Institute for Economic Studies, Keio University

Keio-IES Discussion Paper Series

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Individual Preferences on Trade Liberalization: Evidence from a Japanese Household Survey

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May 4, 2020

Abstract

This paper studies an individual's preference on trade liberalization using a Japanese household survey, the Keio Household Panel Survey. As a result, we show that preferences toward trade liberalization are affected by economic factors (income, gender, family, asset, and job status) as well as noneconomic factors (noncognitive factors and social stance). In addition, regional factors such as food consumption and open-mindedness also matter.

Keywords: Trade liberalization, Household survey, non-cognitive factors, regional factors, compensation

1 Introduction

Investigating the impact of trade liberalization on product/factor prices, income, and welfare across nations, and discussing who are the losers and the winners of international trade has a long history. The recent wave of globalization through trade liberalization resulted in lowering trade and telecommunication costs. It has been believed that globalization benefits overall. However, some groups of people in many developed countries resist the wave of globalization and incline toward protectionism. The current voting behavior such as the UK referendum reveals that no small number of people are against trade liberalization. This paper investigates individual's preference on trade liberalization using a unique household survey in Japan, the Keio Household Panel Survey (KHPS). The current international trade literature has studied whether an individual's preference on trade liberalization is determined by the Stolper–Samuelson theorem or new political economy of trade (behavioral effects and noneconomic factors, e.g., risk attitude, identity, experience, and noncognitive aspects). This paper is in this tradition.

Although the large benefit of free trade has been explored by many studies on international trade theory, it seems that much of the public does not understand it properly. There is still a large gap between what economists have investigated and the real world revealed

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by voting behaviors. For instance, a Japanese newspaper article reported it. In "Keizai Kyoushitsu" (Short lecture on Economics) in the Nikkei Newspaper (October 16, 2009), a survey by the Nikkei Newspaper associated with the Japanese Economic Association asked common people and economists about whether free trade should be sustained or limited.[1] While 60% of common people are negative to free trade (restrict free trade in some cases or many cases), 20% are positive (perfectly or generally sustain free trade). By contrast, around 30% of economists are negative to free trade, while around 60% are positive. The newspaper article concludes that many common people do not deeply understand economics (e.g., international trade theory) and public opinion tends to be far from what international trade theory has uncovered.

Japan is a good country to investigate this issue. First, Japan has engaged in trade liberalization in the last several decades and promoted many kinds of trade liberalization schemes, including free trade agreements (FTA) and economic partnership agreements (EPAs). Except for agriculture, tariff rates are low enough overall. The Japanese people have enjoyed the benefit of trade liberalization.[2] Thus, it is worthwhile to ask them about their trade preferences. Second, Japan is homogeneous in terms of race and language but has some regional variations in culture, economic/noneconomic behaviors, and preferences. In this sense, whether individual factors and/or regional factors affect an individual's trade preference can be investigated. Third, we have a unique household panel survey, which asks many questions on household/individual socioeconomic factors (e.g., gender, income, job status, and education) as well as noneconomic factors (e.g., noncognitive and social stance). We can test the impact of noneconomic factors. Lastly, Japan ratified the Trans-Pacific Partnership Agreement (TPP) and the timing of our household survey is in the process of the agreement.[3] Thus, individuals are exposed to a critical moment of trade liberalization, which provides an occasion to think about the pros and cons of free trade.

Literature review In the previous literature, some empirical studies uncovered individual behaviors on trade liberalization using individual-level survey data. Early studies mainly focus on an individual's skill and occupation to test whether trade theory holds (e.g., Scheve and Slaughter, 2001; O'Rourke and Sinnott, 2002).[4] However, more recent empirical studies state that trade policy preferences of individuals are not greatly influenced by traditional economic factors, such as job occupation/industry and income.[5] Rather than

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[1] The survey was conducted by a research company, Macromill, through the Internet. 560 economists and 1,035 common people answered the survey.

[2] See e.g., Felbermayr et al. (2019) on the impact of the EU–Japan EPA on the Japanese economy.

[3] See Mulgan (2015) and Zakowski et al. (2018) for more policy discussions and political debates on the TPP.

[4] In a similar framework, O'Rourke and Sinnott (2006) investigated individual preference to immigration.

[5] Different from the literature, Jakel and Smolka (2013) using the 2007 wave of the Pew Global Attitudes Project, found significant Stolper–Samuelson effects in individuals' preference toward trade policy.

these economic factors, some noneconomic factors crucially affect the attitude toward trade liberalization. Blonigen (2011), using a US survey of 5524 individuals, found that educational background is the only significant factor for trade preference. Similar results were also found by Mayda and Rodrik (2005) using the 1995 ISSP (The International Social Survey Programme) data including 28,456 people over 23 countries.[6] Our paper investigates more conventional factors in a more specific event. Using the Japanese household survey, our focus is on Japan's ratification of the TPP. Through this event, we investigate an individual's preference on trade liberalization. TPP is a free trade agreement among Asian Pacific nations. Twelve countries including Japan first ratified the TPP agreement in February 2016, but the United States left the TPP in January 2017. In Japan, the National Diet concluded the TPP treaty in December 2016.[7] Cabinet Office (2010), using the GTAP model, estimated that the Japanese economy will gain 2–3 trillion yen by joining TPP, which is equivalent to 0.5% of GDP.

Much closer to our paper, Naoi and Urata (2013) and Tomiura et al. (2016) investigated Japanese individual preference on trade liberalization and TPP. Their data are individual level and a one-shot Internet survey without household information. Naoi and Urata (2013) used a public opinion survey on citizens' attitudes toward the TPP in January 2012 (one-shot) that had 3,798 respondents from ages 20 to 69 years. The data include gender, age, occupation, education, and political stance. They found that elderly educated males and supporters of the government party tend to be positive toward TPP. Tomiura et al. (2016) used another unique survey data of 10,000 individuals in Japan (one-shot in October 2011). The data include attitude to import liberalization, gender, age, annual income, educational attainment, industry of job and occupation, love for his/her hometown and some risk questions. They found that people working for agriculture are substantially more likely to be protectionist and strongly against free trade.[8] People in managerial occupations with a university degree and/or high-income people tend to be positive to free trade.[9]

A much deeper analysis of noneconomic factors is done by Yamamura and Tsutsui (2019), which highlights noncognitive skills and experiences in childhood using 10,000 individual surveys (one-shot in July 2016). They investigated how education and experience in childhood form noncognitive skills and then affect trade preference when they grew up. They also found that sporting and informal education in childhood foster positive feelings on group

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[6] Kuno (2012) used the Japanese household data from ISSP 2003.

[7] Apart from the household survey, Kagitani and Harimaya (2019) studied the attitude of candidates in the election campaign toward TPP. The presence of agriculture in electoral districts of candidates relates to their negative attitude to the TPP before the ratification of TPP, although not after. Their stances on the TPP are also affected by their parties' policies.

[8] Naoi and Kume (2011) interviewed 1200 people in Japan about food imports by showing different photographs. They found that respondents from the viewpoint of producers rather than consumers show increased opposition to food imports.

[9] Using the same data set, Ito et al. (2019) focused on regional differences. Regions with more agricultural farmers tend to be negative to trade liberalization.

working, mutual trust, and competition, which ends up affecting their positive preference for free trade.

By contrast with these studies, our data are much finer and more informative in household survey data and include many more noneconomic questions (i.e., noncognitive questions, social stance, and overseas experience). The current studies suggest that noneconomic factors are a key element in trade preference rather than economic factors. Despite this, all of the current studies, except Yamamura and Tsutsui (2019), use only a few noneconomic factors such as risk attitude.[10] Noneconomic factors are various and thus only a few variables are obviously not enough to understand deeply whether noneconomic factors are crucially influential. The contribution of this paper is to overcome this qualification in the literature and highlight many kinds of noneconomic/noncognitive aspects and thoroughly investigate what and how noneconomic factors affect individual's trade preference using a unique household survey (the Keio Household Panel Survey, conducted by Keio University, Tokyo).

As a result of estimations, we find several interesting results. First, people's attitude toward trade liberalization is affected by economic factors as well as noneconomic factors such as happiness, preference on liberty■equality, and social stance. For instance, male, educated, and unmarried people prefer trade liberalization. Furthermore, people who live a happy life, prefer liberty to equality, trust the government, and have overseas experience, tend to be positive to trade liberalization. Second, noneconomic factors such as happiness, trust in government, and preference for liberty, more strongly affect how much people expect a change in income and quality of life as a result of free trade. Third, regional factors also matter. Urban areas and regions with more foreign people allow people to support trade liberalization.

The remainder of the paper is organized as follows. Section 2 describes our household data, stylized facts, and empirical strategy. Section 3 reports the result of trade preference and Section 4 investigates income change by TPP as well as the quality of life and compensation. Section 5 is on prefectural analysis and Section 6 is on the US step-down from the TPP. The final section is the conclusion.

2 Data Description, Stylized Facts, and Empirical Models

2.1 Keio Household Panel Survey (KHPS) 2017

Our unit of observation is the individual (one or two persons per household: head of household and spouse, if any). In the case of an individual with a spouse, s/he also is asked to answer the same questionnaire.

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[10]Blonigen (2011) uses educational background but has no noneconomic factors. The data of Ito et al. (2019) and Tomiura et al. (2016) ask about whether individuals are optimistic, and whether they are proud of her/his regional tradition and culture. The household survey used by Kuno (2012) asks whether people are proud of their hometowns and Japanese politics, science, economy, and history.

KHPS is a two-stage stratified random representative survey conducted by Keio University in Tokyo, Japan.[11] The first wave was conducted in 2004, which covers around 8,000 individuals (4,500 households). KHPS has an advantage of a panel survey and thus the same households join KHPS every year. Questionnaires are distributed every January and collected by investigators' visit every February to April. Every wave of KHPS includes various information on characteristics of the respondents and their households such as age, gender, place of residence, household composition, income, saving, job status, consumption, and financial assets. In addition, KHPS has a good advantage of including some noncognitive questions such as preference on liberty or equality, donations, and social stance. Other than these basic questions on household and individual characteristics, KHPS has a module with questions on specific issues. KHPS 2017 implemented questions on trade liberalization and TPP for the first time.

Here, we define economic factor as household/individual's socioeconomic characteristics such as age, gender, place of residence, household composition, income, educational attainment, saving, job status, financial assets, while noneconomic factor is defined as noncognitive variables (health, happiness, and preference on liberty and equality), social stance (e.g., donation, trust in government, trust in neighborhood), overseas experience, and lifestyle (e.g., English skill, food consumption, Internet use). See Table 1 and Appendix Table 1 for more details.

2.1.1 Trade policy questions

KHPS 2017 has some trade policy questions. The questions asked an individual's attitude toward trade liberalization.

Attitude toward trade liberalization Our first question is the attitude toward trade liberalization and the KHPS questionnaire asks "($Q1$) What is your attitude toward trade liberalization such as TPP?". The answer is set to five levels (disagree, slightly disagree, neutral, slightly agree, agree), which stands for $A_i \in \{1, 2, 3, 4, 5\}$ with 5 indicating the highest degree of support. Then, the second question is regarding the impact on income and asks "($Q2$) Due to future trade liberalization such as TPP, how do you expect that your income will change?", which stands for $I_i \in \{1, 2, 3, 4, 5\}$ with 1 indicating the strongest expected income decrease and 5 indicating the strongest expected income increase. The third question

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[11] In the first stage, Japan is stratified into 24 regions according to a city–region classification. The number of samples for each region is distributed in accordance with basic resident register population ratios. Then, the number of survey areas to be surveyed within each region is set up with around 10 households for each survey area, defined by districts corresponding to the Population Census, and a random sampling of the designated number of survey areas is implemented. Survey areas are employed by national census survey districts as sampling units. In the second sampling stage, basic resident registers for the selected survey areas are employed as sampling registers, and approximately 10 respondents for each survey area are drawn from the population.

is on quality of life and the questionnaire asks "(Q3) Due to future trade liberalization such as TPP, how do you expect the quality of life–for example, price, quality, and variety of products and services–will change?", which stands for $Q_i \in \{1, 2, 3, 4, 5\}$ with 1 indicating the strongest expected deterioration and 5 indicating the strongest expected improvement. The fourth question is on willingness to pay for compensation. The questionnaire asks "(Q4) Suppose your tax payment is 40,000 Yen (per month). Note that 40,000 yen is the average per-month tax payment in Japan.[12] If you answered 4 or 5 in $Q1$, what is the additional tax payment that you would accept for trade liberalization such as TPP to enter into force. If you answered $1, 2$, or 3 in $Q1$, what would be the tax reduction or financial compensation from the government that you require to support trade liberalization such as TPP?", which stands for $T_i \in \mathbb{R}$ (unit: Japanese yen).

For discrete dependent variables such as A_i, I_i, Q_i, we condense the five possible outcomes into two indicators:

$$A_i^1 = \left\{ \begin{array}{c} 0 \\ 1 \end{array} \right. \text{ if } A_i = \left\{ \begin{array}{c} 1, 2 \\ 4, 5 \end{array} \right. ,$$

$$A_i^2 = \left\{ \begin{array}{c} -1 \\ 0 \\ 1 \end{array} \right. \text{ if } A_i = \left\{ \begin{array}{c} 1, 2 \\ 3 \\ 4, 5 \end{array} \right. ,$$

and similarly for I_i and Q_i, or we use the variables as they are. For the continuous variable T_i, we normalize it by the hypothetical tax level (40,000 yen), and run a linear model.

2.1.2 Control variables in detail

We use several control variables from the KHPS data. In total, there are 37 variables as household/individual characteristics data in our sample (except variables used as fixed effects). See Appendix Table 1 for detailed definitions. The variables for individuals are gender dummy, sex_d (male $= 1$ and female $= 0$), age, university dummy (university degree $= 1$ and otherwise zero), retired dummy (retired people $= 1$ and otherwise zero), nonregular worker dummy, $non\_regular$ (nonregular worker $= 1$ and otherwise zero), number of family members (num_family), labor union dummy (join $= 1$ and otherwise zero) and poor people dummy ($poor$), defined people who received government transfer (poor $= 1$ and otherwise zero). Household economic variables are saving rate, net annual income (ln_net_income) (unit: ten thousand yen) and financial asset ($ln\_finance$) (unit: ten thousand yen). Variables used as fixed effect are job occupation (18 categories), employment size (6 categories), and household location (47 prefectures).[13]

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[12] According to the Household Survey (Ministry of Internal Affairs), 37,000 yen is the average per-month tax payment in Japan.

[13] Occupations are agriculture, fishery, mining, construction, manufacturing, wholesale and retail, restaurant and hotel, banking and insurance, real estate, transportation, information, telecommunication, gas–

KHPS includes some noncognitive skill or noneconomic factor questions. For example, the *libeq* variable is given by a question asking about which is important, liberty (1), neutral (0), or equality (−1). *ln_donation* is the amount of donation in the previous year (unit: yen). *Happiness* is measured by 0 to 10 (0 = not happy at all to 10 = very happy), which asks about happiness for the whole of their life. Health condition (*health*) is measured by 1 to 5 (1 = very bad to 5 = very good).

KHPS 2015 includes a module of social stance questions, answering by 1(negative/disagree) to 5 (positive/agree). The questions are the following statements: (1) We should trust neighboring people (*trust_N*). (2) We can trust our government (*trust_G*). (3) All people are basically good (*all_good_person*). (4) We are allowed to break the law if the law is not appropriate (*law_break*). (5) We need to use questionable ways to make profits (*dirty_money*). (6) I am sure that I can live an efficient life (*efficient_life*). (7) Many people have difficulty living an efficient life (*hard_efficient*). (8) I feel comfortable going shopping in the usual shops (*shopping*). (9) I will spend money now if the interest rate is 10% and the inflation rate is 20% (*spend*). (10) The price of a government bond that will be 10,000 yen one year later should be 10,000 yen now (*no_interest*).

Furthermore, a module of KHPS 2015 involves international experience, past living experience, and communication skills such as (1) English skill (*English*)(1 = not speaking English at all to 4 = speak English very fluently), (2) a dummy for nonexperience of living abroad (*no_exp_foreign*) (1 or otherwise zero), and (3) dummy for birth in core urban regions (*birth_place*). If people are born in the core, the dummy takes one.[14] (4) regional migration (*move*): This dummy is for move. If the residential place and birthplace (as of age 15 years) are different, dummy takes one. (5) Internet use (*internet*): This is a dummy for Internet use. These variables express flexibility to heterogeneous cultures. People who have the experience of living in various cultures and communicate with others with different backgrounds have an open mind. The other set is on lifestyle. Variables are expense share of food (*food_share*), expense share of eating out (*eatout_share*), and expense share of clothes (*clothes_share*). These expense shares would be affected by his/her past life behaviors and habits in childhood.

2.2 Stylized facts

Table 1 reports basic statistics. The number of samples for our paper is around 6,000 individuals because we drop individuals answering "not sure" or missing in $Q1$. Trade liberalization question ($Q1$) variables take from 1 (= disagree and very negative) to 5 (=

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electricity–water supply, medical services, education, other, public, misc.

  Firm size categories are tiny (1 to 4 employees), small (5 to 29), medium (30–99), large (100–499), very large (more than 500 employees), and government

  [14]The core is defined as Greater Tokyo (Tokyo, Saitama, Chiba, and Kanagawa prefectures), Greater Osaka (Osaka, Kyoto, and Hyogo prefectures), and Aichi.

agree and very positive). Answers in every question are distributed almost symmetrically, i.e., around 3 in mean and median, although the question on income is slightly biased to a lower value. The average amount of compensation takes a negative value, which will be discussed in detail later.

2.3 Empirical models

We run various econometric models that all use the structure:

$$A_i = \beta \mathbf{X}_i + FE_{p(i)} + FE_{o(i)} + FE_{f(i)} + \varepsilon_i \tag{1}$$

where i denotes the individual and $\mathbf{X}_i$ are individual i's characteristics; ε_i is a standard error, allowing for clustering at the household level. We include prefecture-level fixed effects $FE_{p(i)}$, occupation fixed effects $FE_{o(i)}$, and fixed effects for categories of firm size $FE_{f(i)}$. Then, we estimate (i) ordered logit model on A_i, (ii) logit model on A_i^1, and (iii) linear model on A_i^2. The same structure applies to I_i and Q_i.

Turning to model specification, we have three key structures, *S1*, *S2*, and *S3*. Specification 1 (*S1*) is on basic individual/household variables, age dummy (age generation, $age30$, $age40$, $age50$, $age60$, age_over_70), gender dummy (sex_d), university dummy ($university$), and number of family members (num_family). Then, we add retired people dummy ($retired$), nonregular worker dummy ($non\_regular$), labor union dummy ($labor\_union$), and poor people dummy ($poor$). Household economic variables are log of net annual income (ln_net_income), saving rates ($saving\_rate$), and log of financial assets ($\ln\_finance$).

Specification 2 (*S2*) is *S1* plus the full array of fixed effects as specified in equation (1). Fixed effects are prefectures (47 prefectures), in which the reference is Hokkaido (North island and agricultural area), occupations, in which the reference is agriculture, and firm size, in which the reference is the smallest size of firms (1–4 employees).

Specification 3 (*S3*) is *S2* plus noneconomic individual variables such health, happiness, social status, experience abroad, and English language skills. *S3* has some varieties of variables. Here, we decompose four subsets, *S3-1*, *S3-2*, *S3-3*, and *S3-4*. First, (*S3-1*) focuses on noneconomic measures, *happiness*, *health*, *libeq*, and *ln_donation*. Then, (*S3-2*) addresses individual's social stance, such as $trust\_N$, $trust\_G$, all_good_person, law_break, $dirty\_money$, $efficient\_life$, $hard\_efficient$, $shopping$, $spend$, and $no\_interest$. Next, (*S3-3*) includes individual's openness such as $English$, $no\_exp\_foreign$, $birth\_place$, $move$, $internet$. Finally, (*S3-4*) investigates the impact of lifestyle, such as $food\_share$, $eatout\_share$, and $clothes\_share$.

3   Overall Attitudes Toward Trade Liberalization

We first report the results on the ordered logit model and then conduct some robustness checks by different estimation methods such as logit and linear models.

3.1 Main results

Table 2 reports estimation results on trade liberalization. We note that variables reported in the table are only the significant ones in at least one estimation due to limited space and many independent variables. The number of all independent variables used in various estimation methods is 37 in total, except variables used as a fixed effect (see Appendix Table 1 for all independent variables and definitions). Overall, 13 economic variables and 7 noneconomic variables are significant. Table 3 reports the marginal effect for each variable.[15] Column 1 of Table 2 reports results of (*S1*). We find that the gender dummy is positive. Male is more likely to be positive to trade liberalization. This is consistent with the findings of all previous studies. Age is hump-shaped. Age 20s (reference) and older age (e.g., age over 70 years) are less negative than ages 30, 40, and 50 years. Young and old generations are relatively positive to trade liberalization.[16] Larger size of family is negative and smaller family size (single people) is positive. University degree is positive but not always significant. Nonregular workers are negative and weakly significant. They are opposed to trade liberalization. Labor union is significantly negative. Workers who belong to labor unions tend to be negative to trade liberalization. Financial asset is significantly positive, which indicates that households with more financial assets are positive to trade liberalization. Overall, these results are similar to previous studies (e.g., Naoi and Urata, 2012; Tomiura et al. 2016).

Next, column 2 of Table 2 reports the results of (*S2*). Figure 1 plots fixed effects in the prefecture, occupation, and firm size. Region (prefectures)(reference: Hokkaido), core prefectures are relatively high (positive) but not very large values. A few rural regions take very high positive values (e.g., Miyazaki, Ehime, Gunma, Aomori, Shimane, and Wakayama). We note that most of them are agricultural (e.g., big fruit producers) but not big rice producers.[17] Prefectures with large negative values are Iwate, Miyagi, Akita, Kochi, and Okinawa. In terms of occupation dummies (reference: agriculture), Agriculture (reference) is strongly negative to trade liberalization. This result is consistent with other previous studies (e.g., Tomiura et al., 2016). Service sectors and public sectors are overall positive and high. In terms of the size of firms (reference: the smallest firm, 1–4 employees), very large firms are very positive, while smaller firms are negative. This might reflect the fact that trade liberalization only benefits large firms (Melitz, 2003).

Column 3 of Table 2 reports results of (*S3-1*). We find that *happiness* is slightly significant and positive and *libeq* is significantly positive. People who prefer liberty and live a happy life tend to be positive to trade liberalization. Columns 4 and 5 of Table 2 report (*S3-*

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[15] Marginal effect reported is in specification S3-2 (column 5) due to the highest R-sq.

[16] We note that the generation of age 20 years is a relatively small sample because KHPS is a panel survey and a new cohort is added every few years (years 2007, 2009, and 2012) to adjust to generations. A sample selection of households of KHPS is age 20–69. Thus, as time goes by, if not adding a new cohort, all sample people are getting older. The sample above 70 years increases and below 30 decreases over time.

[17] Miyazaki produces tropical fruits and Ehime and Wakayama are big producers of Japanese orange. Aomori is a big producer of apple.

2). $trust\_G$ is significantly positive. Those who trust the government are positive to trade liberalization. $Dirty\_money$ is weakly significant and negative. Columns 6 and 7 of Table 2 report results of ($S3$-3) and ($S3$-4). $English$ is significantly positive and $birth\_place$ is significantly positive. Those who are born in core regions and can speak English fluently are positive to trade liberalization. In terms of specifications, Column 5 ($S3$-2) sees the highest R-sq. Overall, people who are liberal and open minded to foreign countries are positive to trade liberalization. In a nutshell, noneconomic factors are fairly influential on people's preference on free trade.

As a robustness check, columns 8 and 9 of Table 2 find that ordinary least squares (OLS) estimations (linear) using A_i^2 and logit by binary variable estimations (A_i^1) are consistent with ordered logit estimations (A_i).

4 Drilling Down: Income, Quality of Life, and Compensation

This section reports more empirical investigations using more variables, namely, income I_i, quality of life Q_i, and compensation T_i.

4.1 Income

This subsection studies a question on change of income, I_i. We take the same estimation strategy as the previous estimation equation (1), where A_i is replaced by I_i. Table 4 reports estimation results and Table 5 reports the marginal effect for each variable. [18] As in Table 2, only significant variables are reported due to limited space. Out of 37, 18 variables (6 economic variables and 12 noneconomic variables) are significant. More noneconomic and less economic variables are significant compared with Table 2. First of all, specification ($S1$) (Column 1) finds that gender dummy (sex), saving rate, and $ln\_finance$ are significantly positive, while the retired dummy is significantly negative. However, once specification ($S2$) (Column 2) is used, all household/individual economic factor variables except labor union dummy do not work at all. By contrast, specification ($S3$-1) (Column 3) finds that noncognitive works well. For instance, $happiness$ and $libeq$ are significantly positive. ln $\_donation$ is significantly negative. Likewise, specification ($S3$-2) (Columns 4, 5) finds that social stance works. all_good_person and $trust\_G$ are significantly positive while $dirty\_money$ is significantly negative. Then, ($S3$-3) ($S3$-4) (Columns 6, 7) suggest that Internet use and food share are weakly significantly negative and $birth\_place$ is weakly significantly positive. People who prefer liberty, live a happy life, and trust government and neighborhood tend to expect trade liberalization to increase income. Compared with the pros and cons of trade liberalization ($Q1$), many noneconomic factors are more critical and tend to affect individuals'

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[18]Table 5 reports the marginal effect for each variable in the specification of Column 5 due to the highest R-sq.

opinions greatly. Table 5 reports the marginal effect for each variable.[19]

4.2 Quality of life

We take the same estimation strategy as the estimation equation (1), where A_i is replaced by Q_i. Table 6 shows the results on questions in terms of quality of life.[20] As in Table 2, only significant variables in at least one estimation are reported due to limited space. Out of 37, 13 variables (5 economic variables and 8 noneconomic variables) are significant. More noneconomic and less economic variables significantly matter compared with Table 2. Specification $(S1)$ (Column 1) finds that the gender dummy is significantly positive. Male expects quality upgrading, while age and university degree do not work. num_family is negative, indicating smaller families are positive. ln $\_finance$ is significantly positive. Specification $(S3\text{-}1)$ (Column 3) finds that $health$ and $libeq$ are significantly positive and Specification $(S3\text{-}2)$ (Columns 4, 5) finds that $trust\_G$ and all_good_person are significantly positive while $dirty\_money$ is significantly negative. Specification $(S3\text{-}3)$ $(S3\text{-}4)$ (Columns 6, 7) find that $English\_skill$ and $clothes\_share$ are significantly positive. Male and unmarried who have financial assets tend to have a positive opinion. Likewise, people who prefer liberty, live a happy life, and trust government and neighborhood tend to expect trade liberalization to increase the quality of life.

4.3 Compensation

The compensation question asks an individual's willingness to pay tax (positive amount of compensation) or receive a transfer (negative amount of compensation), given a certain amount of tax payment. We note that the average amount of compensation is negative. Even people who are neutral to trade liberalization prefer some compensation from the government, i.e., the average negative value of compensation. Regardless of the pros and cons of trade liberalization, Japanese people prefer to receive a transfer from the government. To adjust for the average negative value of compensation, the mean value of neutral people's compensation should be deducted from compensation values in raw data.

Consider rational voters. Individuals favor TPP if $\Delta\left(w/P\right) > 0$, where w is income, affected by income impact I_i, and P is price index, affected by quality impact, Q_i, as mentioned above. We suppress if $A_i = 6, 9$, $I_i = 6, 9$, or $Q_i = 6, 9$ (i.e., unknown or missing answer). We find that 774 out of 1149 strongly agree or agree to TPP, $A_i = \{1, 2\}$, and their compensation is set at $6, 490$ yen on average. On the other hand, 375 out of 1149 disagree or strongly disagree to TPP, $A_i = \{4, 5\}$, and their compensation is $-21, 430$ yen on average. Overall, the average of compensation is equal to $-2, 620$ yen.

Here, some insights can be derived. The average of compensation is negative and the

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[19]Marginal effects reported in the table are in the specification S3-2 (column 5) due to the highest R-sq.

[20]Table 7 reports the marginal effect for each variable in terms of Column 5 of Table 6.

value of compensation for anti-TPP is a larger magnitude than for pro-TPP. Because the per-month average tax is set at 40,000 yen as a reference in this question, anti-TPP people expect discounted tax by half on average. This is a large bias, indicating that Japanese people are originally dependent on the government and expect a big and generous government transfer and subsidies. Voting by collective action would produce a majority in favor of TPP and would force the government to turn TPP down.

Our estimation uses both (i) raw data and (ii) adjusted value data (compensation controlled by mean value), which are reported in Appendix Table 2. Now, we use OLS only. The dependent variable is the value of compensation. Table 8 reports the estimation results using (ii) due to limited space, which shows only significant variables. Out of 37 variables, 10 variables (6 economic variables and 4 noneconomic variables) are significant. Because the dependent variables are monetary values, economic factors, in particular income and financial assets, are significant while the number of family and education are now insignificant. The variable $trust\_G$ is also significantly positive. Richer people and/or government supporters do not mind paying more tax if trade agreements are ratified. This indicates that even if some people well understand the benefits of trade liberalization and prefer it, those who are not rich are reluctant to pay more tax and thus it is difficult to persuade opponents of trade liberalization.

5   Prefectural-Level Evidence

Turning from individual analysis, we conduct prefectural-level analysis. There are 47 prefectures in Japan, and it is a highly centralized nation. However, there are some regional variations not only in industrial structure, topology, and climate but also culture, people's preference, society, and noncognitive factors. First of all, we conduct the following estimation by the ordered logit model.

$$A_i = \beta \mathbf{X}_i + FE_{p(i)} + FE_{o(i)} + FE_{f(i)} + \varepsilon_i \tag{2}$$

where $\mathbf{X}_i$ in this section employs the simplest set of variables (using the model specification $S2$). After running estimations, the coefficients of prefecture dummies, $FE_{p(i)}$, are produced as prefectural residuals, Y_j, where j denotes prefecture (47 prefectures). Then, Y_j is regressed by prefectural variables $\mathbf{Z}_j$, using OLS:

$$Y_j = \beta \mathbf{Z}_j + \varepsilon_j \tag{3}$$

where $\mathbf{Z}_j$ includes several aspects of characteristics of the prefecture: (1) market factors, (2) food consumption in daily life, (3) food production, (4) openness, and (5) sentiments toward US culture and history.

Market factors   First, $\mathbf{Z}_j$ is defined as a market factor such as GDP, market potential (MP), GDP per capita, share of manufacturing, and share of agricultural production in prefecture j. The MP is derived as in Harris (1954). As reported in columns 1 to 3 of Table 9, GDP and MP are significantly positive, while other variables are not significant. Large market size such as high GDP is a generally strong impact on people's pro-trade preferences. Even if we use population and urbanization variables instead of GDP and MP, the results are unchanged. An urban area with a large population and large consumption fosters a positive view on free trade.

Food consumption   The average prefectural-level household expense on meat, fish,

dairy products, and rice are now used. The data are taken from the Household Survey, 2015 (Ministry of Internal Affairs and Telecommunications, Japan). Overall, prefectures in west Japan see higher meat consumption while prefectures facing the Sea of Japan have higher fish consumption. The geographical patterns of high rice consumption are not in clear and specific geographical patterns, unrelated to rice-producing regions. The results are reported in columns 4 to 6 of Table 9. We find that meat is significantly positive and fish is negative. Thus, we can say that regions eating more meat prefer trade liberalization, while those eating more fish are negative toward free trade. This implies that a tariff is often imposed more on meat than fish and thus those who like to eat meat are positive to free trade.

Food production   Now turning to the supply side of food, we use rice field share, food self-sufficiency rates, food production, and GDP. The data are taken from the Ministry of Agriculture, Forestry and Fisheries, Japan. As columns 7 to 9 of Table 9 show, although GDP is significantly positive, food production is significantly negative. Other variables are not significant, although food self-sufficiency rates are positive. This indicates that food production is a generally negative impact on people's trade preferences. This implies that Japan imports a lot of foods protected by tariffs and thus areas of more food production prefer trade protection.

Openness   This is cultural and manufacturing openness toward foreign countries. The variables to use for cultural openness are measured by the number of foreign tourists (ln_tour) and the number of foreign residents ($ln\_foreign$). Then, those for manufacturing openness are export share of manufacturing production (ex_sh), export premium of manufacturing firms (exp_prem), and early port dummy ($early\_port$). The first two variables measure people's open-mindedness to foreigners and the next two variables measure firm's exposure to the international market. The last one is the dummy for early port cities. The early port dummy indicates prefectures with the first opening of ports at the end of the Edo and beginning of the Meiji periods. Japan had been an autarchy in the Edo period, where foreign trade was prohibited except with China, Korea, and the Netherlands through Nagasaki port. At

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the end of the Edo period, Japan was required to open some ports such as Kanagawa, Kobe (Hyogo prefecture), Niigata, Hakodate (Hokkaido prefecture), and Nagasaki ports. These ports imported European products and advanced culture to a large degree.

We note that export premium and export share of manufacturing are taken from Okubo and Tomiura (2019), which are derived using plant-level data of the Census of Manufacturers (Ministry of Economy, Trade and Industry, Japan). When firms can easily access a foreign market, the export premium is smaller, and vice versa. If the export share of manufacturing is higher, firms are exposed to the foreign market. Data for tourists and foreign residents are taken from the Japan Statistical Yearbook (Ministry of Internal Affairs, Japan). As a result of estimations, as reported in columns 10 to 12 of Table 9, the numbers of foreign residents and tourists are significantly positive, while manufacturing exports are negative but insignificant. This indicates that regions that accommodate more foreign people in short or long periods prefer trade liberalization. The openness of manufacturing firms has no impact on an individual's trade preference.

Sentiments toward the US (Culture and history of Japan and the US)   This estimation is to test Japanese sentiment toward the US. We use the US military force share, dead and injured people share during WWII, average household expenditure on fast food, and core dummy. These variables are all measured by the long-term impact of anti-US or pro-US sentiments. Japan has had a military alliance with the US since WWII and thus several large-scale US military bases are located in some prefectures such as Okinawa. US military force share is measured by the percentage of military base areas (Ministry of Defense, Japan, 2018). Then, going back to history, Japan suffered several air raids by the US during WWII. Many major cities in Japan were totally destroyed and many people died and were injured by US bomb attacks. The dead and injured population ratio by US military attacks is derived by the number of dead and injured people (Asahi Shimbun-sha, 2004). After WWII, the culture of fast food was imported from the US. The spending on fast food is measured by average monthly expenditure on fast food (e.g., hamburgers), taken from Household Survey 2015 (Ministry of Internal Affairs, Japan). To control urbanization and penetration of US culture, a core dummy is added, which defines as urban areas Tokyo, Kanagawa, Chiba, Saitama, Aichi, Kyoto, Osaka, and Hyogo. As reported in columns 13 to 15 of Table 9, we find that the US military force share is always significantly negative in trade and quality estimations. Dead and injured people during WWII is negative. The core is always significantly positive. Thus anti-US sentiment might remain in some regions.

Overall, we can conclude that some regional factors are influential to an individual's trade preference and in particular, noneconomic variables and market size are crucial in regional factors.

6 Impact of US Secession from the TPP

On January 24, 2017, the US decided to withdraw from the TPP agreement and President Trump announced the step-down. As a robustness check, we investigate whether the US secession affects an individual's preference to trade liberalization. In the KHPS survey, each household questionnaire is collected by the direct visit of investigators. Then, if household people are absent and/or have not yet filled in the questionnaire, the investigators visit the household again another day. This iteration process continues several times until successfully collecting the survey form. In KHPS 2017, the visits started on February 4, 2017, which is 11 days after the US withdrawal. Our KHPS 2017 includes information on the exact dates of the collection for each individual, although information on the date of his/her filling in the questionnaire form is not available.

Here, we hypothesize that if the impact of the US secession on Japanese individuals is substantial, individuals will be gradually/suddenly skeptical of trade liberalization over time even after controlling basic individual characteristics.

To investigate this, we conduct the following simple estimation.

$$A_i = \beta \mathbf{X}_i + FE_{p(i)} + FE_{o(i)} + \sum \gamma DayV_i + \varepsilon_i \qquad (4)$$

where X_i simply uses the minimum set of individual i's variables, age and gender. The dummy of $DayV_i$ ($V_i = 1, 2, 3...$) indicates day of survey collection since February 4, 2017 and is one when survey questionnaire for i is collected and otherwise zero. For example, if i's survey is collected on Feb 5 (6, 7), then $Day1$ ($Day2, Day3$, etc.) dummy is one. I_i and Q_i are investigated in the same manner. As a result of the estimation, Figure 2 plots coefficients of day dummies, γ, over time in estimation on trade liberalization. All coefficients of Day dummies are not greatly changed nor specific over-time trends, despite some volatilities. This indicates no clear transitional impact of US secession.

7 Conclusion

This paper studies Japanese individuals' attitudes to trade liberalization using a unique household survey, KHPS 2017. We find noneconomic factors tend to affect an individual's preference on trade. While previous studies used educational attainment and risk, our paper uses many kinds of noneconomic factor variables, such as happiness, health, social stance, foreign experience, and daily-life behaviors. Furthermore, individual factors as well as regional factors greatly influence his/her trade preference.

These results imply that the real world is different from what trade theory predicts in preference on trade liberalization. According to the theory, those who work for comparative advantageous industries benefit from trade and thus are positive to trade liberalization, and

vice versa. However, many noneconomic factors are much more important. Preference on trade liberalization is largely affected by individuals' different noneconomic factors such as noncognitive factors, happiness, social stance, and their experience as well as regional factors, which are out of the scope of international trade theory. In other words, this is why there is still a large gap between public opinion on trade liberalization and what economists or economic theory have thought.

References

[1] Asahi Shinbun sha (2004) "Shukan Asahi Hyakka" (written in Japanese)

[2] Blonigen, B. (2011). Revisiting the evidence on trade policy preferences. *Journal of International Economics*, 85(1),129–135.

[3] Cabinet Office (2010) "EPA no Kakushu Shisan" (Estimations of EPA impact), written in Japanese.

[4] Felbermayr, G., Kimura, F., Okubo, T., and Steininger, M. (2019). Quantifying the EU-Japan Economic Partnership Agreement. *Journal of the Japanese and International Economies*, 51, 110-128.

[5] Harris, C.D. (1954). The market as a factor in the localization of industry in the United States, *Annals of the Association of American Geographers* 44(4), 315-348.

[6] Ito, B., Mukunoki, H., Tomiura, E., & Wakasugi, R. (2019). Trade policy preferences and cross-regional differences: Evidence from individual-level data of Japan. *Journal of the Japanese and International Economies*, 51, 99-109.

[7] Jakel, I. C., & Smolka, M. (2013). Individual attitudes towards trade: Stolper-Samuelson revisited. *Open Economies Review*, 24(4), 731-761.

[8] Kagitani, K., and Harimaya, K. (2019). Electoral rules and free trade agreements as a campaign issue: The case of political disputes over the Trans-Pacific Partnership in Japan. *Japan and the World Economy*, 49, 126-137.

[9] Kuno, A (2012) Jiyuu Boueki ni Taisuru Senkou: sono kettei youin to kokusai hikaku (Preference on Free Trade: factor analysis and cross-country comparison) written in Japanese, Ch.8 in "Kokusai keizai no ronten", in *Issues in International Economy*, edited by K. Umada and F. Kimura, Bunshin-do, Japan.

[10] Okubo, T., & Tomiura, E. (2019). Regional variations in exporters' productivity premium: Theory and evidence. *Review of International Economics.* 27(3): 803-821.

[11] O'Rourke, K. H., & Sinnott, R. (2006). The determinants of individual attitudes towards immigration. *European Journal of Political Economy,* 22(4), 838-861.

[12] O'Rourke, K. H., & Sinnott, R. (2001). What determines attitudes towards protection? Some cross-country evidence. In Brookings Trade Forum (Vol. 2001, pp. 157-206).

[13] Mayda, A. (2006). Who is against immigration? A cross-country investigation of individual attitudes toward immigrants. *Review of Economics and Statistics*, 88(3), 510–530.

[14] Mayda, A., & Rodrik, D. (2005). Why are some people (and countries) more protectionist than others? *European Economic Review*, 49(6), 1393–1430.

[15] Melitz, Marc J. (2003) "The impact of trade on intra-industry reallocations and aggregate industry productivity," *Econometrica*, 71(6), pp. 1695–1725.

[16] Mulgan, A. G. (2015). To TPP or not TPP: Interest groups and trade policy. In The political economy of Japanese trade policy (pp. 123-156). Palgrave Macmillan, London.

[17] Naoi, Megumi and Ikuo Kume (2011), "Explaining Mass Support for Agricultural Protectionism: Evidence from a Survey Experiment during the Global Recession," *International Organization* 65:771–95.

[18] Naoi, M., & Urata, S. (2013). Free trade agreements and domestic politics: The case of the Trans-Pacific Partnership Agreement. *Asian Economic Policy Review*, 8(2), 326-349.

[19] Nikkei News Paper (2009) "Bunpai totomoni Seicho Hitsuyou", (Not only distribution but also economic growth is necessary) *Keizai Kyousitsu*, October 16th 2009, page 29.

[20] Scheve, K., & Slaughter, M. (2001). What determines individual trade-policy preferences? *Journal of International Economics*, 54(2), 267–292.

[21] Tomiura, E., Ito, B., Mukunoki, H., & Wakasugi, R. (2016). Individual characteristics, behavioral biases, and trade policy preferences: Evidence from a survey in Japan. *Review of International Economics*, 24(5), 1081–1095.

[22] Yamamura, E., & Tsutsui, Y. (2019). Trade policy preference, childhood sporting experience, and informal school curriculum: An examination of views of the TPP from the viewpoint of behavioral economics. *Review of International Economics*, 27(1), 61-90.

[23] Zakowski, K., Bochorodycz, B., & Socha, M. (2018). Abe Cabinet and the TPP Negotiations on "Trade Sensitivities". In Japan's Foreign Policy Making (pp. 203-231). Springer, Cham.

Table 1: Basic Statistics

Trade liberalization

stats	unit	mean	min	max	p50	sd	N
trade		3.113011	1	5	3	0.901471	5964
TPP_income		2.753977	1	5	3	0.685705	4589
TPP_quality		2.979316	1	5	3	1.071043	4738
compensation	1000 yen	-11.9364	-999	210	-10	29.59886	4808

Economic factors

stats	mean	min	max	p50	sd	N
sex_d	0.539387	0	1	1	0.498489	5903
age	56.57615	26	95	56	13.24231	5903
university	0.212441	0	1	0	0.40907	5964
num_family	3.179425	1	10	3	1.350987	5813
retired	0.320255	0	1	0	0.466614	5964
non_regular	0.224849	0	1	0	0.417518	5964
poor	0.007545	0	1	0	0.086543	5964
labor_union	0.122569	0	1	0	0.327969	5964
ln_net_income	6.092494	0	8.537192	6.175867	0.680808	5293
saving_rate	0.099646	0	0.9	0.09	0.118945	5222
ln_finance	1.689866	0	10.12667	0	2.778793	5568

Non-economic factor variables

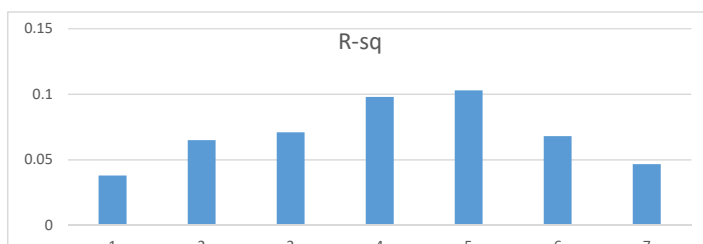| stats	mean	min	max	p50	sd	N
happiness	6.427585	0	10	7	1.796135	5938
Health	3.336307	1	5	3	0.930774	5941
libeq	0.162807	-1	1	0	0.723715	5829
ln_donation	2.383275	0	13.91082	0	4.04119	5939
trust_N	3.514441	1	5	4	0.913067	5886
trust_G	2.579117	1	5	3	0.963736	5890
all_good_Person	3.349414	1	5	3	1.128828	5887
law_break	2.265036	1	5	2	0.981957	5886
dirty_money	2.320726	1	5	2	1.031851	5896
efficientLife	2.860343	1	5	3	0.874321	5893
hard_efficient	3.013612	1	5	3	0.721982	5877
shopping	3.441127	1	5	4	0.975786	5894
spend	2.937808	1	5	3	0.752431	5885
no_intrest rate	2.635172	1	5	3	0.986127	5874
English	1.433459	1	4	1	0.619005	5846
no_exp foreign	0.924715	0	1	1	0.263873	5964
birth_place	0.41214	0	1	0	0.492261	5964
move	0.308853	0	1	0	0.462059	5964
internet	0.780181	0	1	1	0.414159	5964
food_share	0.249779	0	0.839695	0.230769	0.119113	5732
eat_out_share	0.054838	0	0.5	0.045045	0.050828	5732
clothes_share	0.046582	0	0.46875	0.036004	0.047906	5732

Table 2: Trade preference   NB: Due to limited space, varibles reported in Table are only significant at least in one estimation.

Ologit (1,2,3,4,5)

Dependent var: A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Specification	S1	S2	S3-1	S3-2	S3-2	S3-3	S3-4
sex_d	0.544***	0.512***	0.510***	0.514***	0.504***	0.515***	0.518***
	(9.71)	(6.32)	(6.17)	(6.24)	(6.02)	(6.28)	(6.16)
age_30	-0.708**	-0.558*	-0.643*	-0.586*	-0.618*	-0.552	-0.630*
	(-2.46)	(-1.65)	(-1.81)	(-1.65)	(-1.70)	(-1.56)	(-1.75)
age_40	-0.676**	-0.588*	-0.655*	-0.589*	-0.618*	-0.586*	-0.657*
	(-2.45)	(-1.83)	(-1.94)	(-1.74)	(-1.79)	(-1.73)	(-1.92)
age_50	-0.655**	-0.523	-0.594*	-0.535	-0.568	-0.527	-0.589*
	(-2.38)	(-1.62)	(-1.76)	(-1.58)	(-1.64)	(-1.55)	(-1.72)
age_60	-0.548*	-0.427	-0.501	-0.484	-0.51	-0.389	-0.525
	(-1.92)	(-1.27)	(-1.43)	(-1.37)	(-1.42)	(-1.10)	(-1.46)
age_over70	-0.161	-0.148	-0.182	-0.315	-0.287	-0.115	-0.217
	(-0.53)	(-0.39)	(-0.46)	(-0.78)	(-0.71)	(-0.29)	(-0.53)
university	0.182**	0.0649	0.0467	0.0639	0.0536	0.0144	0.0127
	(2.29)	(0.72)	(0.51)	(0.69)	(0.57)	(0.15)	(0.13)
num_family	-0.0726***	-0.0679**	-0.0575*	-0.0646**	-0.053	-0.0606*	-0.0521*
	(-2.63)	(-2.11)	(-1.75)	(-1.96)	(-1.58)	(-1.85)	(-1.72)
retired	-0.279**	-0.111	-0.137	-0.132	-0.145	-0.162	-0.178
	(-2.47)	(-0.83)	(-1.03)	(-0.95)	(-1.05)	(-1.22)	(-1.33)
non_regular	0.018	-0.161*	-0.153*	-0.155*	-0.161*	-0.158*	-0.147
	(0.27)	(-1.77)	(-1.66)	(-1.67)	(-1.72)	(-1.71)	(-1.57)
labor_union	-0.145	-0.329***	-0.344***	-0.281**	-0.306***	-0.348***	-0.348***
	(-1.51)	(-2.89)	(-2.99)	(-2.42)	(-2.62)	(-3.06)	(-3.00)
ln net_income	0.100*	0.054	0.0218	0.0316	0.0123	0.049	0.049
	(1.80)	(0.82)	(0.32)	(0.47)	(0.18)	(0.73)	(0.72)
ln_finance	0.0674***	0.0542***	0.0477***	0.0444***	0.0389**	0.0549***	0.0502***
	(5.49)	(3.63)	(3.14)	(2.92)	(2.51)	(3.58)	(3.23)
happiness			0.0423*		0.0191		0.0428*
			(1.86)		(0.80)		(1.82)
libeq			0.188***		0.179***		0.190***
			(3.50)		(3.30)		(3.45)
trust_G				0.380***	0.384***		
				(7.62)	(7.62)		
dirty_money				-0.0828*	-0.0671		
				(-1.84)	(-1.46)		
no_interest				-0.0646	-0.0561		
				(-1.48)	(-1.26)		
English						0.176***	0.141*
						(2.61)	(2.02)
birth_place						0.199*	0.205*
						(1.77)	(1.80)
N	4707	3423	3320	3346	3259	3361	3251
Prefecture dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm size dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
OLS							
R-sq	0.038	0.065	0.071	0.098	0.103	0.068	0.0467

	OLS (-1,0,1)	Logit (binary)
Dependent var	A2	A1
	(8)	(9)
sex_d	0.149***	0.838***
	(5.54)	(7.59)
age_30	-0.202	-0.339
	(-1.61)	(-0.69)
age_40	-0.185	-0.609
	(-1.52)	(-1.27)
age_50	-0.178	-0.467
	(-1.46)	(-0.98)
age_60	-0.157	-0.243
	(-1.25)	(-0.49)
age_over70	-0.0897	0.0256
	(-0.65)	(-0.05)
univ	0.0178	0.113
	(0.60)	(1.12)
num_family	-0.0179*	-0.102**
	(-1.74)	(-2.50)
retired	-0.0541	-0.0342
	(-1.21)	(-0.20)
non_regular	-0.0518*	-0.367***
	(-1.72)	(-3.00)
labor_union	-0.0901**	-0.274**
	(-2.53)	(-2.10)
ln net_income	0.00158	0.14
	(0.07)	(1.51)
ln_finance	0.0112**	0.0446**
	(2.26)	(2.52)
happiness	0.00818	0.0556*
	(1.11)	(1.93)
libeq	0.0564***	0.192***
	(3.34)	(2.96)
trust_G	0.119***	0.342***
	(7.92)	(6.26)
dirty_money	-0.0144	0.00466
	(-1.06)	(-0.09)
no_interest	-0.0133	-0.155***
	(-0.99)	(-3.05)
_cons	-0.770***	-5.666***
	(-3.30)	(-5.66)
N	3259	3226
adj. R-sq	0.104	
Prefecture dummies	Yes	Yes
Occupation dummies	Yes	Yes
Firm size dummies	Yes	Yes

R-sq

Table 3: Marginal Effect in Trade Preference in Estimation (5)

	very negative				very positive
	1	2	3	4	5
sex_d	-0.0259	-0.03881	-0.02602	0.057781	0.032949
age_30	0.031784	0.047627	0.031936	-0.07091	-0.04044
age_40	0.031803	0.047656	0.031955	-0.07095	-0.04046
age_50	0.029236	0.043809	0.029376	-0.06523	-0.03719
age_60	0.026215	0.039283	0.026341	-0.05849	-0.03335
age_over70	0.014786	0.022156	0.014856	-0.03299	-0.01881
university	-0.00275	-0.00413	-0.00277	0.006146	0.003505
num_family	0.002727	0.004086	0.00274	-0.00608	-0.00347
retired	0.007444	0.011154	0.007479	-0.01661	-0.00947
non_regular	0.008271	0.012394	0.008311	-0.01845	-0.01052
labor_union	0.015736	0.023579	0.015811	-0.03511	-0.02002
ln_net_income	-0.00063	-0.00095	-0.00063	0.00141	0.000804
ln_finance	-0.002	-0.003	-0.00201	0.004463	0.002545
happiness	-0.00098	-0.00147	-0.00099	0.002193	0.00125
libeq	-0.0092	-0.01378	-0.00924	0.020518	0.0117
trust_G	-0.01973	-0.02956	-0.01982	0.044017	0.0251
dirty_money	0.003453	0.005175	0.00347	-0.0077	-0.00439
no_interest	0.002884	0.004322	0.002898	-0.00643	-0.00367

Table 4: Income change   NB: Due to limited space, varibles reported in Table are only significant at least in one estimation.

Dependent var: I	Ologit (1,2,3,4,5)							Dependent var	OLS (-1,0,1) I2	Logit (binary) I1
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)	(9)
Specification	S1	S2	S3-1	S3-2	S3-2	S3-3	S3-4			
sex_d	0.207***	0.0623	0.0543	0.0371	0.0222	0.0734	0.0588	sex_d	0.00473	0.412
	(2.83)	(0.59)	(0.51)	(0.34)	(0.20)	(0.69)	(0.54)		(0.22)	(1.51)
retired	-0.269**	-0.114	-0.116	-0.117	-0.118	-0.178	-0.288	retired	-0.0174	-0.367
	(-2.14)	(-0.74)	(-0.74)	(-0.73)	(-0.73)	(-1.14)	(-1.44)		(-0.52)	(-0.83)
non_regular	-0.0183	-0.181	-0.179	-0.196*	-0.199*	-0.174	-0.175	non_regular	-0.0473*	-0.616*
	(-0.20)	(-1.56)	(-1.51)	(-1.67)	(-1.66)	(-1.49)	(-1.45)		(-1.91)	(-1.83)
labor_union	-0.102	-0.252*	-0.272*	-0.221	-0.246*	-0.251*	-0.282*	labor_union	-0.0385	-0.141
	(-0.77)	(-1.76)	(-1.89)	(-1.53)	(-1.70)	(-1.73)	(-1.94)		(-1.35)	(-0.53)
saving_rate	0.796**	0.571	0.605	0.381	0.424	0.558	0.536	saving_rate	0.0675	0.464
	(2.02)	(1.23)	(1.28)	(0.79)	(0.86)	(1.19)	(1.11)		(0.73)	(0.57)
ln_finance	0.0303*	0.0145	0.0133	0.00838	0.0104	0.0193	0.0214	ln_finance	0.00182	0.0564
	(1.92)	(0.74)	(0.66)	(0.41)	(0.50)	(0.95)	(1.02)		(0.46)	(1.34)
happiness			0.0725**		0.0289		0.0712**	happiness	0.00511	-0.048
			(2.38)		(0.88)		(2.28)		(0.78)	(-0.72)
libeq			0.115*		0.133*		0.133*	libeq	0.0236*	0.0945
			(1.72)		(1.92)		(1.95)		(1.76)	(0.67)
ln_donation			-0.0247**		-0.0281**		-0.0268**	ln_donation	-0.00562**	-0.0881***
			(-2.00)		(-2.22)		(-2.16)		(-2.21)	(-2.68)
trust_G				0.246***	0.250***			trust_G	0.0463***	0.378***
				(4.05)	(4.05)				(3.96)	(2.78)
all_good_person				0.0810*	0.0892*			all_good_person	0.0170*	-0.03
				(1.67)	(1.80)				(1.76)	(-0.27)
law_break				0.00288	-0.00352			law_break	0.00177	0.233*
				(0.05)	(-0.06)				(0.16)	(1.94)
dirty_money				-0.216***	-0.203***			dirty_money	-0.0405***	-0.480***
				(-3.98)	(-3.60)				(-3.67)	(-3.42)
no_interest				0.0793	0.0953*			no_interest	0.0167	0.0952
				(1.51)	(1.75)				-1.58	-0.77
birth_place						0.21	0.226*	_cons	-0.777***	-3.093
						(1.50)	(1.58)		(-3.62)	(-1.48)
move						0.0878	0.0995	N	2653	2362
						(0.79)	(0.88)	adj. R-sq	0.05	
internet						-0.300*	-0.328*	Prefecture dummies	Yes	Yes
						(-1.74)	(-1.88)	Occupation dummies	Yes	Yes
food_share							0.392	Firm size dummies	Yes	Yes
							(0.8)			
N	3714	2783	2701	2723	2653	2731	2647			
Prefecture dummies	No	Yes	Yes	Yes	Yes	Yes	Yes			
Occupation dummies	No	Yes	Yes	Yes	Yes	Yes	Yes			
Firm size dummies	No	Yes	Yes	Yes	Yes	Yes	Yes			
OLS R-sq	0.007	0.046	0.05	0.066	0.069	0.047	0.0451			

R-sq

	1	2	3	4	5	6	7
R-sq	0.007	0.046	0.05	0.066	0.069	0.047	0.0451

(Bar chart, y-axis: 0, 0.02, 0.04, 0.06, 0.08)
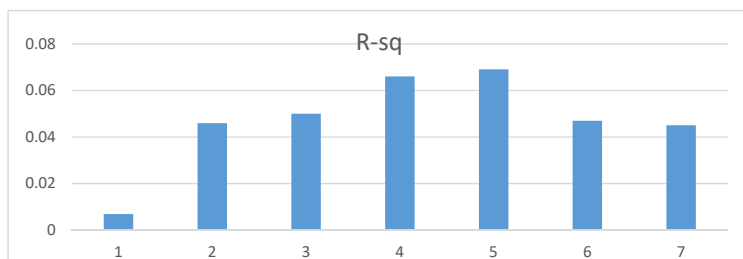
Table 5: Marginal Effect in Income Change in estimation (5)

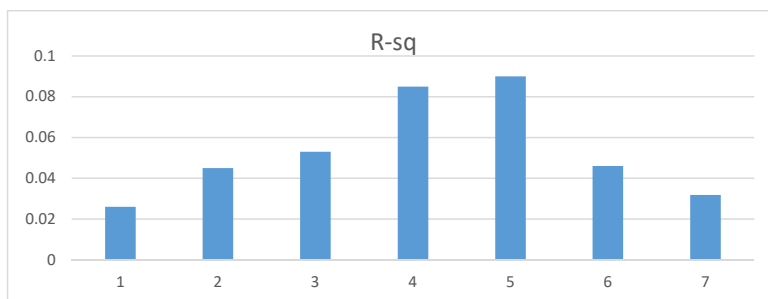| | very negative | | | | very positive |
	1	2	3	4	5
sex_d	-0.00154	-0.00181	0.002363	0.000837	0.000149
retired	0.008218	0.009612	-0.01258	-0.00446	-0.0008
non_regular	0.01387	0.016222	-0.02123	-0.00752	-0.00134
labor_union	0.017098	0.019997	-0.02617	-0.00927	-0.00165
saving_rate	-0.0295	-0.03451	0.04515	0.016003	0.002854
ln_finance	-0.00072	-0.00085	0.001107	0.000392	0.00007
happiness	-0.00201	-0.00236	0.003083	0.001093	0.000195
libeq	-0.00927	-0.01084	0.014187	0.005029	0.000897
ln_donation	0.001954	0.002285	-0.00299	-0.00106	-0.00019
trust_G	-0.01741	-0.02036	0.026639	0.009442	0.001684
all_good_person	-0.00621	-0.00726	0.009506	0.003369	0.000601
law_break	0.000245	0.000287	-0.00037	-0.00013	-2.4E-05
dirty_money	0.014158	0.016559	-0.02167	-0.00768	-0.00137
no_interest	-0.00663	-0.00776	0.010148	0.003597	0.000642

Table 6: Quality impact   NB: Due to limited space, varibles reported in Table are only significant at least in one estimation.

Ologit (1,2,3,4,5)

Dependent var: Q

Specification	(1) S1	(2) S2	(3) S3-1	(4) S3-2	(5) S3-2	(6) S3-3	(7) S3-4
sex_d	0.469***	0.437***	0.441***	0.422***	0.418***	0.445***	0.444***
	(8.10)	(5.12)	(5.09)	(4.86)	(4.75)	(5.17)	(5.04)
num_family	-0.0530*	-0.0648*	-0.0444	-0.0640*	-0.0411	-0.0609*	-0.0319
	(-1.74)	(-1.87)	(-1.25)	(-1.85)	(-1.16)	(-1.73)	(-0.87)
labor_union	-0.0549	-0.218*	-0.203*	-0.17	-0.167	-0.191*	-0.174
	(-0.52)	(-1.91)	(-1.74)	(-1.47)	(-1.40)	(-1.65)	(-1.46)
ln_net_income	0.0882	0.115*	0.0633	0.108	0.0687	0.0984	0.0677
	(1.49)	(1.75)	(0.92)	(1.59)	(0.97)	(1.47)	(0.97)
ln_finance	0.0519***	0.0383**	0.0396**	0.0284*	0.0301*	0.0372**	0.0399**
	(4.08)	(2.44)	(2.45)	(1.78)	(1.84)	(2.31)	(2.40)
happiness			0.0431*		0.012		0.0355
			(1.78)		(0.47)		(1.43)
Health			0.114**		0.118**		0.109**
			(2.39)		(2.44)		(2.25)
libeq			0.131**		0.132**		0.134**
			(2.42)		(2.35)		(2.42)
trust_G				0.367***	0.371***		
				(7.54)	(7.46)		
all_good_person				0.100**	0.0973**		
				(2.54)	(2.39)		
dirty_money				-0.118***	-0.0983**		
				(-2.67)	(-2.14)		
English						0.182**	0.147**
						(2.52)	(1.99)
clothes_share							0.00731**
							(2.14)
N	3819	2817	2732	2759	2686	2761	2673
Prefecture dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm size dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
OLS R-sq	0.026	0.045	0.053	0.085	0.09	0.046	0.0318

	OLS(-1,0,1) (8) Q2	Logit (binary) (9) Q1
sex_d	0.191***	0.460***
	(4.94)	(4.42)
num_family	-0.019	-0.0351
	(-1.29)	(-0.87)
labor_union	-0.0588	-0.0731
	(-1.20)	(-0.57)
ln_net_income	0.0395	0.108
	(1.25)	(1.23)
ln_finance	0.00842	0.0269
	(1.24)	(1.49)
happiness	0.00849	0.0116
	(0.80)	(0.41)
Health	0.0456**	0.114**
	(2.32)	(2.15)
libeq	0.0516**	0.124**
	(2.21)	(2.00)
trust_G	0.154***	0.331***
	(7.88)	(6.25)
all_good_person	0.0383**	0.114**
	(2.33)	(2.52)
dirty_money	-0.0361*	-0.0956*
	(-1.94)	(-1.85)
_cons	-1.620***	-4.179***
	(-4.68)	(-4.31)
N	2686	2684
adj. R-sq	0.079	
Prefecture dummies	Yes	Yes
Occupation dummies	Yes	Yes
Firm size dummies	Yes	Yes

R-sq

0.1							
0.08							
0.06							
0.04							
0.02							
0	1	2	3	4	5	6	7

Table 7: Marginal Effect in Quality Impact in Estimation (5)

	very negative				very positive
	1	2	3	4	5
sex_d	-0.03609	-0.0483	-0.00486	0.06831	0.020943
num_family	0.003548	0.004748	0.000478	-0.00672	-0.00206
labor_union	0.0144	0.019273	0.001941	-0.02726	-0.00836
ln_net_income	-0.00593	-0.00793	-0.0008	0.011218	0.003439
ln_finance	-0.0026	-0.00347	-0.00035	0.004914	0.001507
happiness	-0.00104	-0.00139	-0.00014	0.00196	0.000601
Health	-0.01022	-0.01367	-0.00138	0.019338	0.005929
libeq	-0.01136	-0.0152	-0.00153	0.021499	0.006591
trust_G	-0.032	-0.04283	-0.00431	0.060571	0.01857
all_good_person	-0.0084	-0.01124	-0.00113	0.015902	0.004875
dirty_money	0.008481	0.011352	0.001143	-0.01605	-0.00492

Table 8: Compensation

Compensation adjusted

Dependent var T	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Specification	S1	S2	S3-1	S3-2	S3-2	S3-3	S3-4
sex_d	0.191***	0.171***	0.174***	0.173***	0.171***	0.179***	0.178***
	(8.77)	(5.51)	(5.51)	(5.48)	(5.36)	(5.69)	(5.62)
age_30	-0.170*	-0.14	-0.152	-0.136	-0.142	-0.14	-0.141
	(-1.93)	(-1.38)	(-1.44)	(-1.31)	(-1.32)	(-1.32)	(-1.34)
age_40	-0.183**	-0.164*	-0.174*	-0.148	-0.153	-0.152	-0.137
	(-2.15)	(-1.67)	(-1.72)	(-1.48)	(-1.47)	(-1.47)	(-1.35)
age_50	-0.178**	-0.146	-0.151	-0.14	-0.14	-0.134	-0.118
	(-2.09)	(-1.48)	(-1.49)	(-1.40)	(-1.35)	(-1.29)	(-1.16)
ln_net_income	0.0643***	0.0645***	0.0546**	0.0607***	0.0531**	0.0597***	0.0556**
	(3.32)	(2.95)	(2.46)	(2.79)	(2.41)	(2.74)	(2.47)
ln_finance	0.0183***	0.0168***	0.0156***	0.0143***	0.0133***	0.0163***	0.0151***
	(4.56)	(3.52)	(3.17)	(2.90)	(2.65)	(3.34)	(3.04)
Health			0.0285*		0.0253*		0.0287**
			(1.95)		(1.70)		(1.95)
trust_G				0.0626***	0.0625***		
				(3.97)	(3.90)		
English						0.0594***	0.0582***
						(2.77)	(2.69)
food_share							0.312**
							(2.49)
N	3012	2198	2133	2155	2101	2159	2096
adj. R-sq	0.05	0.072	0.074	0.085	0.084	0.076	0.1192
Prefecture dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Occupation dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm size dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
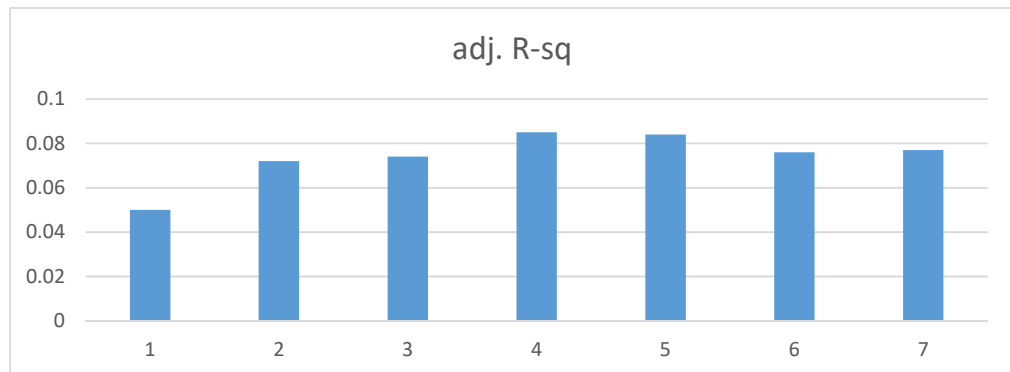
Table 9: Prefectural Analysis

GDP and economic structure

	1	2	3
	Trade	Quality	Income
ln_GDP	0.0613***	0.0195*	0.0384*
	(4.15)	(1.91)	(1.87)
ln_MP	0.0488**	0.0484***	0.0232
	(2.09)	(2.76)	(0.63)
ln_GDP_cap	-0.0951**	-0.0242	-0.0701
	(-2.28)	(-0.68)	(-0.92)
manu_share	0.00867	0.00674	0.0489
	(0.30)	(0.30)	(1.05)
agri_share	-0.834	1.549	0.149
	(-0.59)	(1.28)	(0.06)
N	46	46	46

Food consumption (demand)

	4	5	6
	Trade	Quality	Income
ln_meat	0.167**	0.0942*	0.196**
	(2.05)	(1.89)	(2.23)
ln_fish	-0.137	-0.119	-0.234*
	(-1.12)	(-1.33)	(-1.82)
ln_dairy	0.105	0.0349	0.0175
	(0.89)	(0.52)	(0.16)
ln_rice	-0.0602	0.00803	0.000531
	(-0.76)	(0.14)	(0.01)
N	47	47	47

Food production (supply)

	7	8	9
	Trade	Quality	Income
ricefield	-0.00018	-7.6E-05	0.00186
	(-0.20)	(-0.12)	(1.37)
food_self	0.0211	0.0334*	0.0317
	(0.81)	(1.70)	(0.84)
ln_GDP	0.0965***	0.0499***	0.0685***
	(5.72)	(5.28)	(3.70)
ln_food production	-0.0526**	-0.0374**	-0.0556*
	(-2.15)	(-2.42)	(-1.89)
N	47	47	47

Openness (foreigners and exporting)

	10	11	12
	Trade	Quality	Income
ln_tour	0.0168*	0.0102**	0.0112
	(2.00)	(2.14)	(1.08)
ln_foreign	0.0749***	0.0275*	0.0601**
	(3.55)	(1.74)	(2.11)
Exp_sh	0.0178	0.0859	-0.308
	-0.04	-0.35	(-0.79)
Exp_prem	-0.0949	0.0182	0.00797
	(-1.37)	(0.40)	(0.10)
early_port	-0.0122	-0.0258	-0.0246
	(-0.31)	(-1.16)	(-0.50)
N	47	47	47

US cultural impact (US bomb attack, military base)

	13	14	15
	Trade	Quality	Income
US_force_share	-0.000883[a]	-0.000668[a]	0.000175
	(-2.29)	(-2.17)	(-0.31)
ln_dead	-0.0016	-0.00240*	-0.00422
	(-0.82)	(-1.68)	(-1.28)
early_port	-0.018	-0.0233*	-0.031
	(-0.67)	(-1.80)	(-0.76)
ln_fastfood	0.0245	0.00685	0.0247
	(1.16)	(0.43)	(0.79)
core	0.173***	0.0863***	0.108***
	(6.12)	(5.44)	(3.42)
N	47	47	47

Appendix Table 1: Variable definition

Variable name	Unit	Definition	Source
Trade liberalization			
trade	1 to 5	Attitude toward trade liberalization	KHPS2017
TPP_income	1 to 5	Change of income by TPP	KHPS2017
TPP_quality	1 to 5	Change of quality of life by TPP	KHPS2017
compensation	1000 yen	Compensation	KHPS2017
Economic factors			
sex_d	0,1	Male =1, female =0	KHPS2017
age_30 -age_over70		Age dummies	KHPS2017
university	0,1	Dummy for university degree holder	KHPS2017
num_family		Number of family member	KHPS2017
retired	0,1	Dummy for retired people	KHPS2017
non_regular	0,1	Dummy for non-regular worker	KHPS2017
poor	0,1	Dummy for people who receive government financial support	KHPS2017
labor_union	0,1	Dummy for labor union member	KHPS2017
ln_net_income	10,000 yen	Net income (ln)	KHPS2017
saving_rate		Saving ratio	KHPS2017
ln_finance	10,000 yen	Amount of financial asset (ln)	KHPS2017
Non-economic factor variables			
happiness	0-10	Happiness for the whole of their life. 0=not happy at all to 10=very happy.	KHPS2017
Health	1 to 5	Health condition. 1=very bad to 5=very good.	KHPS2017
libeq	1, 0,-1	Preference on liberty or equality. 1=liberty, 0=neutral, -1=equality	KHPS2017
ln_donation	yen	Amount of donation in previous year. (ln)	KHPS2017
trust_N	1 to 5	We should trust neighborhood	KHPS2015
trust_G	1 to 5	We can trust government	KHPS2015
all_good_person	1 to 5	All people are originally good	KHPS2015
law_break	1 to 5	We are allowed to break the law if the law is not appropriate	KHPS2015
dirty_money	1 to 5	We need to take dirty way if we make profits	KHPS2015
efficientLife	1 to 5	I can send efficient life	KHPS2015
hard_efficient	1 to 5	Many people are hard to send efficient life	KHPS2015
shopping	1 to 5	I feel comfortable to go shopping to usual shops	KHPS2015
spend	1 to 5	I will spend money now if interest rate is 10% and inflation rate is 20%.	KHPS2015
no_intrest rate	1 to 5	The price of government bond which will be 10,000 yen one year later should be 10,000 yen now	KHPS2015
English	1 to 4	English skill. 1= not speaking at all to 4= speak very fluently	KHPS2015
no_exp foreign	0, 1	No oversea experience	KHPS2015
birth_place	0,1	Dummy for birth in core regions	KHPS2017
move	0,1	Dummy for moving regions after birth	KHPS2015
internet	0,1	Dummy for internet user	KHPS2015
food_share		Expense share of food	KHPS2015
eat_out_share		Expense share of eat-out	KHPS2015
clothes_share		Expense share of clothes	KHPS2015

Appendix Table 2: Basic statistics on compensation

adjusted data	Obs	Mean	Std. Dev.	Min	Max
Very positive	372	25.19633	12.81498	17.36031	117.3603
positive	994	23.41363	10.02997	17.36031	227.3603
neutral	2,620	4.37E-07	19.62343	-482.64	17.36031
negative	564	-4.02267	22.1744	-222.64	17.36031
very negative	258	-16.663	89.19907	-981.64	17.36031
	4808				

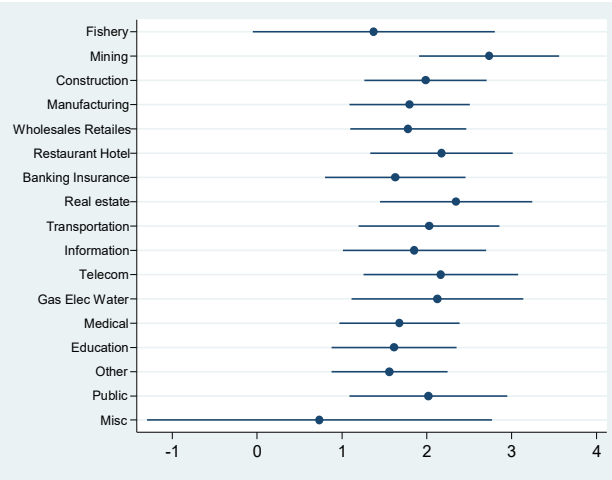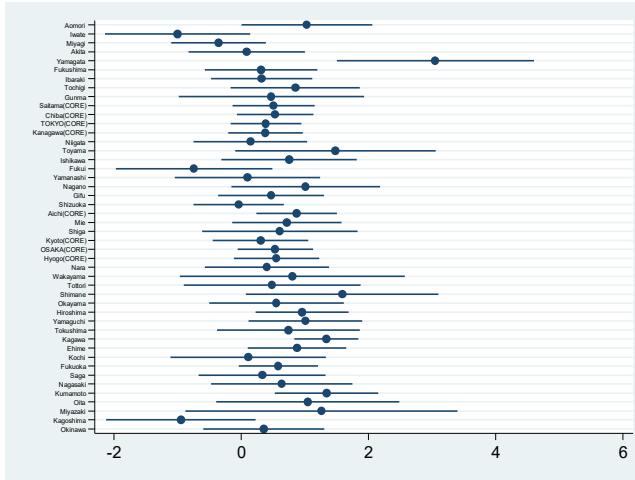| raw data	Obs	Mean	Std. Dev.	Min	Max
Very positive	372	7.836022	12.81498	0	100
positive	994	6.05332	10.02997	0	210
neutral	2,620	-17.3603	19.62343	-500	0
negative	564	-21.383	22.1744	-240	0
very negative	258	-34.0233	89.19907	-999	0
	4808				

Figure 1: Fixed effects in S2
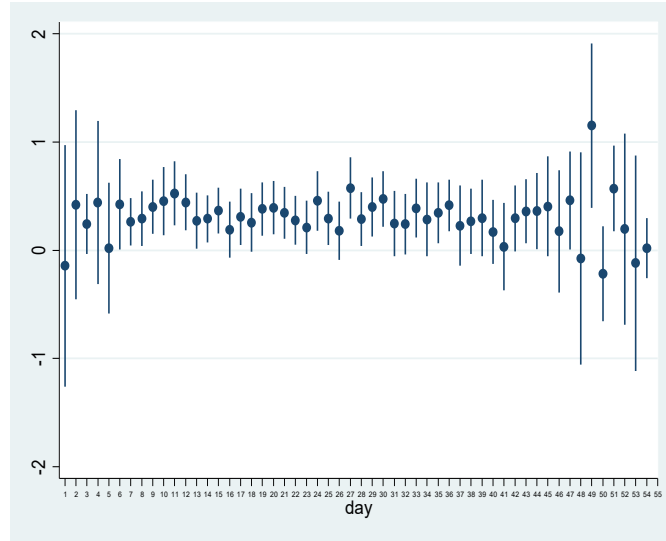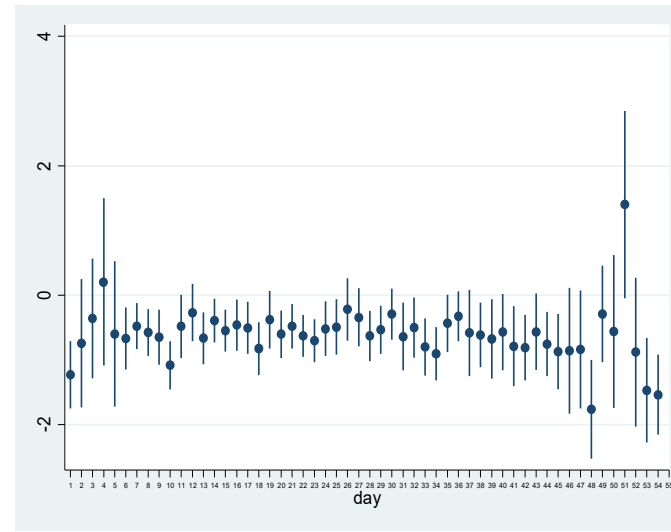
Trade
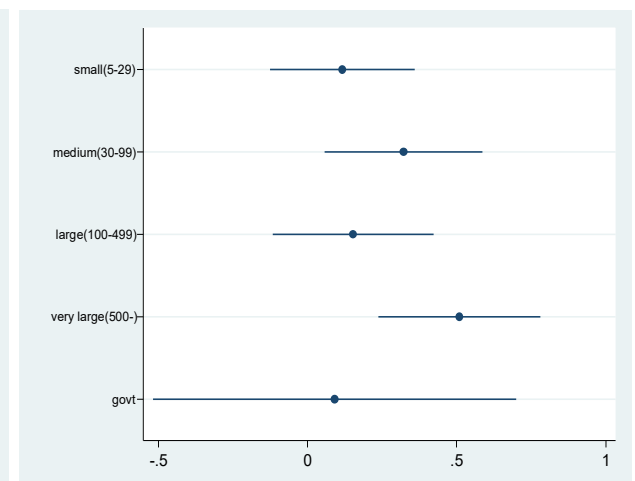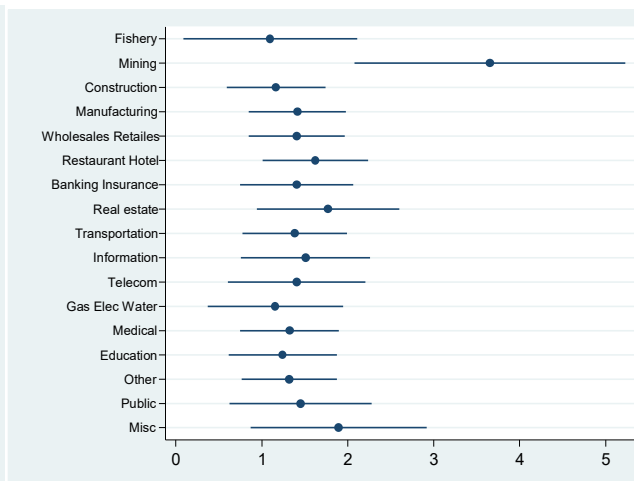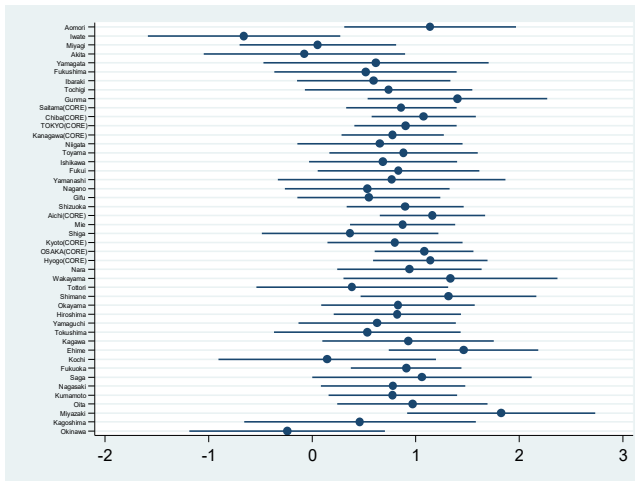
Quality
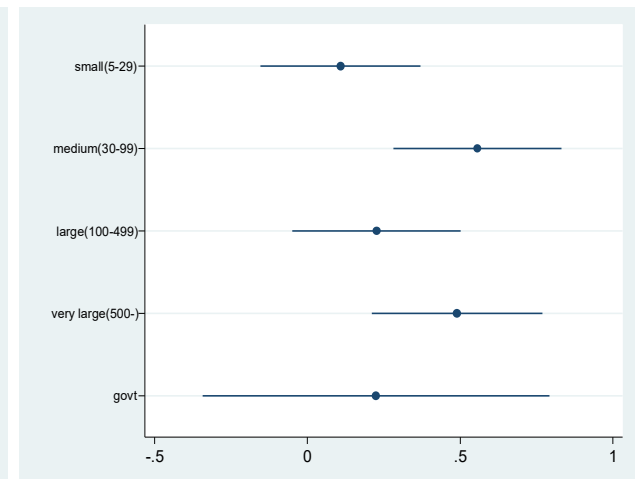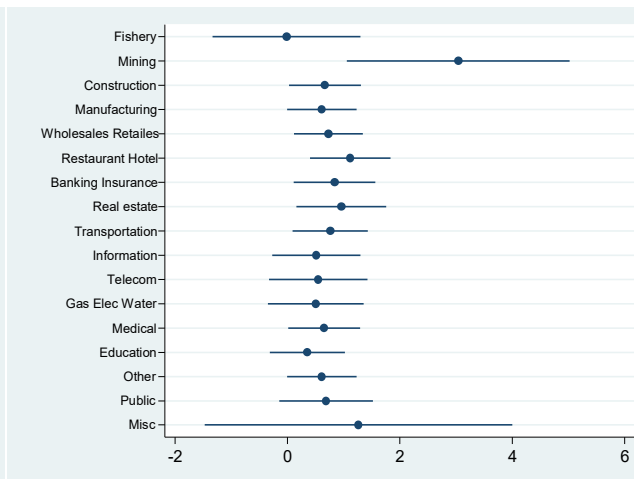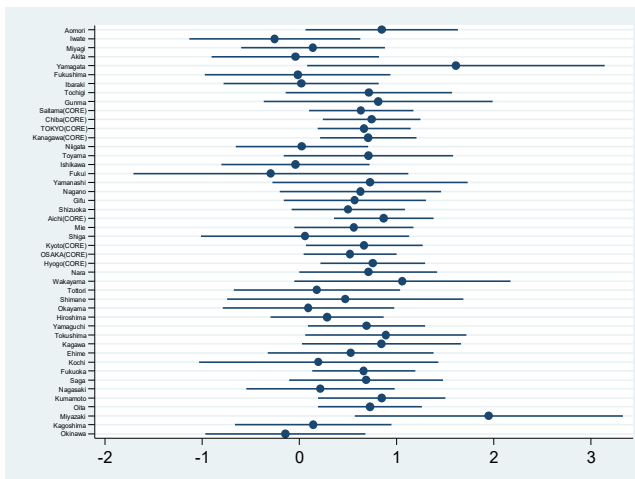
Income
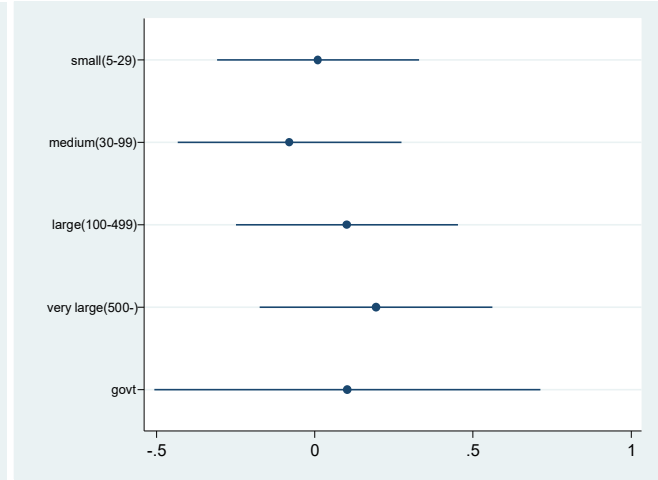
Figure 2: Days of survey correction--No Trump effect

Survey correction started from Feb 4th

Trade

Quality

Income