domestic consumption [15,16] and on the change of social value [17] make a BI possibly function as a development strategy for revitalizing regions suffering depopulation in both developing countries [18,19] and developed countries [20]. BI is anticipated to alleviate the emigration of residents for survival purposes [16,19]. The diverse functions of BI imply that the theoretical ground for the identification of public attitudes toward BI and its influencing factors in different contexts should be expanded from the welfare-reform perspective.

The second gap is that the methodology design remains a space for improvement, as survey respondents are usually given insufficient details on how BI should be implemented. Which existing policies should be adjusted when initiating the implementation of BI would vary with the context. However, such a trade-off selection between BI and existing policies was not considered in the methodologies of previous studies. Instead of asking general questions like "do you think BI is a good idea or not," survey respondents should be told how much BI would be paid and what policies would be replaced. Without being given enough accurate information, we argue that it is difficult for the public to understand the merits and demerits of BI, especially in a country or area where people are not familiar with the concept. Thus, their attitudes toward BI may be biased, failing to generate enough convincing evidence.

The third gap is the context limitation. The public attitudes toward BI have rarely been investigated out of the European context. It is also essential to explore this topic in Asian countries, especially Japan, where BI has increasingly drawn public attention in recent years.

Aiming to address the research gaps above, the objective of this study is to quantitatively investigate the public attitudes toward implementing BI. The research question is, therefore, “how is BI perceived by the public, and what factors would influence the public attitude toward this policy?” The Hokuriku region in Japan was selected as the case study of this research. This region is in line with the characteristics of the Japanese context due to its depopulated and aging society. A questionnaire was carefully developed and conducted online among 1028 local residents from the Hokuriku region, Japan in August 2019. Descriptive statistics and econometric analyses were carried out to achieve the research objective.

The significance of this research is that the public is provided with accurate information about the BI proposal, which was designed based on the social-economic and cultural features of a given context, which allows the surveyed people to make a clear trade-off selection between BI and existing policies. Furthermore, perceiving BI as not only an alternative to welfare reform but also an approach toward social innovation also provides new theoretical ground in the hypothesis making and variable selection. This study also contributes to expanding the knowledge of the investigation of public attitudes toward BI outside of the European context.

The rest of the paper is structured as follows. The next section explains how the hypothesis was developed, the measures for the variables, and the method of collecting data. The third section presents findings and discusses the data analysis of the questionnaire results. The last section draws some conclusions.

## 2. Theorizing the Public Attitudes toward BI

In this paper, ‘public attitude’ specifically means the aggregation of individual attitudes, either positive or negative, toward the implementation of a specific policy in society in a given context explicitly.

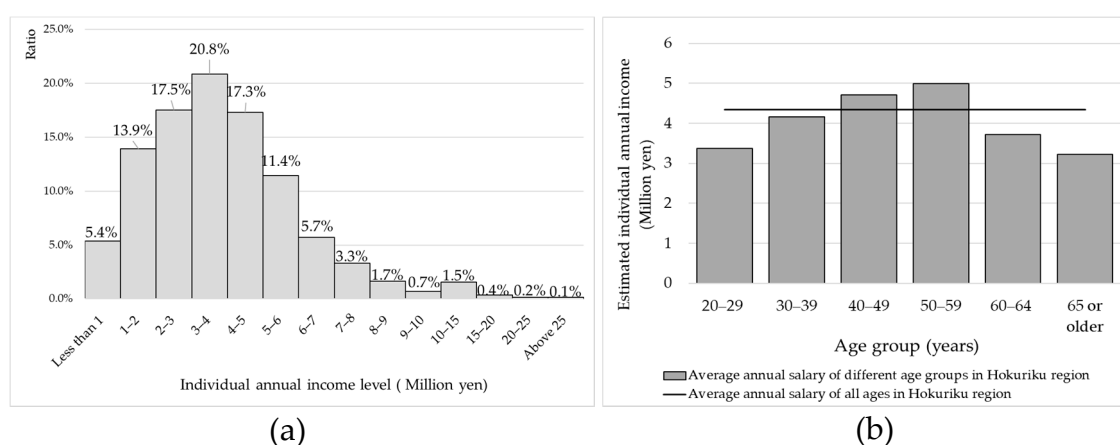
Theories can be borrowed from different disciplines to explain how people decide whether they support BI. For example, in the field of welfare policy, individuals are commonly assumed to be utility-maximizing agents [21] in the self-interest hypothesis, and their decision on whether to support a given welfare policy is likely to be shaped by their concerns about how they could benefit [22]. Regarding the theory on retrenchment, Paul Pierson’s theory on the ‘new politics of the welfare state’ provides an important theoretical ground for the investigation of public attitudes toward BI when people are facing a trade-off selection between BI and existing welfare policies [12]. This theory argues explicitly that the enactment of welfare state policies creates self-interested constituencies who are the potential beneficiaries of these policies, and that they would prevent these policies from being retrenched in the welfare state reform [12]. According to this theory, in the case of this study, such potential beneficiaries of existing welfare policies are supposed to object to the implementation of BI if, at least, the level of BI is lower than the existing welfare policies. Svallfors [23] pointed out that self-interest alone does not determine one’s attitude toward public policy, as individual preferences are also driven by political beliefs and one’s ideology [24].

Social innovation is defined as a change of the attitudes, behavior, or perception of a group of people joined in a network of aligned interests that leads to new and improved methods of collaborative action in the group and beyond [13]. The innovation diffusion theory [25], which emphasizes the importance of differentiating the adopters when promoting innovation, also provides a theoretical basis for investigating how individuals perceive BI if it is seen as a potential approach toward social change [4] in a given context. Following this theory, in a context where the implementation of BI has yet to be initiated, people who support this policy are likely to be recognized as innovators. They are the first group that particularly wants to adopt the innovation in the whole diffusion process [25].

### 3. Materials and Methods

#### 3.1. Area and Sample Size

The Hokuriku region is located in the northwest part of the main island of Japan, and it contains Ishikawa Prefecture, Fukui Prefecture, Toyama Prefecture and Niigata Prefecture. The total population of the Hokuriku region is 5,311,340 people [26]. The average age in the Hokuriku region is between 46.7 and 48.5 years old [26], which is slightly higher than the national average (46.4 years old) [27]. The population aged above 65 years old in the Hokuriku region has reached 29.1% of its total population [26], which is also slightly higher than the average level of Japan (26.6%) [27]. In 2018, the rate of population change in the Hokuriku region was between -0.35% and -0.92%, which is more severe than the average level in Japan (-0.21%) [28]. As shown in Figure 1a, the median value of individual income in the Hokuriku region is between 3 and 4 million yen (equivalent to between 24,940 and 33,254 euros). The average amount of individual annual income in the Hokuriku region is estimated at 4.34 million yen (equivalent to 36,081 euros) (See Figure 1b). This number is lower than the national average level, which is estimated at 4.97 million (equivalent to 41,318 euros) [29].



**Figure 1.** Distribution of the income levels of people working continuously throughout the year (a) and the estimated average income level among different age groups of common laborers (b) in the Hokuriku region, Japan. Source: the data for (a) is from the Japan Statistical Survey of Actual Status for Salary in the Private Sector 2017 [30]. The data for the estimation of income level in (b) is from the Japan Basic Survey on Wage Structure 2018 [29].

As explained earlier, the questionnaire for data collection was conducted online in August 2019 in the Hokuriku region, and a total of 1028 samples above 15 years old were collected.

#### 3.2. BI Proposal for the Case Study Area

Based on the Japanese context, a BI proposal was designed by the authors and elaborated on in the questionnaire. We explained what BI is by using the definition from the Basic Income Earth Network [31], that BI is a periodic cash payment unconditionally delivered to all on an individual basis, without means-test or work requirement. The scheme was also clearly described in detail, including the amount of BI for adults and minors, as well as the policies it would replace. Referring to the standard of public assistance in Japan, the amount was designated as 100,000 yen/month (equivalent to 831 euros) for each adult, and 25,000 yen/month (equivalent to 208 euros) for each minor. The policies replaced by BI were considered to include pensions, public assistance, nursery allowance, child-rearing allowance, the medical expense subsidy system for the child, employment insurance and exemption for individual income tax as well as resident tax. The specific content of the BI proposal is shown in Table 1.

**Table 1.** Content of the BI proposal, as elaborated upon in the questionnaire survey.

Proposed BI Amount per Capita per Month	Policies Considered to be Abolished due to the Implementation of BI
Adult (Above 20 years old): 100,000 yen/month/capita Minor (0–19 years old): 25,000 yen/month/capita	<p data-bbox="799 365 954 389"><i>Welfare policies:</i></p> <ul data-bbox="799 405 1249 589" style="list-style-type: none"> <li>• Public pension</li> <li>• Public assistance</li> <li>• Nursery allowance</li> <li>• Child-rearing allowance</li> <li>• Medical expense subsidy for children</li> <li>• Employment insurance</li> </ul> <p data-bbox="799 622 1086 647"><i>Adjustment on the tax system</i></p> <ul data-bbox="799 663 1337 745" style="list-style-type: none"> <li>• Exemption items for individual income tax &amp; individual resident tax (The exemption for a dependent, the exemption for a spouse, etc.)</li> </ul>

Source: designed by the authors.

### 3.3. Hypothesis

The hypothesis on what factors influence public attitudes toward BI in this study was established based on the theories mentioned earlier, the potential impacts that BI brings to human society, and the social, economic and cultural features of the Japanese context.

Self-interest was often noted in the previous studies on the people's attitudes to welfare policies. According to this theory, the beneficiaries of a policy typically support its implementation [21]. Regarding the case of BI, despite the fact that it has not yet been implemented as a standard policy strictly following the definition in any of the countries so far, its occurrence is considered together with the replacement of the existing welfare policies. Referring to Paul Pierson's theory on the 'new politics of the welfare state' [12], the first fundamental hypothesis is thus that one's attitude toward BI is likely to be determined by one's concerns about the gains and losses from the trade-off between BI and the existing welfare system. Such people's interest may be influenced by different demographic and social-economic features.

Age is likely to affect people's attitudes toward BI as it can contribute to the life stability of vulnerable people, for example elders. On the contrary, according to the theory of the 'new politics of the welfare state' [12], the replacement of pension by BI following the proposal mentioned earlier may also lead the elders—especially those at the retirement age—to be reluctant to support BI if its amount is less than the average level of pension.

In terms of income level, the marginal utility of BI, in general, would be lower for people with higher income levels, compared with those with lower income levels. Furthermore, tax payment increases accompany the increase in income, which may also lead people with high-income degrees to be less interested in BI. Therefore, the income level is likely to function as a factor affecting people's attitudes toward BI. The individuality of BI can enhance one's economic independence, and this may attract the interests of those whose livelihood still depends on their families.

Education is considered to be another factor influencing the support of BI. Educational background is likely relevant to self-perception of the prospect of future career [32]. Japanese society typically features educational credentialism, i.e., one's future career is determined by one's educational background [33]. People with lower educational experiences are therefore expected to be more favorable toward BI.

Women are likely supposed to support BI as it can theoretically weaken the vulnerability of women due to the traditional gender division of labor [34,35]. On the other hand, men may also tend to support BI as, in the context of Japan, they usually take responsibility for earning enough income



through work to raise their families. They may choose to support BI due to concerns about securing a family income source.

Regarding the family structure, BI is likely to be attractive to people with children in the household or household members who are aged, disabled or diseased and in need of long-term nursing, as BI is supposed to release the economic burden of these people from their household living expenditure. In the meantime, following Paul Pierson's theory on the 'new politics of the welfare state' [12], the above type of people may also be opposed to BI if the potential benefits from, for example, nursing allowance and medical expense subsidy for children, or tax exemption for a handicapped person, was higher than the level of BI.

We considered that the public attitudes toward BI are relevant to their employment status. A potential impact of BI is to enhance the bargaining power of laborers [36,37] in an increasingly flexible labor market. Therefore, those who are not permanently employed, including contracted or part-time workers, are likely able to benefit from BI by becoming more capable of choosing their desired work without worrying about losing the source of income [38]. Meanwhile, permanent employees may also support BI due to concerns about work–life balance. In Japan, permanent jobs usually have fixed working hours, which are less flexible compared with other employment statuses, such as non-permanent employment or self-employment. It is reported that the average daily working time in Japan is 8.9 h for a permanent employee, but only 6.4 h for a non-permanent employee [39]. Furthermore, the total hours of unpaid overtime are 20.1 h per month for permanent employees, but only 9.5 h per month for non-permanent employees.

We also included personal interest in participating in non-market activities as a factor in our hypothesis, due to the concern that BI is more than merely a pathway for reforming the existing welfare system, being also an approach toward social innovation. An environment where people are allowed to participate in non-market activities—defined as those, such as personal hobbies [40] or volunteer activities [41] through which it is difficult to generate enough income or economic value to live on, at least in the short term—is a crucial prerequisite for arousing such social innovation. In the theoretical debate, BI is claimed to be able to enhance the engagement of such non-market activities [3,42] by reshaping the meaning of work by decoupling the work ethos from productivism [42,43]. Therefore, in the case of BI, people having interests in participating in such non-market activities may play the role of an innovator, as described in the innovation diffusion theory [25], and thus be more likely to support BI.

Another critical hypothesis is that individual value is likely the other domain that affects people's attitudes toward BI. Previous studies investigating public attitudes toward BI or public policies in the European or American context often utilized political ideology [10,24,44] or party preference [9,45,46] as a critical factor to measure individual value. However, we consider that it is not applicable in our study due to the consideration of the cultural and political differences between the contexts of our research and previous studies. BI is a relatively new concept in Japan. It has neither been mentioned in the manifesto of any party across the Japanese political spectrum nor deeply discussed in any political debate.

Moreover, political ideology appears to have a limited impact on determining the policy preference of voters in Japan, especially when it comes to welfare-related topics. For example, it has been identified that people with either conservative or egalitarian ideologies commonly express the desire for big government to provide more welfare benefits [47]. Similarly, it has been reported that the correlation between voters' political ideology and their policy interests in 2010 has declined compared to 1983 [48].

Besides this, support or objection to BI is also not embedded in a single type of ideology. For example, for the liberal perspective, BI is considered an egalitarian approach, providing everyone with opportunities to achieve so-called real freedom [1], including not just the abstract liberal right to freedom but the financial resource to make freedom a lived reality [49]. Meanwhile, a liberal objection to BI focuses its violence on the principle of reciprocity [50,51]. Support for BI from conservative aspects is rooted in its impact on promoting full employment and addressing poverty issues, while

objections to BI derive from concerns regarding the financial feasibility of BI and the disincentive to work [52]. Due to the above reasons, we included an indicator directly measuring the individual perception of the society reshaped by BI. We described a future vision of the community with BI as one where everyone can survive without being forced to work. We hypothesized that the perception of the future vision of society with BI might vary among individuals, and such differences in value might affect their attitudes toward BI. A person who accepts such a future community would likely support BI.

In summary, we included age, individual income level, gender, economic independence, education, and the presence of household members who need long-term nursing, the presence of children, employment status, and the perception of the future vision of society with BI in our analysis.

### 3.4. Measurement of Model Variables

The dependent variable is people's attitudes toward BI, and it is investigated by asking "do you agree with the BI proposal?" As shown in Table 2, the difference in the respondents' answers on whether they agree with the BI proposal indicates the rationality of taking the Hokuriku region as a case study for investigating the public attitudes toward BI.

**Table 2.** The number of respondents agreeing and disagreeing with the BI proposal. ( $n = 1028$ ).

Attitudes toward BI	Agree with the BI Proposal	Do Not Agree with the BI Proposal
Number of respondents	503	525

Source: made by the author, based on the result of the survey.

Age was measured in years. Gender was divided into two categories (1 = Male, 0 = Female). Economic independence was measured by offering three options, which are 'Economically independent', 'Neither economically independent nor dependent' and 'Economically dependent'. Educational background was categorized into three groups, which are 'Equal to or below high school', 'Vocational school' and 'Equal to or above undergraduate school'. Individual income level was coded into four groups: 'Less than 3 million yen', '3–6 million yen', '6–9 million yen' and 'Higher than 9 million yen'.

In terms of employment status, four types were listed: 'Permanently employment', 'Non-permanent employment', 'Others' (including agriculture, family business, and freelance), full-time housewife (or husband) and student, and 'Unemployment'. We also asked respondents about the presence of children at home (1 = yes, 0 = no) and of any household member(s), such as the aged or the disabled, who need long-term nursing (1 = yes, 0 = no). Whether a respondent had interests in participating in non-market activities was measured by asking, 'if your basic needs for daily life were secured, would you want to participate in any non-market activities (e.g., volunteer work, community management)?'. The perception of the future vision of society with BI was measured by a 5-point Likert scale, which included 'Acceptable', 'Somewhat acceptable', 'Neither acceptable nor unacceptable', 'Somewhat unacceptable', and 'Unacceptable'. All the above variables are explained in Table 3.

**Table 3.** Results of the descriptive statistics (Individual level,  $n = 1028$ ).

Variable	Description	Mean	Standard Deviation
Attitude towards BI	Dummy = 1 if the respondent agrees with BI proposal, 0 otherwise	0.489	0.500
Gender	Dummy = 1 if the respondent is Male, 0 otherwise	0.541	0.499
Age	Age of respondent in years	46.223	13.011
Economically independent	Dummy = 1 if the respondent is economically independent, 0 otherwise	0.407	0.491
Neither economically dependent nor independent	Dummy = 1 if the respondent is neither economically dependent nor independent, 0 otherwise	0.290	0.454
Economically dependent	Dummy = 1 if the respondent is economically dependent, 0 otherwise	0.304	0.460
Less than 3 million yen	Dummy = 1 if the annual individual income level of the respondent is less than 3 million yen, 0 otherwise	0.638	0.481
3–6 million yen	Dummy = 1 if the annual individual income level of the respondent is between 3 to 6 million yen, 0 otherwise	0.274	0.446
6–9 million yen	Dummy = 1 if the annual individual income level of the respondent is between 6 to 9 million yen, 0 otherwise	0.064	0.245
More than 9 million	Dummy = 1 if the annual individual income level of the respondent is more than 9 million yen	0.023	0.151
Below or equal to high school	Dummy = 1 if the educational background of the respondents equal to or below high school, 0 otherwise	0.545	0.498
Vocational school	Dummy = 1 if the educational background of the respondent is a vocational school, 0 otherwise	0.122	0.327
Above or equal to undergraduate	Dummy = 1 if the educational background of the respondent is above or equal to undergraduate school, 0 otherwise	0.334	0.472
Permanent employment	Dummy = 1 if the respondent is a permanent employee, 0 otherwise	0.469	0.499
Non-permanent employment	Dummy = 1 if the respondent is a non-permanent employee, 0 otherwise	0.252	0.434
Others	Dummy = 1 if the respondent is doing agriculture, a family business, or freelance, or the respondents is a full-time household/ husband or student, 0 otherwise.	0.169	0.375
Unemployment	Dummy = 1 if the respondent is unemployed, 0 otherwise	0.110	0.313
Presence of children	Dummy = 1 if the respondent has children need to be raised in the household	0.363	0.481
Long-term nursing	Dummy = 1 if the respondent has children need to be raised in the household	0.159	0.365
Interest in participating in non-market activities	Dummy = 1 if the respondent has an interest in participating in non-market activities, 0 otherwise	0.541	0.499
Acceptable	Dummy = 1 if the respondent feels the future vision of a community with BI is acceptable, 0 otherwise	0.111	0.314
Somehow acceptable	Dummy = 1 if the respondent feels the future vision of a community with BI is somehow acceptable, 0 otherwise	0.219	0.414
Neither acceptable nor unacceptable	Dummy = 1 if the respondent feels the future vision of a community with BI is neither acceptable nor unacceptable	0.410	0.492
Somehow unacceptable	Dummy = 1 if the respondent feels the future vision of a community with BI is somehow unacceptable	0.170	0.376
Unacceptable	Dummy = 1 if the respondent feels the future vision of a community with BI is unacceptable	0.090	0.287

Source: authors' calculations based on the survey data.



### 3.5. Empirical Model

Both the descriptive approach and econometric approach were applied to analyze the data collected from the survey. The descriptive approach aims to elaborate on the frequency distribution, average and ratios of the data. A binary logistic regression model was further carried out for the econometric analysis.

Regarding the econometric analysis, respondents' attitudes toward BI were selected as the dependent variable in this study. Following the questionnaire, it was designed as a binary variable, taking 1 if a respondent agrees with BI, and 0 otherwise. Therefore, either the logistic model or probit model was principally suitable in this case [53]. Due to the consideration of the calculation process of the marginal effect for interpreting the result, the logistic regression model was decided upon for the econometric analysis in this study.

The logistic model applied to investigate the factors influencing the public attitudes toward BI are shown as follows:

$$y_i^* = x_i' \beta + U_i \quad (1)$$

Suppose that there is a latent variable  $y_i^*$  measuring the level of the attitude of the  $i$ th respondent toward BI, as shown in (1).  $\beta$  refers to unknown parameters to be estimated, and  $U_i$  is the error term.  $x_i'$  represents a vector of independent variables. The following equation shows how the latent variable  $y_i^*$  is linked to the binary variable  $y_i$  observed from our questionnaire:

$$y_i = \begin{cases} 1 & \text{if } y_i^* > \alpha \\ 0 & \text{if } y_i^* \leq \alpha \end{cases} \quad (2)$$

where  $\alpha$  functions as a threshold, and it is assumed to be zero in this study.  $y_i$  is equal to 1 if  $y_i^* > \alpha$ , and  $y_i$  is equal to 0 otherwise. The logistic regression model is written as follows (3):

$$pr(y_i = 1|x_i) = \frac{\exp(b \cdot x_i)}{1 + \exp(b \cdot x_i)} \quad (3)$$

where the probability of the  $i$ th respondent to agree with BI ( $y_i = 1$ ) lies between 0 and 1.  $b_i$  refers to the coefficients of the independent variables. The logistic regression model is estimated through maximum likelihood estimation.

Furthermore, the marginal effects of the logistic regression model are also measured to understand to what extent the investigated independent variables would influence the magnitude of the changes in the probability of respondents' attitudes to the BI proposal [54,55]. The marginal effects of the logistic regression model are calculated by the following equation:

$$\frac{dp_i}{dx_i} = \frac{\exp(b \cdot x_i)}{(1 + \exp(b \cdot x_i))^2} b \quad (4)$$

where the marginal effect  $\frac{dp_i}{dx_i}$  is equal to the probability density function of the logistic distribution multiplied by the coefficient of the independent variables.

## 4. Result and Discussion

### 4.1. Descriptive Analysis

The results from the descriptive study of the data are elaborated in Table 3. It was demonstrated that, in general, 48.9% of the respondents agree with BI, while 51.1% of the respondents do not agree with BI. The average age of respondents was reported as 46.2 years old. In total, 40.7% of the respondents reported that they are economically independent. The number of respondents with an individual income level above 3 million yen occupies 36.2% of the total samples. In terms of educational

background, 54.5% of the respondents are equal to or less than high school graduates, 12.2% of the respondent went to vocational school and 33.4% of the respondents held an educational background equal to or above undergraduate school. In terms of employment status, permanently employed and non-permanently employed respondents occupy 46.8 % and 25.2% of the samples, respectively. The employment of 16.9% of the respondents includes agriculture, family businesses, freelancing, or being a full-time housewife/husband or student. In total, 11% of the surveyed respondents are unemployed. Respondents with children to raise in the household reached 36.3% of the total samples. In total, 15.6% of the respondents have household members who need long-term nursing. In total, 54.1% of the respondents are reported to have interests in participating in non-market activities. Finally, the respondents who can accept the future vision of a society with BI and those who cannot respectively occupy 11% and 9% of the total respondents.

#### *4.2. Factors Affecting Public Attitudes on Basic Income*

The result of examining the factors influencing public attitudes toward BI through the logistic regression model is elaborated in Table 4. An odds ratio higher than 1 means a variable has a positive influence on the probability of the respondents agreeing with the BI proposal, while an odds ratio less than 1 means a variable has a negative influence on the probability of the respondents agreeing with the BI proposal. It turns out that the odds ratio of gender is less than 1, which implies that male respondents are significantly negative toward the implementation of the BI proposal. Unlike in the western context, in Eastern Asian countries such as Japan, males usually take the critical responsibility of earning income to support the livelihood of the whole family. Concerns about economic pressure may lead male respondents to support BI.

Our result shows a negative correlation between age and the attitude toward the BI proposal, and that this is highly statistically significant. The result implies that younger respondents tend to be in favor of BI. In comparison, elderly respondents tend to be against the BI proposal. Due to the age-wage system in Japan, the individual annual income of younger people aged in their 20s and 30s is less than those aged in their 40s and 50s, and also below the average level of the Hokuriku region (see Figure 1b). This implies that BI would be more attractive to younger people as an extra income source. Also, the result provides a typical example in line with the argument in Paul Pierson's theory on the 'new politics of the welfare state'. As mentioned in the BI proposal, the pension is a key policy replaced by BI. According to data from the Ministry of Health, Labor and Wealth [56], the average monthly pension in the Hokuriku region was 131,996 to 138,295 yen (equivalent to between 1097 to 1150 euro) in 2017, which is slightly higher than the proposed amount of BI in the questionnaire. This suggests that the incomes of many elderly respondents would likely reduce if BI were implemented and the pension was retrenched, which consequently lead these respondents to have a negative attitude toward the BI proposal.

The results reveal that respondents with an individual income level above 9 million yen tend to significantly disagree with BI. The odds ratio of this variable is less than 1, and it is statistically significant. This is similar to the outcomes of previous studies on BI [10] or welfare policy [24]. An income of above 9 million yen should be categorized as a high income level in the Hokuriku region (see Figure 1a). Despite the universality and unconditionality of BI determining that everyone, including those with a high income level, the utility of BI to promote individual welfare should be less for them compared with those people at a low individual income level, which makes BI less attractive to the people with a higher income level.

**Table 4.** Result of logistic regression of public attitudes toward BI.

Dependent Variable: Attitude toward BI	Odds Ratio	Standard Error
Gender	1.599 ***	0.283
Age	0.981 ***	0.006
<i>Economic independence (Reference group: Economically independent)</i>		
Neither economically dependent nor independent	0.927	0.170
Economically dependent	1.143	0.220
<i>Individual income (Reference group: Less than 3 million yen)</i>		
3-6 million yen	0.793	0.161
6-9 million yen	1.036	0.345
More than 9 million yen	0.247 **	0.140
<i>Educational background (Reference group: Below or equal to high school)</i>		
Vocational school	1.802 **	0.410
Above or equal to undergraduate	1.148	0.183
<i>Status of employment (Reference group: Others)</i>		
Permanent employment	1.255	0.273
Non-permanent employment	0.851	0.191
Unemployed	0.873	0.252
Presence of children	1.290 *	0.196
Long-term nursing	1.458 *	0.285
Interest in participating in non-market activities	1.683 ***	0.245
<i>Perception of the future vision of a society with BI (Reference group: Somehow acceptable)</i>		
Acceptable	1.252	0.365
Neither acceptable nor unacceptable	0.239 **	0.046
Somehow unacceptable	0.145 ***	0.034
Unacceptable	0.075 ***	0.024
Constant	3.312 ***	1.292
LR chi2(19)	243.09	
Pseudo R <sup>2</sup>	0.1706	

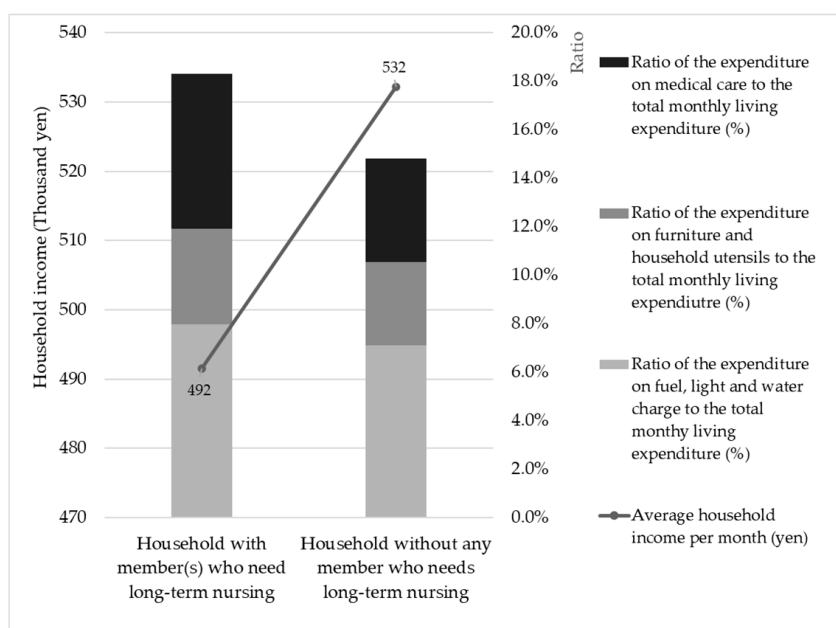
Note: an odds ratio higher than 1 means that a variable positively influences the probability of the respondents agreeing with the BI proposal, while an odds ratio less than 1 means a variable negatively influences the probability of the respondent agreeing with the BI proposal. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Regarding educational background, the results demonstrated that vocational school has a significantly positive correlation with respondents' agreement with the BI proposal. Japanese society features meritocracy, and educational background is a decisive factor in determining one's future career, including the content of the occupation and life-long income; this may lead people with lower level educational backgrounds, such as vocational school, to tend to be more favorable toward BI as a backup for their future.

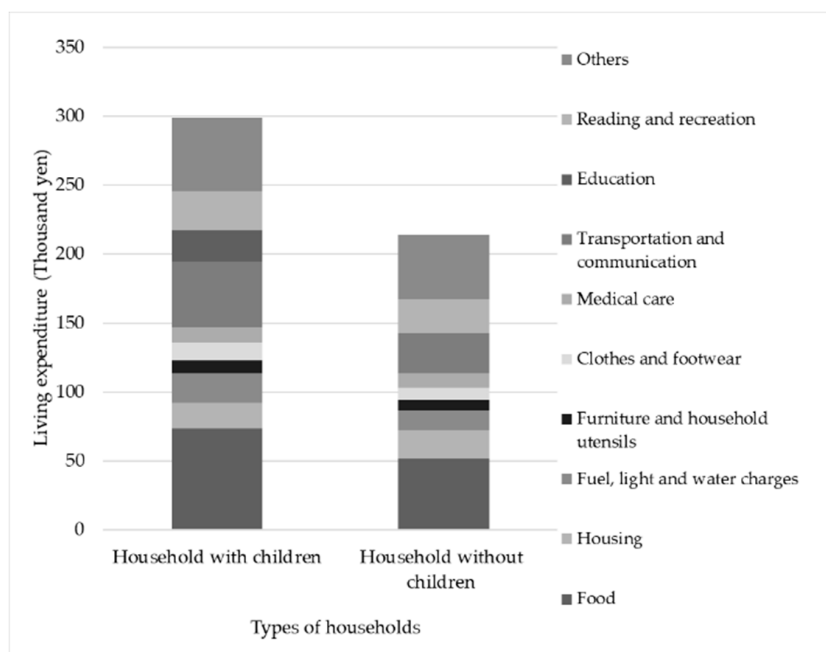
In terms of family structure, the presence of children has a positive impact on agreement with the BI proposal, as the odds ratio is significantly higher than 1. In Japan, raising children would directly determine the family budget. Secondary data also reveal that the living expenditure of households with children is about 84,000 yen (equivalent to 698 euros) higher than those without children (See Figure 3). Meanwhile, despite the fact that the above respondents are the potential receivers of nursery allowance or the medical expense subsidy for children, the total amount is on average lower than the amount of BI provided in the proposal. Regarding the usual case of nursery allowance, a child would receive 15,000 yen/month (equivalent to 125 euros) when they are aged under 3 years old, and 10,000 yen/month (equivalent to 83 euros) between 3 and 15 years old [57]. Furthermore, for a child aged 15 years old and under, the copayment on the medical treatment under health insurance is usually further compensated by the scheme of medical expense subsidy for children. According to the data from the Ministry of Health, Labor and Welfare [58], the annual amount of the copayment on medical treatment under health insurance per person is estimated to be on average 37,000 yen/year (equivalent to 308 euros) between 0 and 4 years old, and this number declines to 21,000 yen/year (equivalent to 175 euros)

between 10 and 14 years old. Therefore, it is reasonable for respondents who are raising children to support BI, as the benefit potentially provided by the above welfare policies is less than the level of BI in the proposal.

Similarly, the presence of a household member(s) who needs long-term nursing also shows a significantly positive sign toward a respondent favoring the BI proposal, as the odds ratio of this variable is significantly higher than 1. Long-term nursing for a household member(s) also leads to an increase in household expenditure in daily life. Figure 2 highlights that, in Japan, the average household income per month of households with member(s) requiring long-term nursing is estimated to be 40,000 yen (equivalent to 323 euros) less than those without such a member(s). Furthermore, such respondents could apply for the exemption for handicapped persons in the tax payment of the individual income tax or individual resident tax. The amount of such an exemption annually is 270,000 yen (equivalent to 2245 euros) for the calculation of individual income tax [59], and annually 260,000 yen (equivalent to 2162 euros) for the calculation of individual resident tax [60]. The level of the above tax exemption is less than the annual amount of BI set at 100,000 yen/ month (equivalent to 831 euros). Therefore, we believe that a better situation to alleviate the economic burden due to the implementation of BI may increase interest in this policy among respondents with household members requiring long-term nursing.



**Figure 2.** Comparison of the expenditure and income of households with and without members who need long-term nursing, 2014. Source: the data are from the Japan National Survey of Family Income and Expenditure 2014 [61].



**Figure 3.** Comparison of the expenditure of households with and without children (a), and a comparison of the expenditure of households with and without members who need long-term nursing (b). Source: the data are from the Japan National Survey of Family Income and Expenditure 2014 [61].

In line with our hypothesis, the odds ratio of having interests in participating in non-market activities is higher than 1, and this is statistically significant. The results suggest that this variable has a positive impact on the agreement of respondents with the BI proposal. Engaging in non-market activities is one way of achieving human needs at a higher level, including love and belonging, esteem and self-actualization, as defined in Maslow's theory of needs. However, such human needs cannot be achieved without fulfilling physiological and safety needs first. That is, one must ensure a stable income source for one's livelihood as a precondition to pursuing human needs at a higher level. In Japan, according to the Public Assistance Act [62], people who live in poverty have to try to find paid work based on their ability at first to maintain a minimum standard of living before applying for public assistance. Entitlement to social benefits, such as pension and unemployment insurance, is also strongly tied to paid employment. It is anticipated that BI enhances engagement in non-market activities by decoupling the relationship between market-led productivity and entitlement to the income [3]. To enhance the equality of society, self-realization by exercising one's skills should be, at least partially, independent from others' judgment on what is valuable in society [43]. Our results suggest that, as BI is expected to help reshape the purpose of work, it is attractive for respondents who are interested in non-market activities, and so they have a reason to support BI.

In terms of individual values, the result reveals that a lower acceptance of the future vision of a society with BI significantly leads to disagreement with the BI proposal, as the odds ratios of 'Neither acceptable nor unacceptable' 'Somewhat unacceptable' and 'Unacceptable' are reported to be significantly less than 1. People are supposed to be careful about how a new policy would reshape society. Referring to the social diffusion theory, BI can be considered an innovative approach toward reforming local social systems. Therefore, people who cannot accept such future visions of a society reshaped by this innovative approach are very much likely to be unable to take the role of innovator [25] at the phase of promoting the implementation of BI.

A marginal function of the logistic regression model was also carried out to measure the extent to which the investigated independent variables would influence the magnitude of changes in the probability of respondents' attitudes towards the BI proposal. The marginal effects of all the independent

variables are shown in Table 5. Our results indicate that the likelihood of male respondents to support the BI proposal is significantly 9.2% higher than female respondents. Having children or having any household member who needs long-term nursing significantly enhanced the respondents' probability of agreeing with BI proposal, by 5% and 7.4% respectively. The likelihood of respondents with an educational background of vocational school level is significantly 11.6% higher than others. Having an interest in participating in non-market activities would significantly lead to an increase of 10.2% of the probability to support the BI proposal.

**Table 5.** Marginal effect of independent variables on the public attitude toward BI.

Dependent Variable: Attitude toward BI	dy/dx	Standard Error
Gender	0.092 ***	0.034
Age	−0.004 ***	0.001
<i>Economic independence (Reference group: Economically independent)</i>		
Neither economically dependent nor independent	−0.015	0.036
Economically dependent	0.026	0.038
<i>Individual income (Reference group: Less than 3 million yen)</i>		
3–6 million yen	−0.045	0.040
6–9 million yen	0.007	0.065
More than 9 million yen	−0.274 **	0.110
<i>Educational background (Reference group: Below or equal to high school)</i>		
Vocational school	0.115 ***	0.044
Above or equal to undergraduate	0.027	0.031
<i>Status of employment (Reference group: Others)</i>		
Permanent employment	0.044	0.042
Non-permanent employment	−0.031	0.044
Unemployed	−0.027	0.056
Presence of children	0.050 *	0.030
Long-term nursing	0.074 *	0.038
Interest in participating in non-market activities	0.102 ***	0.028
<i>Perception of the future vision of a society with BI (Reference group: Somehow acceptable)</i>		
Acceptable	0.044	0.057
Neither acceptable nor unacceptable	−0.279 ***	0.034
Somehow unacceptable	−0.377 ***	0.040
Unacceptable	−0.506 ***	0.056

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

On the other hand, an increase in respondents' age by one year would significantly reduce the probability of agreeing with the BI proposal by 0.4%. If the individual's income level is above 9 million yen per year, the possibility of agreeing with the BI proposal would be significantly reduced by 27.4%. Finally, if the future vision of society with BI, that everyone can survive without being forced to work, is neither acceptable nor unacceptable, somewhat unacceptable or unacceptable, it would significantly lower respondents' probability of agreeing with the BI proposal, by 27.9%, 37.7%, and 50.6%, respectively. The result of the marginal effect shows that individual income, educational background, interest in participating in non-market activities and the perception of the future vision of a society with BI are the main drivers influencing the public attitudes toward BI.

## 5. Conclusions

With the increasing interest in BI worldwide in recent years, a precise understanding of public attitudes toward implementing BI would provide valuable evidence for discussions among academics and policymakers on the feasibility of introducing BI in any given context. Taking the Hokuriku region of Japan as an example, this study investigated the factors influencing public attitudes toward BI based on the theories of retrenchment and of social innovation. Through a logistic regression analysis on the data from our questionnaire survey, we concluded that public attitudes toward BI are influenced by people's interest in the expected gains and losses from BI, as well as their values related to BI.



From the self-interest perspective, we found that taking age or income level into consideration, people tend to form their attitude by weighing up the gains and losses in a trade-off selection between BI and existing welfare benefits. With similar concerns, people with children to take care of in their households, or with household member(s) who need long-term nursing, are more favorable toward BI. The findings confirm that an interest in non-market activities positively influences support for BI. The expectation that BI would strengthen the capability of people to pursue higher-level human demands by securing their income source induces people who are interested in participating in non-market activities to be in favor of BI. Finally, in terms of individual values, we found that people's perception of the future vision of society created by BI significantly influences their attitudes toward BI.

BI is supposed to be implemented with the adjustment of the existing policy system. It would be supported by many people who do not benefit from the current welfare system. On the other hand, the retrenchment of existing results in those potential beneficiaries of the current welfare policies weighing the change of their benefits, which consequently forms their attitudes toward BI. Furthermore, the investigation on the popularity of BI and its influencing factors should not be limited from the perspective of an alternative to welfare reform, but should also be an approach toward social innovation, especially in a local-level context. This research sheds light on investigations into public attitudes toward BI in other settings around the world. Taking the economic, social and cultural features of a given context into consideration and providing the public with a clear trade-off selection between BI and the replacement of existing policies is vital to precisely measure public attitudes toward BI with convincing evidence in a given context.

Regarding the limitations of our research, the results could be supported by longitudinal data with a larger sample size covering all of the regions in Japan. Furthermore, our case study was only able to target one area in Japan. However, how the public in a given context perceives BI, either based on their interests in the benefits or their acceptance of the values, is closely linked to their economic, social and cultural background. Hence, future research is needed to explore situations in more diverse contexts and to obtain findings on factors influencing public attitudes toward BI through comparative studies.

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