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Media Influence on Public Attitudes toward Japan's Value-Added Tax[†]

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Abstract

This study investigates the impact of media on people's attitudes toward the Japanese value-added tax (VAT), also known as the "consumption tax." The study draws on microdata from *the Twin Survey on the Japanese Economy and Policy Effects*. The study reveals a significant difference in the perception of VAT between the general public and economists. While many economists view VAT positively, the general public tends to view it negatively. The study examines the role of economic information media in bridging this perception gap by disseminating economists' ideas to the public. By analyzing daily exposure to newspaper information, especially NIKKEI, the study statistically examines the relationship between media exposure and the public's understanding of VAT. Using propensity score matching techniques, the study compares the attitudes of newspaper readers and non-readers toward the Japanese VAT, controlling for basic background attributes. The results indicate that daily newspaper readers were significantly more likely than non-readers to have positive attitudes toward the VAT. The findings highlight the importance of media efforts in translating economists' proposals into actual policies.

Keywords: Japanese economy, survey of economists, media information, value-added tax (VAT), propensity score matching

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1. Introduction

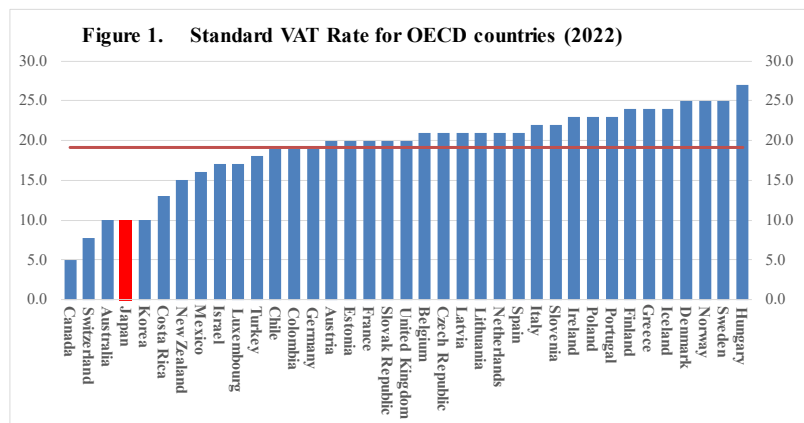
For the planning and formulation of economic policies and their smooth implementation and realization, it is necessary to strive for consensus building regarding the current state of the target economy and the impact (direction, magnitude, etc.) on the economy if such policies are implemented. If this consensus-building (especially in gaining the support of the general public majority) is not achieved, even policies that are highly regarded by experts will not be realized and will end up as a mere image. Recently, there has been a growing awareness of the importance of scientific evidence in policy making (known as EBPM). However, even if a policy is based on sound evidence, it will not materialize and be implemented as a policy unless it is supported by the public.

As an example of such difficulties, this study will focus on the issue of value-added tax (also known as "consumption tax") in Japan. Since its introduction in France in 1959, value-added tax (VAT) has spread to more than 160 countries as a simple tax system that can correct many of the inefficiencies associated with traditional tax systems¹. In Japan, the VAT was first introduced in 1989 at a rate of 3% in order to (1) correct the ratio between direct and indirect taxes in the income tax-centered tax system to ensure the fairness of the tax system as a whole, (2) fundamentally solve the problems of the individual indirect tax system, and (3) secure financial resources for pensions, medical care, and welfare needed in the aging society.

Although many fiscal experts or economists agree that an expansion of the VAT tax is necessary to secure the country's financial resources in the medium and long term, as repeatedly discussed by the Government Tax Commission, an increase in the VAT rate is representative of

¹ The theoretical advantages (and disadvantages) of consumption taxation, especially of VAT, are discussed in detail by chapter 25 of Gruber (2022). Ihori (2016) is a book for the general public that explains the benefits of VAT in the context of the Japanese economy.

an unpopular policy that is strongly opposed by the general public, as parties that have supported the introduction and expansion of the VAT in the past have lost votes in elections.² Because of this public unpopularity, attempts to raise the VAT rate have repeatedly failed or been postponed, and as a result Japan's VAT rate remains low, ranking 33rd out of 38 OECD countries, despite the strong fiscal demands of an aging population.



In light of this current situation, this study will use a questionnaire survey targeting both the general public and economists, who are economic experts, to confirm that a gap exists in the perception of VAT between the two groups (the general public and economists). We then discuss the role that the media can play in bridging this gap. No matter what kind of insight an expert (economist) may have in proposing a certain policy or system, if it is not accepted by the general public, it will never be realized. What options are available in terms of means and measures for the acceptance and dissemination of experts' ideas to the general public is a future issue that should be further explored, but this paper focuses particularly on the possibility of the general public learning through economic information media.

To this end, this paper uses microdata from *the Twin Survey on the Japanese Economy*

² One might think that aversion to the consumption tax is the same as aversion to rising prices, since an increase in the consumption tax rate has the same effect as an increase in consumer prices. However, given the absence of strong public protests against the price hikes triggered by the war in Ukraine, it is likely that aversion to the consumption tax is related to emotional factors that go beyond aversion to price hikes.

and Policy Effects. The survey was conducted in 2017 by the Cabinet Office's Economic and Social Research Institute (ESRI) to gauge the general public's and economists' perceptions of Japan's economy and economic policies. In addition to asking about respondents' perceptions of the VAT, the survey also collects information about the types of media respondents use on a daily basis, as well as basic attributes of the respondents, including their gender, age, educational background, etc. Therefore, the dataset is suitable for understanding the differences between the public's and economists' attitudes toward the VAT and the influence of the information media on the public's attitudes.

The results of the analysis first showed that, as expected, there is a large gap between economists and the general public in terms of their attitudes toward the VAT, with 70-80% of economists viewing it positively, while the general public is negative, with only 10-30% of them viewing it positively. Among the general public, a higher share of individuals with attributes such as male, highly educated, full-time job, and higher income responded positively to the VAT, but the difference in the share between these groups and those who opposed to the VAT (female, young, less educated, lower income, etc.) was at most 10%. On the other hand, no systematic differences in views were found among economists, even when divided by education, affiliation, age, etc. In this sense, economists generally agree that it is desirable to promote the use of the VAT in Japan.

In light of these facts, this study analyzes the impact of daily use of economic information media on the public's attitude toward the VAT in order to find a way for economists to persuade the general public (i.e., to get the public to accept support for the VAT). Those who are regularly exposed to newspapers, especially Nikkei newspaper readers, tend to be more positive about the use of VAT than those who are not exposed to newspapers. However, this correlation is likely to be also affected by differences in basic attributes between newspaper (or

NIKKEI) users and non-users. Therefore, we computed a propensity score using a logistic model that identifies media use and estimated the effect of newspaper (or "Nikkei Shimbun") use on attitudes toward the VAT after adjusting for the balance of attributes through propensity score matching. The results showed that the proportion of positive responses to the use of VAT increased significantly with exposure to newspapers, suggesting that the public's attitude toward economic policies (in this study, VAT) can change depending on the media information they are exposed to.

This paper is organized as follows. Section 2 presents several previous studies that compare the perceptions of the general public and economists about the economy. Section 3 outlines the "Twin Survey on the Japanese Economy and Policy Effects," whose microdata were used in the empirical analysis of this paper, and explains how some of the variables used were constructed. Section 4 organizes respondents' attitudes toward the VAT (percentage of positive responses to the VAT) by different attribute categories to see which attributes make respondents more likely to be positive about the VAT. Section 5 reports the results of a propensity score matching analysis examining the impact of media use on respondents' stance toward the VAT. A brief summary is provided in the concluding Section 6.

2. Literature Review

The ultimate goal of this study is to explore what options are available in terms of means and measures to disseminate the ideas of economists on VAT to the general public. To do so, however, we first need to determine how the general public and economists differ in their attitudes toward the VAT.

An earlier study that focused on the differences in perceptions of economic issues

between the general public and economists can be found in the "Survey of Americans and Economists on the Economy" conducted by the Washington Post/Kaiser Family Foundation/Harvard University (1996). Caplan (2001) used microdata from the survey to compare the perceptions of economists and the general public in the U.S. and showed that there is a systematic gap between them regarding the effectiveness of market mechanisms and the future prospects of the economy, and argued that education is the key to bringing about the economists' view. Caplan later developed the argument that intelligence, more than education, is the biggest factor in producing an economist's views, using the General Social Survey conducted by the National Opinion Research Centers at the University of Chicago (Caplan and Miller, 2010). Andre et al. (2022) focuses on the discrepancy in average beliefs about the effects of macroeconomic shocks between economists and the general public from the perspective of the disagreement in macroeconomic forecasts, arguing that part of the discrepancy arises because respondents think of different propagation channels of the shocks, in particular demand vs. supply-side mechanisms.

To the author's knowledge, there had been no studies comparing the economic perceptions of economists and the general public for Japan, but around 2010, the Nihon Keizai Shimbun (NIKKEI), in cooperation with the Japanese Economic Association, conducted a questionnaire survey of both economists and the general public, and the results were reported in *Keizai Kyoshitsu* (2009; 2010). According to the report, the "perception gap between economists and the general public" similar to that reported in the US is confirmed in Japan.

The "Twin Survey on the Japanese Economy and Policy Effects" conducted by the Economic and Social Research Institute (ESRI) of the Cabinet Office, from which I used microdata for the empirical analysis in this paper, is the first comparative survey of economists' and the public's perceptions in Japan since the NIKKEI survey. While an overview of the survey and simple tabulation results are available in Umeda, Kawamoto and Hori (2018), the results are

not as formally reported in the academic sense as those in the United States. Although their study did not focus on the perception gap between economists and the general public, Kitamura and Kuroda (2022) analyzed the impact of information disseminated by the media on consumers in a randomized experiment and pointed out that news reports may influence people's beliefs. In this study, I focus on the value-added tax, which is a particularly pressing policy issue for the Japanese economy, to clarify the perception gap between economists and the general public, and to examine the role that economic media information can play in bridging the perception gap by making economists' ideas more acceptable and widespread among the general public.

3. Data

This paper analyzes microdata from *the Twin Survey on the Japanese Economy and Policy Effects*, conducted in late 2016 and early 2017 by the Economic and Social Research Institute, Cabinet Office, Government of Japan, among the general public and experts on the Japanese economy (economists), respectively. This section provides an overview of the survey and explains how the variables used in the analysis below were constructed.

3.1 *Twin Survey on the Japanese Economy and Policy Effects*³

The "Twin Survey on the Japanese Economy and Policy Effects" used in this paper is unique in that it asks the general public and economists in particular about their perceptions of the Japanese economy and macroeconomic policies, and collects data in a form that can be compared.

³ See Umeda, Kawamoto, and Hori (2018) for survey details and simplified tabulation results.

The survey of the general public is a questionnaire survey of men and women aged 18-79 living in Japan. The survey was conducted using Rakuten Research's survey panel (2.3 million registered monitors), stratified and assigned to six regions of Japan, in 10-year age increments and by gender, and as an Internet survey with a target collection sample of 5,000. The survey request was emailed to the monitors to be surveyed. Responses were accepted on a first-come, first-served basis, with cells closed when the target number of responses was reached. This resulted in a total national sample of 5,167. The survey of economists, on the other hand, is a mail survey of experts in macroeconomic analysis and related fields in Japan. Questionnaires were mailed to 1,353 respondents out of about 5,000 candidates selected from the Grant-in-Aid for Scientific Research DB (National Institute of Informatics), various directories of academic societies, analyst handbooks (Nikkei Research), etc. Participation in the survey was solicited by telephone and e-mail, and 547 valid responses were received.

The number of questions was about 50 for the general public survey and about 60 for the economist survey. About two-thirds of the questions in each survey were common to both groups, and the remaining questions were specific to each group. The survey items were wide-ranging and included

1. questions about the respondent's own attributes (gender, age, education, employment, media used, income, etc.),
2. questions about perceptions of the Japanese economy,
3. questions about perceptions of the government burden and tax policy,
4. questions on perceptions of public investment (fiscal policy),
5. questions on perceptions of monetary policy, and
6. questions on perceptions of market competition and deregulation.

In particular, this paper analyzes the effect of respondents' different attributes on their attitudes toward the VAT, using respondents' attribute information obtained from 1. and their responses to the question about their perceptions of VAT obtained from 3.

3.2 Respondents' attitudes toward the VAT

This paper contrasts the perceptions of the general public and economists on Japan's VAT policy, clarifies the gap between their perceptions, and analyzes the role of the economic media information as a channel to bridge this perception gap. Therefore, some form of indicator is needed to assess respondents' attitudes toward the VAT. In the followings, I assess respondents' attitudes toward the VAT based on their responses to questions related to the VAT. The following three questions were used specifically.

A) If it is difficult to avoid increasing the national burden, which of the following means do you think would be appropriate to secure revenue, given the current state of the national burden and the tax system? (Up to 3 choices)

1. income tax hike, 2. corporate tax hike (increase in tax rate),
3. corporate tax hike (expansion of tax bases), 4. consumption tax hike, 5. property tax hike,
6. inheritance tax hike, 7. social insurance premium hike, 8. increase revenue through inflation,
9. others, 10. not sure.

B) Considering Japan's fiscal situation and other factors, which of the following do you think is a realistic (and acceptable) VAT rate? Please select the option that is closest to your opinion. (circle one)

1. lowering from current level or abolition, 2. maintain current level (8%),
3. increase to about 10%, 4. increase to about 15-20%, 5. increase to 25% or more,
6. other, 7. not sure.

C) Please select from the options below the view closest to your own regarding the VAT. (Up to two choices)

1. Expanding the VAT is undesirable because it is regressive and imposes a heavy burden on low-income households.
2. Increasing the VAT is undesirable because of its broadly negative impact on the economy, including business conditions and prices.
3. VAT is a fairer and more appropriate means of taxation under the reality of the hiding income.
4. VAT is an excellent means of taxation because it does not directly interfere with the incentive

to work and does not distort private economic behavior.

5. Given the current fiscal situation, it is essential to ensure a stable source of revenue, and there are high expectations for VAT.
6. others, 7. not sure

For each of the questions, the response sample was categorized according to the following criteria to provide an indicator of the respondent's attitude (positive or negative) toward the use of the VAT.

- ✓ First, for question A), respondents who chose to consumption tax hike as a means (one of the methods) of securing revenue are considered to be individuals who are positive about the VAT, while respondents who did not choose the consumption tax are considered to be individuals who are negative about the VAT.
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Table 1 calculates and compares the share of respondents who responded positively to the VAT in the "three indices of attitudes toward the VAT" created by the above methods for the general public and for economists. The results show that there is a significant gap between the general public and economists in Japan in terms of their attitudes toward the VAT, consistent across all indices. Among economists, the share of positive responses to VAT ranges from 70% to over 80% of all respondents, while among the general public, the share of positive responses is less than half that level.

Table 1. Share of sample that responded positively to the consumption tax

	General Public (5,167 obs.)	Economists (547 obs.)	Two-sample test of proportions (p-value)
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.289	0.711	0.000
Share of respondents who would have to accept consumption tax rate increases	0.154	0.846	0.000
Share of respondents citing more pros of consumption tax than cons	0.301	0.753	0.000

The unpopularity of the VAT among the general public is confirmed by the fact that most of the election promises of the opposition parties were to lower or reduce the VAT. On the other hand, the fact that the majority of economists support the VAT is not limited to the survey results used in this paper (Umeda, Kawamoto, and Hori (2018)), but is also consistently shown in a joint survey by the Japanese Economic Association and NIKKEI (2010) and a more recent survey by the Tokyo Foundation for Policy Research (2023).

This paper focuses on the gap between the general public and economists in terms of their attitudes toward the VAT, and examines the impact of the media information on the public's attitudes toward the VAT as a step toward bridging this gap (i.e., having the public understand economists' views).

3.3 Basic Attribute of Respondents

While the previous section showed the large gap in attitudes toward the VAT between the general public and economists in particular, it is not only between these two that differences can be seen in their attitudes toward VAT. Often, respondents' attitudes toward the VAT vary by gender, education level, and other respondent attributes. Therefore, this section uses basic attribute information from the survey to confirm attitudes toward the VAT by attribute. Specifically, we focused on attribute information such as gender, age, household composition, place of birth (region, city size), place of residence (region, city size), educational attainment, major field of

study, whether self-employed, employed (regular/nonregular), or unemployed, industry of employment, and income level of respondents.

Regarding household composition, I focused on the number of family members living together, contrasting single-person households with those with two or more members, and examining differences in attitudes based on the presence or absence of children. In addition to comparing respondents' place of birth (the place where they lived longest before reaching adulthood) and current place of residence by each of the eight regional divisions and by city size divisions (government-designated city/special ward/city/county), we also attempted to compare educational attainment (college graduate or not) and, for college graduates, major.

Although it may not be a basic attribute, for the purposes of the study, the economic information media that respondents are exposed to on a daily basis is important. Fortunately, our dataset includes answers to the following two questions about the media used by respondents.

D) Please select the economic information media that you use (are exposed to) on a daily basis from the following options. (You may select more than one.)

1. television/radio, 2. newspapers (general newspapers), 3. newspapers (trade/business),
4. magazines (weekly/monthly), 5. books (excluding magazines),
6. internet, 7. other (Specify: _____).

E) Which general interest news articles do you see most often on a daily basis (in newspapers, on the Internet, etc.)? Please select from the following options. (Multiple choices allowed).

1. Yomiuri Shimbun, 2. Asahi Shimbun, 3. Seikyo Shimbun, 4. Chunichi/Tokyo Shimbun,
5. Mainichi Shimbun, 6. Nihon Keizai Shimbun, 7. newspaper Akahata, 8. Sankei Shimbun,
9. local papers, 10. overseas papers, 11. others (Specify: _____)

Therefore, we used the responses to the above questions to categorize the sample for each of the two questions according to the following criteria to provide an indicator of respondents' use of economic media information. First, question D) focuses on the division between newspaper users and non-users, where individuals who included options 2 and 3 in their responses are considered newspaper readers, and individuals who did not include them in their responses are considered newspaper non-readers.

- ✓ First, question D) focuses on the division between newspaper readers and non-readers, where individuals who included option 2 and/or 3 in their responses are considered newspaper readers, and individuals who did not include them in their responses are considered newspaper non-readers.
- ✓ Next, in question E), individuals who included option 6 in their responses were defined as NIKKEI users, and those who did not include it in their responses were defined as NIKKEI non-users.

Table 2 summarizes the distribution of several attributes from the survey in the form of a comparison between the general public sample and the economist sample. For example, in terms of gender, the general public sample is almost evenly split between men and women, while the economist sample is less than 10% female. There are no significant differences between the general public and economists regarding the presence of children and the number of family members living together. In terms of educational attainment, less than 50% of the general public have a college degree or higher, while 100% of economists have a college degree or higher. There is also a marked difference in media use between the general public and economists, as noted at the end of the table. As might be expected, economists' use of books and magazines, newspaper use and NIKKEI subscriptions is much higher than that of the general public.

Table 2. Comparison of basic attribute distribution between the general public sample (5,167 obs.) and economist sample (547 obs.)

	Gender (Male=1)	Child(ren) (Yes=1)	Household (Single=1)	Education (College or above=1)	Print Media (Yes=1)	Nikkei NP (Reader=1)
General Public (5,167 obs.)	0.495	0.720	0.169	0.456	0.183	0.170
Economists (547 obs.)	0.914	0.751	0.194	1.000	0.475	0.867
Two-sample test of proportions (p-value)	0.000	0.116	0.136	0.000	0.000	0.000

These differences in attributes found between the two groups (general public vs. economists) may be able to explain the marked difference between the attitudes of the general

public and economists toward the VAT found in Table 1. In fact, as we will show in the next section, we can confirm a clear relationship between some of these attributes and attitudes toward the VAT. Therefore, in the analysis in Section 5 of this paper, these attribute variables are used as independent variables in the logistic regressions to compute propensity scores.

4. Attitudes toward VAT by Attribute Category

Before examining the impact of media use on attitudes toward the VAT, which is the main subject of this paper, this section examines the relationship between various attribute information about respondents obtained from the survey and their attitudes toward the VAT.

4.1 Attitudes towards the VAT by basic attributes of the general public

Table 3 summarizes the results of calculating the share of the sample that responds positively to the VAT, using the "three indicators of attitudes towards the VAT" introduced in the previous section, while dividing the general public sample on the basis of several attributes.

Table 3. Share of sample that responded positively to the consumption tax

	Gender		Household structure		Child(ren)		Education	
	Male (2,559 obs.)	Female (2,608 obs.)	Single (871 obs.)	Two or more (4,296 obs.)	Without (1,448 obs.)	With (3,719 obs.)	Less than college graduate (2,775 obs.)	College graduate or above (2,311 obs.)
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.265	0.168	0.179	0.223	0.167	0.234	0.186	0.254
Two-sample test of proportions (p-value)	0.000		0.004		0.000		0.000	
Share of respondents who would have to accept consumption tax rate increases	0.433	0.325	0.350	0.384	0.317	0.402	0.329	0.446
Two-sample test of proportions (p-value)	0.000		0.061		0.000		0.000	
Share of respondents citing more pros of consumption tax than cons	0.326	0.276	0.258	0.310	0.240	0.325	0.272	0.342
Two-sample test of proportions (p-value)	0.000		0.003		0.000		0.000	

	Economic Education		Book/Magazine		Newspaper		NIKKEI: Nihon Keizai Shinbun	
	Econ (541 obs.)	Other majors (1,770 obs.)	Non reader (4,223 obs.)	Reader (944 obs.)	Non reader (2,619 obs.)	Reader (2,548 obs.)	Non reader (4,288 obs.)	Reader (879 obs.)
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.270	0.250	0.205	0.262	0.150	0.283	0.194	0.322
Two-sample test of proportions (p-value)	0.346		0.000		0.000		0.000	
Share of respondents who would have to accept consumption tax rate increases	0.484	0.434	0.367	0.429	0.297	0.461	0.350	0.515
Two-sample test of proportions (p-value)	0.041		0.000		0.000		0.000	
Share of respondents citing more pros of consumption tax than cons	0.346	0.341	0.299	0.310	0.240	0.364	0.280	0.404
Two-sample test of proportions (p-value)	0.850		0.494		0.000		0.000	

The table shows that the results for attitudes toward VAT are almost consistent in terms of response trends by attribute, regardless of which of the three indicators is used. For example, by gender, a higher share of men than women responded positively to the VAT for all indicators, confirming that there is a statistically significant gap between men and women. In terms of household composition, those living in households with two or more persons are more positive about the VAT than those living alone, and those with children are also more positive. In terms of education, respondents with a college degree or higher were significantly more likely to be positive about VAT than those with less than a college degree. On the other hand, among college graduates and above, the results focusing on differences in undergraduate majors show no significant differences (except for the case of the second indicator) between respondents majoring in economics and business administration and the rest of the respondents.

The differences by media use category, summarized in the three right-hand columns of

the bottom row of the table, are more pronounced than the differences by basic attributes we have seen so far. In particular, the differences between newspaper readers and non-readers and between NIKKEI readers and non-readers (although not as large as the differences between the general public and economists) are clearly larger than when divided by any other attribute. In the next section, I will conduct a more formal analysis of the effect of economic media use on attitudes toward the VAT, but the fact that users of economic information media such as NIKKEI are more positive about the VAT than non-users is the basis for such an analysis.

Table 4 shows attitudes toward VAT by other attributes that could not be included in Table 3. Specifically, we look at respondents' age, occupation, industry of employment, and household income bracket, and in each case we find a statistically significant relationship with their attitudes toward the VAT. In terms of age groups, support for the consumption tax tends to increase with age. By occupation, support for the consumption tax is highest among full-time workers, followed by the jobless, and lower among the self-employed and part-time workers. By industry, support varies by industry, with high support in the finance/insurance/real estate and public services/utilities and low support in the wholesale/retail and food industries. In addition, by household income level, support tends to increase as income level increases.

Table 4. General Public's stance on the consumption tax (share of respondents who are positive about the consumption tax)

4-1. By age of respondents								
	19-22	23-30	31-40	41-50	51-60	61-70	71-80	Pearson's chi-squared (p-value)
Number of observations	187	614	868	960	829	947	762	
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.150	0.160	0.165	0.181	0.215	0.296	0.280	0.000
Share of respondents who would have to accept consumption tax rate increases	0.316	0.326	0.334	0.325	0.386	0.464	0.438	0.000
Share of respondents citing more pros of consumption tax than cons	0.278	0.244	0.244	0.252	0.316	0.381	0.364	0.000

4-2. By work type (self-employed, regular employee, irregular employee, or jobless)					4-3. By work industry				
	Self-employed	Regular	Irregular	Jobless	Pearson's chi-squared (p-value)	Agriculture, forestry and fisheries	Mining and construction	Manufacturing	Transportation Information & Communication
Number of observations	407	1,738	935	2,087		30	175	513	279
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.204	0.228	0.175	0.225	0.007	0.233	0.189	0.222	0.204
Share of respondents who would have to accept consumption tax rate increases	0.359	0.400	0.349	0.377	0.050	0.467	0.394	0.394	0.358
Share of respondents citing more pros of consumption tax than cons	0.297	0.311	0.262	0.311	0.035	0.400	0.291	0.306	0.251

4-3. By work industry (cont.)							
	Wholesale, retail and catering	Finance insurance & real estate	Medical and welfare	Education	Public service, electricity, gas and water	Others and unknown	Pearson's chi-squared (p-value)
Number of observations	463	218	289	204	195	714	
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.181	0.266	0.221	0.211	0.318	0.171	0.001
Share of respondents who would have to accept consumption tax rate increases	0.328	0.440	0.374	0.412	0.482	0.349	0.010
Share of respondents citing more pros of consumption tax than cons	0.255	0.372	0.294	0.289	0.415	0.270	0.001

4-4. By household income level							
	Less than 2 million yen	2 to 4 million yen	4 to 6 million yen	6 to 8 million yen	8 to 12 million yen	Over 12 million yen	Pearson's chi-squared (p-value)
Number of observations	461	1,186	1,096	713	570	260	
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.143	0.186	0.248	0.241	0.275	0.431	0.000
Share of respondents who would have to accept consumption tax rate increases	0.273	0.341	0.434	0.447	0.463	0.562	0.000
Share of respondents citing more pros of consumption tax than cons	0.221	0.274	0.325	0.367	0.382	0.469	0.000

4.2 Economists' Attitude Toward Excise Tax by Attribute

The economists contrasted with the general public in this paper are a group that fits many of the basic attributes of the general public that have positive view about the VAT, such as being male, highly educated, regularly employed, having high rates of newspaper and Nikkei reading, and having incomes that are at the upper end of the income distribution. In this sense, it is a somewhat

predictable trend that economists' attitudes toward the VAT are more positive than those of the general public, as seen in Table 1. On the other hand, the difference between economists and the general public in support for the VAT, as measured by each of the three indicators, is significantly larger than the differences found in the other basic attribute categories.

In the next section, I will focus on the gap between economists and the general public in terms of their attitudes to the VAT, and more formally examine the role of the media in raising public support for the VAT to a level comparable to that of economists. In this section, I categorize economists according to a number of attributes and examine whether there are systematic differences in their attitudes to the VAT.

Table 5 summarizes economists' attitudes toward VAT (percentage of respondents in favor of VAT) by type of affiliated institution, most recent degree, academic affiliation, age, and country of degree. In Japan, it is often said that there are two types of economic experts: "economists" and (ivory tower) academic economists. Although there is no strict definition and the difference is on the level of impressions, "academic economist" refers to a person who has a (doctoral) degree and studies economics professionally at a university or graduate school, etc., while "economist" has the image of a person who is familiar with economics without any special degree or qualification backing, and who calls himself or herself an economic analyst or critic in close contact with practical work. It is said that there is mutual distrust between the two (Kwan, 2004), and in this sense, it may not be surprising that even experts (economists) have different views on the VAT when they belong to different affiliated institutions, academic backgrounds, academic societies, generations, and so on.⁴

⁴ Indeed, the street debate over Japan's VAT is dominated by "economists" who see the VAT as the main culprit behind Japan's economic downturn (e.g., Fujii and Morii, 2022; Takahashi, 2019; Morinaga, 2017).

Table 5. Economists' stance on the consumption tax (share of respondents who are positive about the consumption tax)

5-1. By type of institution affiliation						
	Government	Public-interest corporations, etc.	Private company	National university	Private university	Pearson's chi-squared (p-value)
Number of observations	48	22	101	171	205	
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.813	0.682	0.683	0.743	0.678	0.440
Share of respondents who would have to accept consumption tax rate increases	0.854	0.818	0.842	0.865	0.834	0.914
Share of respondents citing more pros of consumption tax than cons	0.813	0.818	0.733	0.772	0.727	0.722
5-2. By educational background						
	Undergraduate	Master's degree	Ph.D. coursework completed without degree	Ph.D. degree		Pearson's chi-squared (p-value)
Number of observations	78	81	73	304		
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.679	0.827	0.630	0.724		0.042
Share of respondents who would have to accept consumption tax rate increases	0.846	0.877	0.849	0.849		0.932
Share of respondents citing more pros of consumption tax than cons	0.756	0.852	0.671	0.760		0.074
5-3. By affiliated academic society						
	Japanese Economic Association	JEA Non-member	Pearson's chi-squared (p-value)	Japan Institute of Public Finance	JIPF Non-member	Pearson's chi-squared (p-value)
Number of observations	265	282		42	505	
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.751	0.674	0.047	0.762	0.707	0.450
Share of respondents who would have to accept consumption tax rate increases	0.860	0.833	0.381	0.881	0.844	0.518
Share of respondents citing more pros of consumption tax than cons	0.792	0.716	0.039	0.738	0.754	0.813
5-4. By other attribute						
	Younger Economists	Elder Economists	Pearson's chi-squared (p-value)	Graduated from US universities	Graduated from Non-US universities	Pearson's chi-squared (p-value)
Number of observations	273	258		114	433	
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.725	0.709	0.683	0.746	0.702	0.362
Share of respondents who would have to accept consumption tax rate increases	0.864	0.837	0.378	0.842	0.848	0.885
Share of respondents citing more pros of consumption tax than cons	0.755	0.775	0.576	0.798	0.741	0.210

However, the data distribution of the "Twin Survey on the Japanese Economy and Policy Effects," which collected a sample of over 500 economists, covering both "economists" and (ivory tower) academic economists (Table 5), suggests that the conflict of views among economists on the VAT is the result of a few "economists" who are notoriously vocal in their extreme views. In other words, while there are some differences in the share of respondents who view VAT positively

for each type of economist, the differences between economists are much smaller than those between the general public and economists and are not statistically significant. In this sense, a positive view of the VAT is close to the consensus of Japanese economists. However, this consensus among economists has not gained broad public support in Japan. Given this fact, I would like to ask how we can steer the public in the direction of the economists' consensus. In the next section, we will more formally examine the effects of economic media information on the public's view of VAT in the context of these questions.

5. Media influence on the general public view of Japan's VAT: A Propensity Score Analysis

Given the near-unanimous support for Japan's VAT among economists, and the current taboo against discussing its expansion due to its unpopularity among the general public, this section considers what can be done to bring the public's view of the VAT closer to that of economists, or, to put it more bluntly, to increase public support (and understanding) for the use of the VAT. As Tables 3 and 4 in the previous section show, the general public's attitudes toward the VAT vary widely depending on their attributes and other factors. However, the difference in the share of VAT supporters in the two attribute groups is smaller than the difference between economists and the general public, and many of the attribute groups (such as gender) are either fixed and not amenable to intervention, or, if amenable, difficult to change in the short term. Among the attribute variables in our dataset, I considered "final education" and "major field of study" as potential variables for a policy intervention variable, but had to abandon them this time because of their interdependence with other attribute variables and because the timing of the intervention (or decision) was well before the timing of the survey and I could not secure enough covariate variables (variables that were fixed

at the time of the intervention) to calculate the propensity scores used in the propensity score analysis.

Based on these considerations, I decided to examine the impact of the use of economic information media, specifically newspapers and, in a more specific case, subscriptions to the NIKKEI, on the general public's view of the VAT in Japan. Newspaper reading and whether or not they read NIKKEI have a clear relationship with the share of positive responses to the VAT, as already reported in Table 3 (i.e., the share of positive responses to the VAT is significantly higher among newspaper readers and Nikkei readers).

Table 3 (Partially reprinted) Impact of media use on attitudes toward the consumption tax

	Newspaper		NIKKEI: Nihon Keizai Shinbun	
	Non reader (2,619 obs.)	Reader (2,548 obs.)	Non reader (4,288 obs.)	Reader (879 obs.)
Share of respondents who chose an increase in consumption tax as a future source of public finance	0.150	0.283	0.194	0.322
Two-sample test of proportions (p-value)	0.000		0.000	
Share of respondents who would have to accept consumption tax rate increases	0.297	0.461	0.350	0.515
Two-sample test of proportions (p-value)	0.000		0.000	
Share of respondents citing more pros of consumption tax than cons	0.240	0.364	0.280	0.404
Two-sample test of proportions (p-value)	0.000		0.000	

However, what is shown above is only a correlation, and it may be the result of confounding biases, such as the fact that newspaper readers and NIKKEI readers are more likely to be highly educated males and that these media attract the type of people who have a positive inclination toward the VAT. Therefore, in this paper, we selected variables from the attribute information available in the data set that we considered appropriate as explanatory variables (covariates) for the logistic regression determining newspaper reading and NIKKEI reading, and used a propensity score matching technique to measure the impact of economic information media use (intervention: daily exposure to newspapers

or NIKKEI) on the attitudes toward the VAT (outcome). Since the selection of the media used (whether or not they read newspapers daily) and the selection of the media series (whether or not they read NIKKEI-affiliated news) are made after much of the attribute information has been determined, I think we are able to secure enough covariate variables.

5.1 Logistic regressions and propensity scores

In order to calculate a propensity score that captures the propensity to read newspapers in general, or NIKKEI in particular, this paper used logistic regression with whether respondents use economic information media (newspapers or NIKKEI) or not (1 if they do, 0 otherwise) as the dependent variable and various attribute variables (background factors) of the respondents as the independent variables.

In logistic regression for propensity score analysis, the principle is to use as independent variables factors that were determined before (or at least contemporaneously with) the assignment of the intervention (in this study, exposure to the information media) and not to include factors that were determined after the assignment of the intervention, especially those that may have been influenced by the intervention. However, in the case of the analysis in this paper, the timing of economic media exposure is not fully specified, so the number of factors (attribute information) that can be said with certainty to have been established prior to the point of intervention assignment is limited. On the other hand, we cannot conclude that the choice was determined prior to the intervention, but we can obtain a number of attribute variables that are unlikely to be significantly changed by the intervention (exposure to the economic information media), so I tried the following three combinations of independent variables for logistic regressions.

Model I : gender, age, education, major, household structure, presence of children, place of origin
(region, city size)

Model II : Model I + occupation, use of books and magazines

Model III : Model II + current place of residence (region, city size), industry of employment, income level

Needless to say, the independent variable in Model I is the most conservative (i.e., it is certain to have been determined prior to the intervention). The models are set up with more relaxed criteria as we move to Models II and III. Table 6 on the next page shows the estimation results of logistic regressions (average marginal effects for each independent variable) applying Models I to III above on whether respondents are exposed to newspapers as a source of economic information.

First, the results for Model I, which is the most conservative, show that women are significantly less likely to use newspapers than men. Also, the older the respondent, the more likely they are to be exposed to newspapers. Exposure to newspapers is more prevalent among the better educated, and by major field of college study, law majors have the highest exposure to newspapers, followed by business and economics majors, while science and engineering majors have lower exposure to newspapers. In terms of household structure, a higher percentage of individuals living alone or with children are exposed to newspapers. The fact that most of the coefficients on the hometown dummies are negative suggests that individuals from Kanto region, the base region for the dummy variables, have higher exposure to newspapers than those from other regions. The pseudo R^2 of this regression equation is not very high at 0.086, but the area under the ROC curve (c-statistic) is 0.708, and the calculated propensity score can identify exposure to newspapers reasonably well.

Table 6. Marginal effects in logistic regressions distinguishing whether newspapers are chosen as (one of) economic information sources.

Independent variables	Model I			Model II			Model III		
	dy/dx	Delta-method S.E.		dy/dx	Delta-method S.E.		dy/dx	Delta-method S.E.	
Female dummy (Female=1)	-0.045	(0.011)	***	-0.029	(0.012)	**	-0.028	(0.012)	**
Age dummy (Base: 51-60 years old)									
Dummy 1 (19-22 years old = 1)	-0.059	(0.036)	*	-0.024	(0.036)		-0.008	(0.035)	
Dummy 2 (23-30 years old = 1)	-0.022	(0.019)		-0.020	(0.019)		0.004	(0.019)	
Dummy 3 (31-40 years old = 1)	-0.020	(0.018)		-0.022	(0.018)		-0.008	(0.018)	
Dummy 4 (41-50 years old = 1)	0.003	(0.017)		-0.001	(0.017)		0.009	(0.017)	
Dummy 5 (61-70 years old = 1)	0.003	(0.017)		0.032	(0.018)	*	0.043	(0.018)	**
Dummy 6 (71-80 years old = 1)	0.024	(0.018)		0.062	(0.020)	***	0.081	(0.020)	***
Education dummy 1 (Junior college or less=1)	0.041	(0.017)	**	0.037	(0.017)	**	0.039	(0.017)	**
Education dummy 2 (College graduate or less=1)	0.079	(0.018)	***	0.069	(0.018)	***	0.062	(0.018)	***
Education dummy 3 (Master or higher=1)	0.048	(0.019)	**	0.035	(0.019)	*	0.025	(0.019)	
College major dummy (Base : Liberal arts/social sciences/humanities other than econ & law)									
Dummy 1 (Economics, Business Administration, Commerce=1)	0.086	(0.018)	***	0.080	(0.018)	***	0.061	(0.018)	***
Dummy 2 (Law=1)	0.109	(0.023)	***	0.098	(0.023)	***	0.078	(0.023)	***
Dummy 3 (Science and tech=1)	0.008	(0.018)		0.007	(0.017)		-0.003	(0.017)	
Live alone dummy (Live alone=1)	0.060	(0.013)	***	0.057	(0.013)	***	0.070	(0.014)	***
Child dummy (With child(ren)=1)	0.034	(0.012)	***	0.026	(0.012)	**	0.020	(0.012)	*
Home region dummy (Base: Kanto region)									
Dummy 1 (Hokkaido=1)	-0.044	(0.023)	*	-0.049	(0.023)	**	0.044	(0.035)	
Dummy 2 (Tohoku=1)	-0.048	(0.022)	**	-0.045	(0.022)	**	0.006	(0.028)	
Dummy 3 (Chubu=1)	-0.037	(0.016)	**	-0.039	(0.016)	**	-0.005	(0.021)	
Dummy 4 (Kinki=1)	-0.041	(0.015)	***	-0.040	(0.015)	***	0.021	(0.022)	
Dummy 5 (Chugoku=1)	-0.027	(0.021)		-0.031	(0.021)		0.056	(0.029)	*
Dummy 6 (Shikoku=1)	0.024	(0.029)		0.022	(0.028)		0.066	(0.039)	*
Dummy 7 (Kyushu=1)	-0.053	(0.018)	***	-0.047	(0.018)	***	0.006	(0.025)	
Size of home city/town/village dummy (Base: Ordinance-designated cities, special wards of Tokyo)									
Dummy 1 (City=1)	-0.028	(0.012)	**	-0.028	(0.012)	**	-0.010	(0.013)	
Dummy 2 (Village=1)	0.001	(0.017)		0.002	(0.017)		0.030	(0.018)	*
Book & Magazine dummy (Yes=1)				0.099	(0.011)	***	0.087	(0.011)	***
Jub dummy (Base: Regular employee)									
Dummy 1 (Selfemployed=1)				-0.065	(0.020)	***	-0.056	(0.021)	***
Dummy 2 (Non-regular employee=1)				-0.060	(0.016)	***	-0.034	(0.017)	**
Dummy 3 (Non-worker=1)				-0.071	(0.014)	***	-0.070	(0.019)	***
Current residence region dummy (Base: Kanto region)									
Dummy 1 (Hokkaido=1)							-0.116	(0.039)	***
Dummy 2 (Tohoku=1)							-0.071	(0.032)	**
Dummy 3 (Chubu=1)							-0.034	(0.021)	*
Dummy 4 (Kinki=1)							-0.071	(0.022)	***
Dummy 5 (Chugoku=1)							-0.109	(0.032)	***
Dummy 6 (Shikoku=1)							-0.054	(0.045)	
Dummy 7 (Kyushu=1)							-0.056	(0.026)	**
Size of current residence city/town/village dummy (Base: Ordinance-designated cities, special wards of Tokyo)									
Dummy 1 (City=1)							-0.035	(0.012)	***
Dummy 2 (Village=1)							-0.089	(0.027)	***
Industry dummy (Base: Manufacturing)									
Dummy 1 (Agriculture, forestry and fisheries=1)							0.097	(0.057)	*
Dummy 2 (Construction and mining=1)							-0.023	(0.029)	
Dummy 3 (Transportation, Information and Communication=1)							0.012	(0.023)	
Dummy 4 (Wholesale, retail, and food services=1)							-0.013	(0.022)	
Dummy 5 (Finance, insurance, and real estate=1)							0.014	(0.025)	
Dummy 6 (Medical and welfare=1)							-0.147	(0.032)	***
Dummy 7 (Education=1)							-0.108	(0.030)	***
Dummy 8 (Public service, electricity, gas and water=1)							-0.052	(0.028)	*
Dummy 9 (Others and unknown=1)							-0.019	(0.020)	
Income dummy (Base: 6-8 million yen)									
Dummy 1 (Less than 2 million yen=1)							-0.047	(0.024)	**
Dummy 2 (2-4 million yen=1)							-0.054	(0.017)	***
Dummy 3 (4-6 million yen=1)							-0.029	(0.016)	*
Dummy 4 (8-12 million yen=1)							0.018	(0.018)	
Dummy 5 (More than 12 million yen=1)							0.096	(0.021)	***
Dummy 6 (Income unanswered=1)							-0.064	(0.019)	***
Number of observations		5,086			5,086			5,086	
Pseudo-R2		0.086			0.109			0.148	
Area under ROC curve	0.708	(0.010)		0.728	(0.009)		0.765	(0.009)	

In Model II, the use of books and magazines as information media and the type of occupation are added to Model I. However, the marginal effects of the independent variables included in Model I remain almost the same after their addition. On the other hand, with regard to the newly added independent variables, we can confirm that exposure to newspapers is

significantly higher among full-time employees (compared to those who are self-employed, part-time or jobless) and that those who are familiar with books and magazines also have a higher exposure to newspapers. This is a natural result as the number of explanatory variables increases, but as the pseudo R^2 increases to 0.109 and the area under the ROC curve (c-statistic) also increases to 0.728, we can say that the ability of the propensity score to identify exposure to newspapers has increased.

Model III adds to Model II information on the respondent's current region of residence, industry of employment, and household income. When the model is extended to this level, the estimated marginal effects break down somewhat from those up to Model II, for example the coefficients on the hometown dummies are inverted, but the same pattern is generally maintained for the other main attribute variables. In terms of additional variables, Kanto region's high exposure to newspapers can be read into the region of current residence dummies, while in the industry of employment, health care and education industries have low exposures, and for the income group, the higher the income, the higher the exposure to newspapers. Extending the model further increased the identifying power of the model, with the pseudo R^2 increasing to 0.148 and the area under the ROC curve (c statistic) increasing to 0.765.

Table 7 on the next page shows the average marginal effects of a logistic regression applying a similar model to exposure to the NIKKEI. For the independent variables included in Model I, the pattern was generally similar to that of the newspaper exposure model (males by gender, law students by major, older individuals by age, and the more educated by education were more likely to be NIKKEI readers), while the signs on the hometown dummies were reversed, with Kanto region having a lower NIKKEI exposure, for unknown reasons. The pseudo R^2 (0.142) and the area under the ROC curve (0.748) are slightly higher than those of the newspaper exposure model, indicating that the identifying power of the model is not bad.

Table 7. Marginal effects in logistic regressions distinguishing whether NIKKEI is chosen as (one of) economic information sources.

Independent variables	Model I		Model II		Model III				
	dy/dx	Delta-method S.E.	dy/dx	Delta-method S.E.	dy/dx	Delta-method S.E.			
Female dummy (Female=1)	-0.039	(0.014)	***	-0.028	(0.014)	*	-0.038	(0.014)	***
Age dummy (Base: 51-60 years old)									
Dummy 1 (19-22 years old = 1)	-0.257	(0.039)	***	-0.246	(0.039)	***	-0.235	(0.038)	***
Dummy 2 (23-30 years old = 1)	-0.235	(0.023)	***	-0.244	(0.023)	***	-0.234	(0.023)	***
Dummy 3 (31-40 years old = 1)	-0.257	(0.021)	***	-0.259	(0.020)	***	-0.249	(0.020)	***
Dummy 4 (41-50 years old = 1)	-0.126	(0.020)	***	-0.131	(0.020)	***	-0.128	(0.020)	***
Dummy 5 (61-70 years old = 1)	0.101	(0.021)	***	0.114	(0.021)	***	0.118	(0.021)	***
Dummy 6 (71-80 years old = 1)	0.227	(0.023)	***	0.238	(0.024)	***	0.238	(0.024)	***
Education dummy 1 (Junior college or less=1)	0.006	(0.018)		-0.001	(0.017)		-0.011	(0.017)	
Education dummy 2 (College graduate or less=1)	0.090	(0.022)	***	0.074	(0.022)	***	0.067	(0.022)	***
Education dummy 3 (Master or higher=1)	0.009	(0.029)		-0.016	(0.029)		-0.029	(0.029)	
College major dummy (Base : Liberal arts/social sciences/humanities other than econ & law)									
Dummy 1 (Economics, Business Administration, Commerce=1)	0.049	(0.027)	**	0.044	(0.027)	*	0.047	(0.027)	*
Dummy 2 (Law=1)	0.106	(0.036)	**	0.083	(0.036)	**	0.071	(0.036)	**
Dummy 3 (Science and tech=1)	-0.046	(0.024)	**	-0.046	(0.024)	*	-0.045	(0.024)	*
Live alone dummy (Live alone=1)	-0.193	(0.018)	***	-0.193	(0.017)	***	-0.147	(0.018)	***
Child dummy (With child(ren)=1)	0.014	(0.015)		0.009	(0.015)		-0.003	(0.015)	
Home region dummy (Base: Kanto region)									
Dummy 1 (Hokkaido=1)	0.109	(0.029)	***	0.097	(0.028)	***	0.030	(0.049)	
Dummy 2 (Tohoku=1)	0.044	(0.027)	*	0.042	(0.026)		-0.053	(0.038)	
Dummy 3 (Chubu=1)	0.088	(0.020)	***	0.085	(0.019)	***	0.062	(0.029)	**
Dummy 4 (Kinki=1)	0.067	(0.019)	***	0.067	(0.019)	***	0.044	(0.030)	
Dummy 5 (Chugoku=1)	0.042	(0.027)		0.033	(0.026)		-0.031	(0.042)	
Dummy 6 (Shikoku=1)	-0.001	(0.039)		-0.008	(0.038)		-0.065	(0.055)	
Dummy 7 (Kyushu=1)	-0.021	(0.022)		-0.010	(0.022)		0.030	(0.034)	
Size of home city/town/village dummy (Base: Ordinance-designated cities, special wards of Tokyo)									
Dummy 1 (City=1)	0.007	(0.015)		0.007	(0.015)		-0.011	(0.017)	
Dummy 2 (Village=1)	0.007	(0.022)		0.012	(0.022)		-0.001	(0.024)	
Book & Magazine dummy (Yes=1)				0.256	(0.016)	***	0.253	(0.016)	***
Jub dummy (Base: Regular employee)									
Dummy 1 (Selfemployed=1)				-0.070	(0.025)	***	-0.033	(0.026)	
Dummy 2 (Non-regular employee=1)				-0.050	(0.019)	***	-0.004	(0.020)	
Dummy 3 (Non-worker=1)				-0.044	(0.018)	**	-0.025	(0.025)	
Current residence region dummy (Base: Kanto region)									
Dummy 1 (Hokkaido=1)							0.096	(0.051)	*
Dummy 2 (Tohoku=1)							0.147	(0.041)	***
Dummy 3 (Chubu=1)							0.030	(0.028)	
Dummy 4 (Kinki=1)							0.029	(0.029)	
Dummy 5 (Chugoku=1)							0.092	(0.043)	**
Dummy 6 (Shikoku=1)							0.075	(0.060)	
Dummy 7 (Kyushu=1)							-0.047	(0.034)	
Size of current residence city/town/village dummy (Base: Ordinance-designated cities, special wards of Tokyo)									
Dummy 1 (City=1)							0.044	(0.016)	***
Dummy 2 (Village=1)							0.008	(0.029)	
Industry dummy (Base: Manufacturing)									
Dummy 1 (Agriculture, forestry and fisheries=1)							-0.143	(0.085)	*
Dummy 2 (Construction and mining=1)							-0.040	(0.038)	
Dummy 3 (Transportation, Information and Communication=1)							-0.061	(0.033)	*
Dummy 4 (Wholesale, retail, and food services=1)							-0.019	(0.029)	
Dummy 5 (Finance, insurance, and real estate=1)							0.038	(0.036)	
Dummy 6 (Medical and welfare=1)							0.043	(0.032)	
Dummy 7 (Education=1)							-0.018	(0.037)	
Dummy 8 (Public service, electricity, gas and water=1)							0.068	(0.036)	*
Dummy 9 (Others and unknown=1)							-0.060	(0.026)	**
Income dummy (Base: 6-8 million yen)									
Dummy 1 (Less than 2 million yen=1)							-0.140	(0.028)	***
Dummy 2 (2-4 million yen=1)							-0.025	(0.021)	
Dummy 3 (4-6 million yen=1)							-0.006	(0.021)	
Dummy 4 (8-12 million yen=1)							0.053	(0.024)	**
Dummy 5 (More than 12 million yen=1)							0.094	(0.032)	***
Dummy 6 (Income unanswered=1)							-0.027	(0.023)	
Number of observations		5,086			5,086			5,086	
Pseudo-R2		0.142			0.177			0.194	
Area under ROC curve		0.748	(0.007)		0.775	(0.007)		0.787	(0.006)

Model II showed the same pattern as the newspaper exposure model (i.e., higher rates of Nikkei exposure among regular employees and book and magazine users), with the pseudo R2 and area under the ROC curve increasing to 0.177 and 0.775, respectively. In model III, the

occupation type dummies are no longer significant and, in contrast to the newspaper exposure model, NIKKEI exposure is higher in the finance/insurance/real estate and government sectors. The pattern of NIKKEI exposure increasing with household income is similar to that observed in the newspaper exposure model. As a result of the model extension, the pseudo R² is 0.194 and the area under the ROC curve is increased to 0.787, so the model is expected to provide moderate identification.

Figure 2 visualizes the distribution of propensity scores calculated from the logistic regression results for Model I to Model III for the newspaper exposure model (left side of the figure) and the NIKKEI exposure model (right side of the figure), respectively. As expected, there is some overlap in the distribution of propensity scores between the treatment and control groups, and matching is considered possible.

Figure 2. Distribution of Propensity Score: Control Group vs. Treatment Group



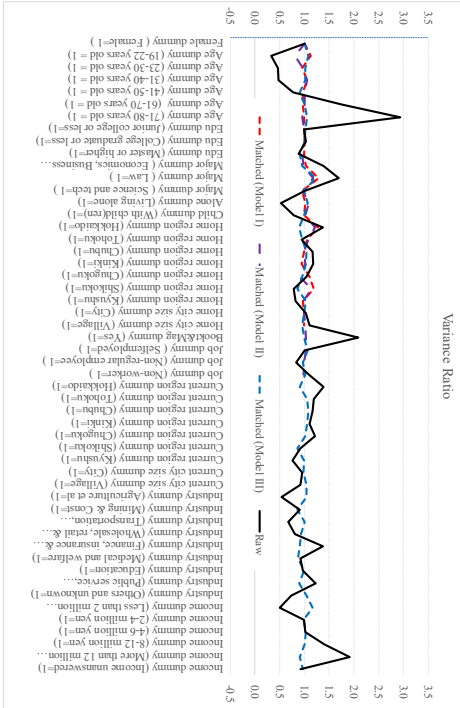
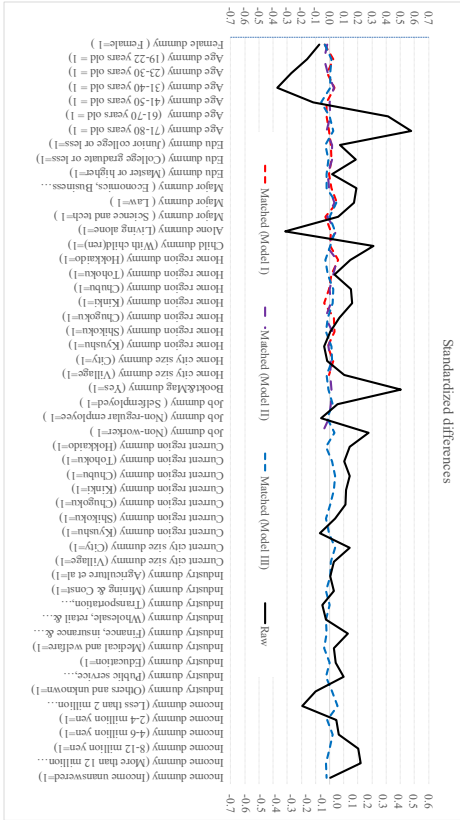
5.2 Attribute balance after propensity score matching

Using the propensity scores obtained in the previous section, I matched media (newspapers or NIKKEI) users (treatment group) and non-users (control group). In order to confirm that the matching was successful in balancing respondent attributes, Figure 3 calculates the standardized differences and variance ratio for the independent variables in the logistic regressions for the

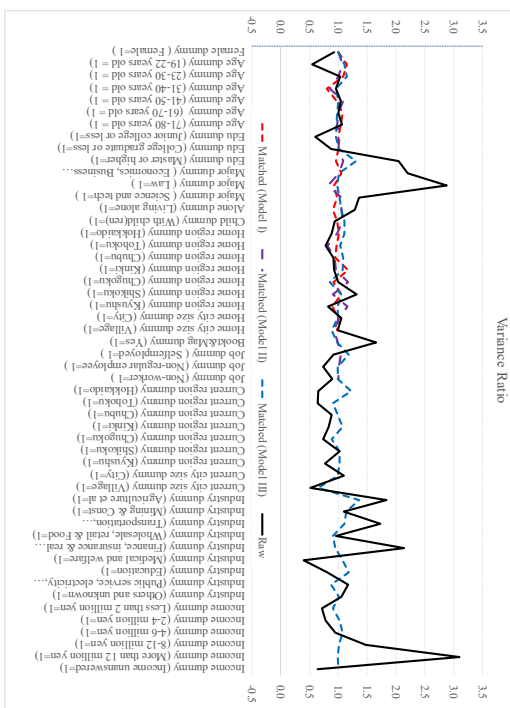
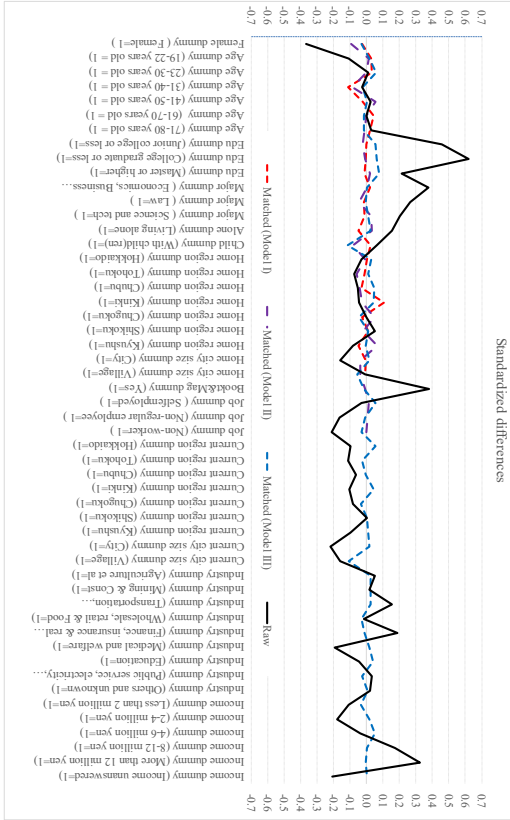
newspaper exposure model (3.1) and the NIKKEI exposure model (3.2), respectively, and plots them in graphs comparing before and after matching.

The figure shows that the standardized differences calculated for the pre-matching data varied widely (in the range of -0.4 to 0.6) for each variable, but for the post-matching data the variation was significantly reduced, regardless of the choice of model specification. Although two variables in Model I of the NIKKEI exposure model have standardized differences slightly above 0.1, all other variables are within 0.1, indicating that the matching allows for a nearly balanced comparison of the media use (treatment) and non-use (control) groups. The same is true for the variance ratio. Before matching, a considerable number of variables deviated from 1, but after the matching, the variance ratios of almost all variables converged to 1.

Figure 3. Balance of covariates: original data (before matching) vs. after matching
3.1 Propensity Score Matching in Newspaper Usage Model



3.2 Propensity Score Matching in NIKKEI reader Model



5.3 Media influence on public attitudes toward Japan's VAT

Based on the results of the previous subsection, we used the post-matching data to compare and examine differences in attitudes toward the VAT between the media users (newspaper or NIKKEI readers) and non-user groups. The outcome variable here is a dichotomous categorical variable that is set to 1 if the respondent has a positive attitude toward the VAT (0 otherwise) on each of the "three indicators of attitudes toward the VAT" defined in section 3. Tables 8 and 9 present the results of χ^2 tests for the difference in the share of positive responses (average treatment effect) between the media users and non-users groups and its statistical significance for newspaper and NIKKEI exposure, respectively.

For each of the analyses focusing on newspaper exposure and NIKKEI exposure, there are three cases from Model I to Model III for each of the three indicators, resulting in a total of 9 (= 3×3) different marginal treatment effects after propensity score matching (if the three differences in the shares before matching (for three indicators) are also included, each table shows 12 patterns of treatment effects).

The results are the same whether we focus on newspaper exposure or the more specific NIKKEI exposure, and are largely consistent regardless of which indicator is used to measure attitudes toward the VAT, and regardless of the choice of independent variables in the logistic regressions. That is, the share of respondents in the pre-matched media users group who are positive about the VAT exceeds that of the media non-users group by 12-17%, but it cannot be denied that this difference may be due to differences in background attributes between the media users and non-users groups (the media users group has a higher share of individuals who are male, older, more educated, etc., and have personal attributes that favor the VAT). However, the average marginal effect after propensity score matching, adjusted for differences in background attributes, is significantly positive regardless of the choice of indicator or model, with effect sizes ranging from 7 to 13%, about two-thirds of the pre-matching difference remaining. In other words, even

if we use propensity score matching to remove the effects that might be caused by differences in background attributes, positive responses to the VAT would still be about 10% higher in the media exposure group than in the non-exposure group.

Since propensity score matching only controls for the effects of the independent variables (confounders) included in the logistic regression, it cannot be excluded that bias may remain in the estimates of intervention effects if there are important unmeasured confounders. Nevertheless, significant positive average treatment effects were obtained stably, including in Model III, which boldly expanded the independent variables, and these results suggest that newspapers, especially economic information media such as NIKKEI, may potentially become one of the channels to bring the public's negative view of VAT closer to the economists' positive view.

Table 8. Effects of reading newspapers on public's view of consumption taxes.

Average Treatment Effect	Difference	Robust Standard Error	Number of Observations
Share of respondents who chose consumption tax as a future source of public finance			
ATE newspapers (1 vs 0) linear regression adjustment (two sample t test)	0.132	(0.011)	5,167
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model I	0.096	(0.015)	5,086
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model II	0.089	(0.016)	5,086
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model III	0.069	(0.017)	5,086
Share of respondents who would have to accept consumption tax rate increases			
ATE newspapers (1 vs 0) linear regression adjustment (two sample t test)	0.164	(0.013)	5,167
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model I	0.125	(0.018)	5,086
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model II	0.122	(0.018)	5,086
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model III	0.114	(0.020)	5,086
Share of respondents citing more pros of consumption tax than cons			
ATE newspapers (1 vs 0) linear regression adjustment (two sample t test)	0.124	(0.013)	5,167
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model I	0.083	(0.017)	5,086
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model II	0.095	(0.018)	5,086
ATE newspapers (1 vs 0) Propensity Score Matching - Logit Model III	0.078	(0.018)	5,086

Table 9. Effects of reading NIKKEI on public's view of consumption taxes.

Average Treatment Effect	Difference	Robust Standard Error	Number of Observations
Share of respondents who chose consumption tax as a future source of public finance			
ATE NIKKEI (1 vs 0) linear regression adjustment (two sample t test)	0.128	(0.017)	5,167
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model I	0.095	(0.022)	5,086
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model II	0.070	(0.020)	5,086
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model III	0.075	(0.022)	5,086
Share of respondents who would have to accept consumption tax rate increases			
ATE NIKKEI (1 vs 0) linear regression adjustment (two sample t test)	0.165	(0.018)	5,167
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model I	0.124	(0.023)	5,086
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model II	0.096	(0.023)	5,086
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model III	0.124	(0.028)	5,086
Share of respondents citing more pros of consumption tax than cons			
ATE NIKKEI (1 vs 0) linear regression adjustment (two sample t test)	0.124	(0.018)	5,167
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model I	0.095	(0.025)	5,086
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model II	0.075	(0.024)	5,086
ATE NIKKEI (1 vs 0) Propensity Score Matching - Logit Model III	0.087	(0.025)	5,086

6. Conclusion

The planning and formulation of economic policies and their smooth implementation and realization require efforts to build consensus on the current state of the economy and the perception of the impact of policies on the economy. Even if good policies can be formulated through EBPM, it is difficult to implement them as policies if they do not have the support of the general public. With these issues in mind, this study addresses the issue of public acceptance of the value-added tax (consumption tax) in Japan.

Using micro data from the "the Twin Survey on the Japanese Economy and Policy Effects," conducted in early 2017 by the Economic and Social Research Institute, Cabinet Office, Government of Japan, targeting both the general public and economists, I examined the relationship between respondents' attributes and their attitude toward the value-added tax. According to it, economists have a consistently positive attitude toward the VAT, regardless of their educational background, institutional affiliation, age, or other attributes. For the general public, on the other hand, although there are differences in attitudes by basic attributes (e.g., respondents with attributes such as women, less education, and lower income are more negative toward the VAT), we find that they are basically negative toward the use of the VAT and diverge from the attitudes of economists more than any differences found among other attributes.

In order to examine the channels through which economists' ideas can penetrate the general public (i.e., deepen the general public's understanding of the VAT), we focused on the economic information media, which seemed to have a relatively large effect on the public's attitudes toward VAT, and statistically examined how newspaper reading, especially exposure to NIKKEI news, is related to the public's understanding of the VAT. Using propensity score matching techniques, we compared the attitudes of newspaper readers and non-readers toward the

VAT, controlling for background attributes, and found that individuals who selected "newspaper" as the economic information medium with which they frequently interact and individuals who selected NIKKEI as the economic news source were by 10% more likely to respond positively to the VAT than those who did not.

Since policymakers cannot compel access to newspapers or subscriptions to specific newspapers, there is obviously no direct way to reach out to the general public based on the findings of this study and increase the general public's understanding of the VAT. However, the results obtained suggest that economic information media could play an important role in helping the public understand VAT. In order for the ideas of economists to be translated into concrete policies, efforts to reach out to the general public through the media are both essential and effective.

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