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Individual Characteristics, Behavioral Biases, and Attitudes
toward Immigration: Evidence from a Survey in Japan

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Individual characteristics, behavioral biases, and attitudes toward immigration:
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Abstract

This study examines individual attitudes toward immigration jointly with their trade policy preferences based on a survey of more than 10,000 respondents in Japan. Our bivariate probit estimation results show that people influenced by status-quo bias or risk aversion tend to have significantly lower probability of supporting both immigration and import liberalization. Anti-immigration individuals tend to have pessimistic views of the national economy's prospects and no personal acquaintance with foreigners. These findings suggest that wide-ranging measures are required for expanding support for immigration. In addition, we confirm the effects of standard variables, such as education and occupation.

Keywords: immigration; policy preference; behavioral biases; survey data

JEL classifications: F16, F22, F66, D03

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1. Introduction

Economists almost unanimously support free trade in goods and services, but controversies continue on the issue of immigration, as recently surveyed by Peri (2016). In the real world, many countries control immigrants at national borders. Immigration control is among the hotly debated issues in many developed countries, including the U.K., as illustrated in the so-called Brexit referendum on exiting the EU, and the U.S., as shown by US President Donald Trump's campaign promise to build a wall along the Mexican border in the presidential election in 2016. In contrast to these other developed countries, Japan maintains extremely tight regulations on immigration in spite of its rapidly declining working-age population. This study examines the impacts of orthodox economic factors as well as behavioral biases on individual attitudes toward immigration based on a survey of more than 10,000 respondents in Japan.

Workers often oppose inflows of immigrants due to threatened employment opportunities and/or lower wages in the domestic labor market. Empirical analyses confirming these effects include Borjas (2003) in the U.S. and Felbermayr et al. (2010) in Germany, to name just a few. However, Hainmueller et al. (2015) revisit this issue by conducting a survey of U.S. employees in 12 diverse industries and cast doubt on the effect of labor market competition on attitudes toward immigration. Accumulated studies in economics, as reviewed in the next section, have confirmed that narrowly defined economic self-interest is insufficient for explaining individual attitudes toward immigration, but possible explanations suggested by research in other social science fields are so diverse.¹

To explore economic factors outside of the labor market, we introduce behavioral biases into our analysis. Behavioral economics has successfully explained anomalies in various economic fields, such as finance, consumption, and labor, but the application to international

¹ In sociology and political science, as reviewed by Hainmueller and Hopkins (2014), social, ethnic, and cultural factors have been intensively discussed.

economics has so far been limited, to the best knowledge of the authors.² Based on Japanese survey data, Tomiura et al. (2016) find that individuals' status-quo bias and risk aversion are significantly related with opposition to import liberalization, but their analyses are on trade protection, not immigration. As anti-immigrant sentiments might be more easily influenced by psychological factors than trade protectionism, the investigation of possible impacts of behavioral biases on attitudes toward immigration should be useful. This study examines whether the individual's behavioral biases affect her/his opinion about immigration after controlling for standard economic factors, such as occupation and industry. As individual attitudes toward immigration are likely to be correlated with trade policy preferences, this study analyzes them jointly in a bivariate model.

This study derives data from a survey on 10,816 respondents in Japan. The share of foreigners in the total population has persistently been extremely low in Japan, partly as a result of its long history of tight control of foreign workers.³ However, as the working-age population continues to shrink (it has decreased by nearly 10 million during the last 2 decades)⁴ owing to rapid aging and low fertility, the Japanese government is discussing the deregulation of foreign workers.⁵ Therefore, our research has deep implications for ongoing discussion of immigration policy reforms in many countries.

The results of this study show that individuals opposing both immigration and import liberalization tend to be influenced by status-quo bias or risk aversion. We confirm significant

² As a rare example, Tovar (2009) applies loss aversion to explain import protection of declining industries.

³ Foreigners occupy 1.3%, according to the Population Census in 2010, the previous year in which our survey was conducted. If we were to exclude Koreans born in Japan with the status of special permanent residents, the percentage would become even smaller.

⁴ The number of people aged 15 to 64 years declined from 87.2 million in the peak year 1995 to 77.9 million in 2014, according to the Statistics Bureau, Ministry of Internal Affairs.

⁵ The number of foreign workers rose from 686,246 in 2011, the year our survey was conducted, to 907,896 in 2015, in spite of a stagnant domestic economy, according to the Ministry of Labor. Illegal immigrants are not included in these numbers.

effects of behavioral biases even after controlling for standard variables, such as individual's education, occupation, income, age, and gender. This suggests that traditional economic measures, such as income compensation, are insufficient for expanding political support for globalization, especially for resisting anti-immigration movements.

The rest of the paper is organized as follows. Section 2 reviews related previous research. Section 3 describes our survey data, especially the survey items critical for this study. Section 4 introduces our empirical model. Section 5 reports estimation results and discusses their implications. Section 6 concludes.

2. Literature review

This section reviews related previous studies. As many studies have accumulated on attitudes toward immigration, this survey is not intended to be exhaustive but selective for motivating our research. To facilitate comparisons with our survey results, this review section concentrates on observational studies of survey data and does not cover experimental studies.⁶

As inflows of immigrants result in increased supply of labor, native people oppose immigration based on fear of labor market competition. This concern should be especially serious among unskilled workers in countries abundant in skilled labor, as immigrants flow mainly from developing countries to developed countries. Scheve and Slaughter (2001) make an early contribution to the analysis of individual policy preferences, and find that less skilled workers tend to demand tighter restrictions on immigration in the U.S. From samples covering 22 mostly developed countries and 44 mostly developing countries, Mayda (2006) reports that

⁶ The research topics previously investigated but not reviewed here include the distinction between skilled versus unskilled immigrants, the comparison of different origin countries, the impacts on previous immigrants, and the impacts of political partisanship, common language, religion, race, and ethnicity. We omit these topics mainly because they are not well suited or relevant for studying the current state of immigration in Japan. A survey by Hainmueller and Hopkins (2014) covers a wider range of studies on this topic.

skilled individuals favor immigrants more in countries with more abundant skilled labor endowments. This observation is consistent with the factor proportions trade theory.

Although respondents' expectations about the future are not exactly a labor market variable, several studies have investigated their effect. Chandler and Tsai (2001) find that a pessimistic view of the national economy has a strong impact on anti-immigration attitudes in the U.S. In Europe, Dancygier and Donnelly (2012) observe that support for immigration tends to be stronger in people working in growing sectors than those in shrinking sectors but this support dampened during the financial crisis in 2007. Citrin et al. (1997) also report that a pessimistic view of the national economy, not of own personal financial situation, is associated with anti-immigration sentiments in the U.S. These results suggest that negative reactions to immigrants should be influenced by the perceived impacts of labor market competition that vary across sectors, over business cycles, or with the anticipated future trajectory of the national economy.

However, Hainmueller et al. (2015) find that labor market fears have no substantial impact on the anti-immigration attitudes of workers in diverse U.S. industries. The effect of education is strong irrespective of the skill intensity of the industry. The authors suggest ethnocentrism or socio-tropic concerns as alternative explanations, while their survey is not designed to test such effects. The finding of insignificant impact might be plausible, as a dominant share of native people is not directly threatened by immigrants in the labor market. Dustmann and Preston (2007) report that labor market fear is less serious than cultural concerns.⁷ Similarly, Blonigen (2011) finds that education has a persistent effect on retirees' opinions on import restrictions in the U.S. and argues that labor-market attributes are

⁷ Much previous research distinguishing skilled versus unskilled immigrants, not reviewed in this section, report that people favor skilled immigrants irrespective of their own skill levels, indicating limited impacts of labor market competition on anti-immigration sentiment.

insufficient for explaining trade policy preferences.⁸

To find a clue to this puzzle of no significant effect of labor market factors on reactions to immigrants, deviations from the orthodox optimization framework as analyzed in behavioral economics should be among the promising first candidates before expanding our scope to social and cultural factors. Ehrlich and Maestas (2010), although their main focus is on protectionism, briefly refer to their finding that job threat decreases support for immigration only among risk averters.⁹ However, to our knowledge, no other research has yet investigated the effect of behavioral biases on anti-immigration attitudes. From a survey in Japan, Tomiura et al. (2016) find that an individual's opposition to import liberalization is significantly related to both her/his risk aversion and status-quo bias.

Even if we restrict our attention to economic self-interest, the labor market is not the sole channel affecting personal attitudes toward immigration. Anti-immigrant sentiments might also arise from fears of extra fiscal burden. Hanson et al. (2007) find that people, especially more skilled people, in U.S. states in which immigrants receive more welfare payments are less likely to support immigration. However, evidence for this pocket-book concern has been mixed (e.g., no relation in the U.S. reported by Tingley 2013).¹⁰

The strong effect of education on pro-migration attitudes has been confirmed repeatedly (e.g., Dustmann and Preston 2007; Mayda 2006; McLaren 2003; Scheve and Slaughter 2001).¹¹

⁸ On the other hand, Mayda (2006) reports that the correlation between skill (education) and pro-immigration attitudes disappears in individuals out of the labor force.

⁹ We discuss the effect of risk aversion on anti-immigration attitudes of native people, but risk orientation has often been examined for its effect on migration decisions by migrants. See, for example, Jaeger et al. (2010).

¹⁰ Facchini and Mayda (2009) find that pro-immigration preference is positively related with skill (education) but negatively related with income in an international sample. From a European survey, Dustmann and Preston (2006) report that welfare concerns are more important than labor market concerns.

¹¹ Although almost all the previous research depends on correlations with college education, d'Hombres and Nunziata (2016) detect the causal impact of education by using a rare setting of natural experiment: exogenous changes in compulsory education legislation in Europe.

Education is regarded as a crude proxy for skill by many studies, such as those cited above discussing labor market competition, but Hainmueller and Hiscox (2007) argue that college education should have profound effects on personal attitudes toward immigration through tolerance to different cultures or respect for cultural diversity.

In addition, previous research has detected significant effects of biological characteristics of individuals. First, on the age effect, older people tend to be more concerned about immigrants (e.g., Calahorrano 2013; Chandler and Tsai 2001; Dustmann and Preston 2007; O'Rourke and Sinnott 2006). By using the panel format of German surveys, Calahorrano (2013) finds that this difference across generations is driven by a cohort effect, as anti-immigrant concerns decrease over the life cycle of individuals.

Second, preferences of individuals differ between genders. Women are more protectionist and anti-immigrant than men are. This gender gap is confirmed by Mayda (2008) and O'Rourke and Sinnott (2006), for example, on immigration.

Individuals' opinions about immigrants are naturally influenced by experience of personal contact with foreigners. O'Rourke and Sinnott (2006) report that those who have never lived abroad tend to oppose immigration. According to European evidence by McLaren (2003), having friends from minority groups results in a lower level of threat perception against immigrants. Dustmann and Preston (2007) investigate deeper personal contacts (marriage of one's close relatives or appointment to one's boss) in discussing differences across immigrants' origin countries in the British case. From a survey in Japan, Yamamura (2012) reports that frequent contact with foreigners in neighborhoods "sharpens perceptions of the effects of immigration" (p.45). Among respondents with frequent contact with foreigners, high-income people regard immigrants as a necessary labor force but low-income people regard them as reducing job opportunities.

In addition, regional factors are related with individual attitudes toward immigration. For example, Card et al. (2012) show that the compositional amenity of local community (sharing customs, traditions, religions, and languages) is substantially more important than concerns over wages or taxes in explaining attitudes toward immigration in Europe. However, as foreigners occupy merely 1% of the population in Japan, and as smaller villages even with concentrations of foreigners are less frequently sampled in any survey, it is quite unlikely for us to discover any discernible regional variations in Japan. On the willingness to relocate residence, O'Rourke and Sinnott (2006) report that mobile people, especially internationally mobile people, are less hostile to immigrants.

The local share of young population is important especially for aging societies with declining labor-force population, like Japan. In a related finding in Latvia, Ivlevs (2012) shows that people are more favorable to foreign workers in areas with lower birth rates.¹² However, as the share of aged people tends to be high in rural areas, it is difficult to distinguish the urban–rural attitude gap from different aging speed across regions in Japan.

Research in sociology and political science has emphasized the impact of nationalism on reactions to immigrants. According to results by Ariely (2012), De Figueiredo and Elkins (2003), and Rajzman et al. (2008), chauvinistic feelings (belief in national superiority in comparison with other countries) are associated with xenophobic attitudes toward immigration, but patriotic feelings (feeling of national pride) are instead related with pro-immigration attitudes. The authors argue that positive, constructive patriotism alleviates perceived threats from immigrants. By contrast, O'Rourke and Sinnott (2006) report that both chauvinism and patriotism are related with anti-immigration. As it is difficult to measure nationalistic feelings by a survey, its effect on anti-immigration should be discussed with caution.

¹² Malchow-Moller et al. (2008) report that pro-immigration probability is higher for those who consider immigrants help to fill jobs amid the shortage of workers in Europe.

A comparison of an individual's opinion on immigration with his or her view on other related policy issues, especially import liberalization, is informative, as inflows of goods and of workers have partly similar impacts on native residents. Previous studies comparing attitudes toward immigration with those toward import restrictions include Ehrlich and Maestas (2010) on job threat, Hanson et al. (2007) on fiscal concern, and Mayda (2008) on sector effect. As far as the authors know, O'Rourke and Sinnott (2006) is the only example of research that considers correlations between disturbances in these two attitudes, reporting that native-born people are not protectionist but anti-immigrant. As O'Rourke and Sinnott (2006) estimate a seemingly unrelated model (two equations linked only through errors), their bivariate model does not consider anti-immigrant free traders or pro-immigrant protectionists.

3. Description of data

3.1. Basic design of our survey

The survey from which we derive individual-level data was conducted by Japan's Research Institute of Economy, Trade and Industry (RIETI).¹³ We collect data from approximately 1 out of 10,000 in Japan's total population, or 10,816 individuals.¹⁴ This survey was conducted in October 2011.¹⁵ While the next subsection describes our key survey items, this survey collects such fundamental information on basic individual characteristics as education, age, and gender. The summary statistics for the variables, which are included in our regressions and whose

¹³ The survey ("Questionnaire Survey about Japanese Economy and International Trade with Foreign Countries") was undertaken by a commercial research company Intage under contract with RIETI for our research project. The response rate was 31%, which is relatively high as a survey for academic research. Although 97% of the responses were via the internet, the same questionnaire was printed on paper and sent by postal mail to people aged over 60 years without internet access.

¹⁴ This sample size is larger than those of most previous studies on this topic (e.g., 5,224 by Blonigen 2011). More than 20,000 respondents are covered by Mayda (2006, 2008), but they are distributed over 22 countries.

¹⁵ The survey also asks about the damage from the Great East Japan Earthquake, which occurred 7 months prior to the survey, but policy preferences appear not to be correlated with this damage.

definitions are explained in the following two subsections, are shown in Table 1.

We design the sample to be as representative as possible of the entire Japan by setting the proportions of gender, 10 regions, and 12 age groups to approximate those of the whole of Japan reflected in the most recent population census. Roughly half of the responses are from men. While our survey covers people aged between 20 and 79 years, the average respondent is 49 years, which is only slightly older than the 44 years calculated from the population census in the previous year. Around 40% of the surveyed individuals in our sample had completed college, university, or graduate school, which is slightly higher than that reported in the population census.¹⁶ Based on our survey data on annual income, this study defines the binary dummy *Rich* for people above the median income of 4 million yen, which approximates that reported by government survey in the same year.¹⁷ Therefore, our survey can be regarded as a reliable representation of Japan as a whole in such fundamental dimensions as those listed above, with sufficiently wide variations, as shown in the standard deviation column. On the other hand, as the proportions of unemployment and managerial occupation in our sample deviate from the national average, we should not draw macroeconomic quantitative implications, such as magnitude of impacts on the national unemployment rate.¹⁸ Even with such limitations, our estimations at the individual level should remain valid for investigating how individuals' attitude toward immigration is affected by his or her characteristics. On many other items, we collect unique or untapped information not previously captured by official statistics. See the

¹⁶ We include respondents currently enrolled in these higher-education institutions in this category. The share of those who have completed higher education in the population aged between 20 and 79 years is calculated, from the population census in 2010, as 32%, but those currently enrolled are excluded.

¹⁷ In this survey, we choose to ask about income, as more respondents would have declined to answer if we had asked about total wealth or assets. Our main results remain qualitatively intact even with alternative income thresholds for *Rich*.

¹⁸ The unemployment rate in Japan was around 4–5%, although an exact comparison is inappropriate owing to different denominators. In the population census, the share of people in managerial occupations is only about 1%, partly due to the large population not counted as employed in the population census.

appendix of Tomiura et al. (2016) for response distributions on all items of the survey.

3.2. Individual attitudes toward immigration and imports

This subsection explains the survey items essential for our analysis: individual attitudes toward immigration and imports. First, to collect data on immigration, we introduce the following item.¹⁹

Answer what you think about foreigners coming to Japan for work (choose one from the following answers).

- 1. Strongly agree.*
- 2. Somewhat agree.*
- 3. Somewhat disagree.*
- 4. Strongly disagree.*
- 5. Cannot choose or unsure.*

In what follows, we categorize those who agree strongly or somewhat with the arrival of foreign workers as pro-immigration, and others, including the last option, as anti-immigration. The binary dummy variable *MIG* is defined to take a value of 1 for the former and 0 for the latter. This definition temporarily categorizes those undecided or unsure individuals as anti-immigration, since they are likely to choose inaction and are not active supporters of controversial immigration reform. As a robustness check, however, we report alternative results in Subsection 5.2 by excluding these individuals.

Some differences between our survey and previous research should be noted. In the U.S. or Europe, the survey question is mainly about changing the number of legal immigrants or granting citizenship to illegal immigrants (e.g., Ehrlich and Maestas 2010), and sometimes

¹⁹ Questions actually presented to surveyed individuals are expressed in italics in this paper. As questions are originally in Japanese, the authors translate them into English for this paper.

disaggregates immigrants based on origin countries or skill levels (e.g., Dustmann and Preston 2007). In our survey, we choose to ask about respondents' opinions of foreign workers in general, as their presence has been extremely limited for a long period of time in Japan. In addition, it is noteworthy that our survey question is on foreign workers, not refugees. People are assumed to respond to foreign workers based on economic costs/benefits, compared with general migrants.²⁰

To compare the opinion about immigration with the same individual's trade policy preference, our survey has the following item: *Answer what you think about the following opinion: "We should further liberalize imports to make wider varieties of goods available at lower prices."* Respondents are required to choose from exactly the same set of five options as in the previous question on immigration. We define the dummy *IMP* to take 1 for free traders and 0 for protectionists. As in the immigration dummy, we include undecided or unsure respondents as protectionist, but we also report results from alternative definitions for a robustness check.

By combining responses to these two questions, people are grouped into four patterns (*MIG* = 0 or 1 with *IMP* = 0 or 1). Table 2 reports the distribution across the four groups in our sample.²¹ In line with established facts from other countries, such as Mayda (2008), people are more pro-trade than pro-immigration. People who strongly or somewhat favor import liberalization occupy the majority albeit with a slim margin (51.7%) in our sample, but those who strongly or somewhat favor immigration are the minority with a larger margin (34.5%). Therefore, if asked separately, import liberalization and anti-immigration attitudes occupy the

²⁰ We should carefully distinguish temporary foreign workers and permanent immigrants, but the ongoing policy discussions in Japan concentrate on deregulating restrictions on foreign workers to ease labor supply shortage. We exclude refugees from our analysis by the wording of the questionnaire ("for work"), as the number of refugees accepted by Japan has been extremely limited (only 21 people in our survey year).

²¹ The percentages in Table 2 are calculated among respondents answering both import and immigration questions.

majority. As Japan has liberalized imports of most goods except politically sensitive agricultural products but keeps tightly controlling immigration, the current state of Japan is well reflected in our survey.²² Indicating high correlation between attitudes toward immigration and opinions about imports, people often take the same position on both issues along the diagonal cells in Table 2. Few people take strong positions on either trade or immigration. People who somewhat agree with imports but somewhat oppose immigration are the second largest group (11.5%) in Japan, following only those who somewhat agree with both imports and immigration (21.4%), and slightly larger than those who somewhat oppose both (11.1%). More people are unsure or undecided about immigration compared with trade (21.1% vs. 16.9%, respectively).

3.3. Measures of behavioral and other individual characteristics

Our survey contains a wide range of items useful for our analysis of personal attitudes toward immigration and imports. This subsection explains these variables one by one, starting from behavioral biases. As some of the items attempt to capture psychological factors, sentiments, or beliefs of respondents, we carefully discuss the possible limitations of our proxies.

First, we examine the effect of behavioral biases. The introduction of behavioral variables is partly motivated by the following stylized fact: economic self-interest motivations play a limited role in anti-immigration sentiments, as confirmed by the literature review by Hainmueller and Hopkins (2014). Among various behavioral biases picked up in behavioral economics, this study focuses on status-quo bias and risk aversion. In our survey, to evaluate the individual's status-quo bias, those surveyed are required to answer the following two questions

²² Japan's average tariff rate on agricultural products, 23.3%, is substantially higher than that of the E.U. (13.9%) or the U.S. (5.0%), but Japan's average tariff rate on non-agricultural products (2.6%) is lower than that of the U.S. (3.3%) and the E.U. (4.0%). These are most-favored nation applied rates for 2011, when our survey was conducted, according to *World Tariff Profiles 2012* compiled by World Trade Organization.

about a lottery ticket. The first question on the purchase decision is as follows.

Would you buy a lottery ticket with a 1/100 chance of winning 1 million yen and a 99/100 chance of receiving nothing (sold at 2,000 yen)?

The second question is about the same lottery ticket under a different situation, as follows.

Suppose you already own a lottery ticket with a 1/100 chance of winning 1 million yen and a 99/100 chance of receiving nothing. As the winning lottery ticket will be announced 1 year later, you will receive 1 million yen 1 year later even if you own a winning lottery ticket. Are you willing to sell the lottery ticket if somebody asks you to sell it now at 2,000 yen?

In our sample, in answering the second question, 72% of surveyed individuals do not sell this lottery ticket. However, for the first question, 62% of those surveyed do not buy the same lottery ticket at the same price (2,000 yen) if they do not possess it. This result clearly demonstrates the status-quo bias. People seriously influenced by status-quo bias might oppose any drastic change in the current state, including immigration inflows or trade liberalization. We define the status-quo bias dummy, which takes a value of 1 when an individual does not buy a lottery ticket but does not sell the same lottery ticket at the same price, and 0 otherwise.

In addition, we introduce risk aversion into our behavioral analysis. The dummy *Risk averse* is defined as taking a value of 1 if people do not buy a lottery ticket. In our survey, we have two questions on lottery purchase with different chances of winning. To focus on extremely risk-averse people, we choose the purchase of safer lottery ticket in defining risk aversion. The exact text used for the questionnaire is given as follows: *Would you buy a lottery ticket with a 1/2 chance of winning 20,000 yen and a 1/2 chance of receiving nothing (sold at 2,000 yen)?* We set this second lottery ticket to exactly the same expected value as the previous one, but with a much higher probability of winning than normally sold. In our sample, around

30% of respondents are classified as risk-averse by this definition.²³ These extremely risk-averse people might oppose immigration or trade liberalization owing to high uncertainty associated with the adjustment process after changes in cross-border controls.

Next, we expand our scope to a wider range of variables out of the narrowly defined behavioral variables explained above, as various sentiments or beliefs about individuals should affect their reactions to immigrants or imported goods. To this end, we enquire about the surveyed individual's views of the national economy's prospects by the following question: *How do you view the future prospects of the Japanese economy?* The respondents are asked to choose from the following five options: *very optimistic, somewhat optimistic, somewhat pessimistic, very pessimistic, and cannot choose or unsure*. As in the previous question on immigration, we define *Optimistic* to take a value of 1 for those who are strongly or somewhat optimistic about the future prospects of the Japanese economy. Only 13% are optimistic, which is in line with the general impression of Japanese stagnation. People who are pessimistic about the future naturally seek protection from competition against imports or foreign workers.

To explore the sentiments of people further, because responses to foreign people or goods are likely to be influenced by cultural factors, we add a variable related with identity, patriotism, or national attachment by the following question: *How do you feel about the culture, society, and tradition of your country and hometown?* The choices available for this question are *very proud, somewhat proud, somewhat not proud, not proud at all, and cannot choose or unsure*. Chauvinistic or nationalistic feelings might ignite protectionism or anti-immigrant sentiment, but people who are proud of their home country or hometown might be more pro-migration than

²³ In a similar study of the impact of risk aversion on trade policy preference in the U.S. by Ehrlich and Maestas (2010), the share of risk averters is 32% in their sample. They define risk averters in their survey as those feeling uncomfortable taking risks "when making financial, career, or other life decisions" (Ehrlich and Maestas 2010, p.666). If we instead defined the risk aversion by the purchase decision of a lottery ticket with a 1% chance, we would need to classify nearly two-thirds of people as deviating from risk neutrality.

people who are not confident about their culture, as reported by Ariely (2012), De Figueiredo and Elkins (2003), and Raijman et al. (2008). As more than 90% of the respondents feel either very or somewhat proud of their country or hometown, the remaining less than 10% can be regarded as outliers. Therefore, we define the dummy *Patriot* to focus on very proud people (35.7% in our sample).

In addition, we consider other aspects of life associated with policy preferences of individuals. For this purpose, we ask about the individual's willingness or acceptance of mobility (moving one's residence) by the following question:²⁴

Would you like to change where you live in the future? Choose from the following answers.

1. *I would like to (I have a plan.)*
2. *I would like to if I had an opportunity.*
3. *I would not like to, if possible.*
4. *I would not.*

The dummy for residential mobility is defined by merging the first two options. This dummy is introduced since people are likely to change places of living during the process of adjustment after cross-border liberalization. Mobile people are supposed to adapt to changes relatively easily. In our sample, nearly two-thirds of people are unwilling to move their residential locations.

Furthermore, we ask whether a surveyed individual has a child. The motivation for defining the dummy variable *No Children* is that people with children tend to care about the future wellbeing of their children and thus have longer time horizons in their policy preferences compared with people without children, as formalized in the dynasty model. On the other hand,

²⁴ Although we also ask about the respondent's job mobility (willingness to change their jobs), we find that its relationship to immigration or imports turns out to be statistically insignificant.

parents might oppose immigrants owing to safety concerns for their children. Slightly more than one-third of surveyed individuals in our sample have no children.

As the resistance to imports might be rooted in consumers' concerns about the safety of imported food, we ask the following question: *When you buy dairy foods or beverages, do you check additives and place of origin?* The respondents choose one from the following four options.

1. *I check in detail.*
2. *I check a little.*
3. *I do not check in detail.*
4. *I do not check at all.*

We focus on extremely sensitive consumers by defining the dummy as equal to 1 for those choosing the first option.²⁵ The safety of food, such as residual chemicals, contaminated food imported from unclean production plants, or genetically modified foods, is a serious concern for many Japanese consumers, as the import liberalization of agricultural products is a key political issue in Japan and the country depends heavily on imported food (grains and meat from the U.S. and processed food and vegetables from China, the top two exporting countries to Japan).²⁶

Finally, as confirmed by previous literature, an individual's view on immigrants is influenced by her/his personal attachment to foreigners. To collect information for this purpose, we ask the following question:²⁷ *Do you have a foreign acquaintance whom you occasionally*

²⁵ This definition is due to the observation that more than half of the respondents check food safety a little in our sample. If we include these respondents, the results are not qualitatively altered but are naturally diluted to a large extent.

²⁶ According to a survey conducted 2 years after the earthquake by the Tokyo Metropolitan Government, four import-related issues are listed among the top five concerns for food safety: imported food, food additives, radioactive substances, residual chemicals, and genetically modified food. The same survey also shows that the share of people who do not buy food from areas damaged by the Fukushima nuclear power accident in the year following the earthquake for safety reasons was not dominant: 26.8% = 35.2% (not buying from damaged areas) * 76.1% (for safety reasons).

²⁷ In our survey, we ask about respondents' experience traveling abroad or habits viewing foreign

communicate with through e-mails, social networking services, letters, telephone, or direct meetings, or have you ever had such a foreign acquaintance? Similar questions have been used in previous research for studying the impact of human contact on attitude toward immigration.²⁸

4. Empirical model

Before discussing the empirical results from our survey data, this section introduces a bivariate model by combining respondent's positions on immigration and imports. To examine the determinants of personal attitudes toward immigration, we start with the underlying continuous latent variable MIG^* . The binary dummy MIG (favoring immigration) equals 1 if the latent variable MIG^* is positive and 0 otherwise. We formalize MIG^* as a linear function of individual characteristics vector x , as follows:

$$MIG_j^* = x_j\beta + u_j \quad (1)$$

The individual is indexed by j . The continuously distributed error term is denoted by u .

We assume the error term u is distributed standard normal, although our principal results are qualitatively unaffected even with logistic distribution. As we impose no structures on the individual's choice, equation (1) should not be regarded as an indication of causality. We estimate the vector of parameters β to summarize the relations with characteristics of individuals.

To compare attitude toward immigration with the same individual's trade policy preference, we estimate the same model with the dependent variable replaced by IMP , as

TV programs or Internet sites, but we confirm that the effects of these two channels are weaker than the effect of having foreign acquaintances. As a proxy for frequency of contact with foreigners in Japan, Yamamura (2012) uses responses to the question "Do you often see foreigners in the area where you live?" in the Japanese General Social Survey in 2003 with 3,663 respondents.

²⁸ Dustmann and Preston (2007) ask about reactions to marriage of a respondent's close relative to a foreigner or to the appointment of a foreigner as one's boss, but Japanese people, who generally have very limited experience of contact with foreigners, are likely to feel difficulty even imagining such deep contact with foreigners in a hypothetical question.

follows.

$$IMP_j^* = x_j\gamma + v_j \quad (2)$$

The latent variable is expressed with an asterisk. The error term is denoted by v .

The investigation of the bivariate model is, however, important for our purpose, since some personal determinants of the attitude toward immigration might have non-negligible influence on trade policy preference of the same individual. Therefore, we estimate the following bivariate model:

$$\begin{aligned} MIG &= 1[x\beta + u > 0] \\ IMP &= 1[x\gamma + v > 0] \end{aligned} \quad (3)$$

We express the binary response model with the indicator function $1[.]$ equal to 1 if the statement in brackets is true and 0 otherwise. The vector of error terms (u, v) is assumed to follow a bivariate standard normal distribution with mean zero, unit variance, and possibly non-zero covariance. We include the same set of variables on the right-hand side as x . A joint estimation of the parameters β and γ in (3) is more efficient than separately estimating them in the two probit models, as in (1) and (2), if u and v are correlated. While O'Rourke and Sinnott (2006) is an example of the bivariate probit model applied to this issue in Europe, this study differs from theirs most critically in the introduction of our behavioral variables.

As vector x on the right-hand side of (3), we include relevant variables captured in our survey. In addition to the variables described in Section 3, we introduce variables on such basic individual characteristics as educational attainment (with college education or less than college),²⁹ employment status (currently employed or not), occupation (managerial or not), income (rich or poor), gender, age, as well as 20 industry dummies.³⁰ All these variables have

²⁹ Chandler and Tsai (2001) report that college education has a stronger effect on immigration attitudes than do years of schooling.

³⁰ Those who have no working experience are categorized as a separate group in our industrial

been repeatedly examined in previous literature.

To control for region-level externality or amenity, we add dummy variables for 47 prefectures. While we estimate the same model with typical regional variables, such as local unemployment rate, the share of foreigners in local population, and the share of welfare expenditure in local government spending, we confirm that the estimated coefficients of our primary interest are unaffected even if these regional variables are replaced by prefecture dummies.³¹

The matrix in Table 3 presents correlation between variables. College education is the most highly correlated variable with immigration sentiment, followed by foreign acquaintance. Educated people appear to be less influenced by behavioral biases. Women tend to be less likely to favor immigration or imports, although their negative sentiments are slightly stronger on imports. Correlations between variables, which we use on the right-hand side of our regressions, are generally weak, indicating that the problem of multicollinearity is not serious. Although correlations between two variables are informative as a preliminary step, we report bivariate results for jointly analyzing attitudes toward immigration and trade policy preferences of the same individuals.

5. Estimation results

5.1. Baseline results

Our baseline results from the bivariate probit model are shown in Table 4. Marginal effects, not estimated coefficients, are reported with robust standard errors, clustered at the prefecture level, displayed in parentheses. The independence of errors in the two equations (1) and (2) is rejected, justifying the bivariate estimation. Several findings are noteworthy as follows.

classification.

³¹ Results with regional variables instead of prefecture dummies are available upon request.

As the most notable result, we find significant impacts of behavioral biases. Risk aversion is clearly related with import protectionism at any conventional significance level, while status-quo bias appears to be associated with the opinion opposing both imports and immigration. While Tomiura et al. (2016) find that both risk aversion and status-quo bias have significantly negative impacts on support for import liberalization based on the same survey data, this study examines their impacts jointly on immigration and imports within the bivariate model and additionally finds that the risk assessment appears to be an important factor in forming opinions about import liberalization rather than about immigration. We discuss this observed difference in two behavioral variables again in the next Subsection 5.2 with alternative definitions of dummy variables.

We find that the following characteristics of individuals are significantly related with attitudes toward immigration. A respondent with a foreign acquaintance tends to favor immigration substantially more. This finding, which is consistent with earlier results from the U.S. and Europe, suggests the important role of personal attachment or human contact in the formation of policy preferences. People might show tolerance to foreigners or even appreciate cultural diversity when they have foreign friends. The effect of personal acquaintance with foreigners on an individual's attitude toward immigration should be particularly strong in Japan, where there are extremely few foreign residents, which is in line with a previous report on Japan by Yamamura (2012). Although educated or rich people tend to have more opportunities to become acquainted with foreigners, our finding is confirmed after controlling for respondents' education and incomes.

We find a similarly strong relationship with optimism, which again is in line with established results, including those of Citrin et al. (1997). One possible interpretation of this result is that bright views on the prospects for the domestic economy lead people to expect a

tight labor market. In other words, pessimism about domestic labor demand should be a strong driving force for anti-immigration sentiments.

Unemployed individuals are more likely to oppose immigration, although it is statistically significant only at the 10% level.³² This finding of a weak relationship is in some sense in line with previous mixed results. Although omitted from Table 4, the significant impact of unemployment on immigration sentiments is detected only for respondents with less than college education. This confirms that people without college education oppose immigration if unemployed, as unskilled workers are more directly threatened by foreign workers in labor market competition.

The following variables are significantly related with opinions about both imports and immigration. First, individuals with college education tend to favor both immigration and import liberalization. The statistical significance is confirmed at any conventional significance level. This finding on education is consistent with established results from previous literature, including Hainmueller et al. (2015).

Second, people in managerial occupations tend to welcome the inflows of foreign workers as well as foreign goods. This result implies that skilled workers in Japan are a scarce production factor in the factor proportions trade theory, and hence, they support free trade and immigration, since Japan is expected to predominantly import unskilled labor-intensive goods and to attract unskilled foreign workers. The positive association with managerial occupation also indicates that people in charge of hiring employees tend to welcome foreign workers amid substantially declining working-age population in Japan.

Third, rich people tend to support both immigration and free trade. Richer people are likely to place more value on expanded varieties of goods available from import sources, and to

³² In our survey, this significant relationship is for people currently unemployed distinguished from those who have never worked during their lives or those who are still at school.

welcome more foreign workers for domestic non-tradable service jobs. While the previous literature is mixed on the effect of fiscal concern for immigrants, we do not detect such a pocket-book effect, possibly because there are too few foreigners present in Japan to raise such concern.

Fourth, we find that residential immobility is related with the opposition to immigration as well as to import liberalization, in line with previous results, such as O'Rourke and Sinnott (2006).³³ People ready to change the place in which they live are supposed to adapt more easily to changes caused by inflows of foreign workers or foreign goods, because specific regions, especially those with concentrations of import-competing or unskilled-labor intensive industries, tend to be seriously impacted.

Some variables explained below are related more with imports than immigration. First, the age effect is significant only for imports. Older people, especially after retirement, support import liberalization possibly because they form their policy preferences more as consumers rather than producers/workers. The opposition to foreign workers is likely to be weakened among old people who have retired from labor participation, but the negative reaction to foreigners among older generations could offset this effect, as reported by Calahorrano (2013).

Second, women are significantly more likely to be protectionists than men are, as repeatedly confirmed by many previous studies. As indicated by a simple correlation between two variables in Table 2, women are likely to be anti-immigration. However, our bivariate analysis reveals that the gender gap is more evident in trade protection compared with immigration. As the gender gap in preferences is a stylized fact in the established literature, this study decides not to investigate it deeper. We must note here, however, that this negative attitude of women toward globalization is confirmed even after controlling for occupation and education,

³³ As reported by Kan (2003) for moves within the U.S., risk aversion discourages residential mobility, but we confirm the risk-aversion effect even after controlling for residential immobility.

in which the gender gap is clearly persistent.

Third, we find a significant impact of patriotic feeling, especially on import protectionism. Patriots tend to be protectionists but not necessarily anti-immigration. As suggested by the previous literature, such as Raijman et al. (2008) and Ariely (2012), our observation of insignificant relationships with attitudes toward immigration is consistent with the interpretation that national pride attenuates the fear of threat, anxiety, or feeling of vulnerability against inflows of foreigners and thereby weakens anti-immigration sentiments. Our result might be driven partly by the Japanese experience of few foreigners in the country, as it might be easier for nationalists in Japan to target the visible penetration of imported goods.

Fourth, people checking food carefully for safety reasons tend to be sensitive to imports. This result is as expected, since their personal sensitivity to food safety should be linked with their responses to imported goods, not directly to inflows of workers.

Finally, having a child is likely to be weakly related with support for import liberalization, as predicted by the dynasty model, and with opposition to immigration possibly arising from concerns for the safety of their children. However, we should be cautious in discussing this variable owing to its low statistical significance

On the sectoral effect, we find that industries are divided into two groups: pro-immigration free trade versus anti-immigration protectionist. Working in any industry except agriculture is either positively or insignificantly related with pro-immigration import liberalization.³⁴ This finding is plausible, since the import liberalization of agricultural products is the most debated issue in Japanese trade policy. Food manufacturing is the only industry favoring imports but opposing immigration, possibly owing to its dependence on imported inputs for processed food.

³⁴ Estimated coefficients on industry dummies are shown relative to the public sector.

5.2. Excluding unsure or undecided respondents

We have so far included unsure or undecided respondents (choosing the last out of five options in our survey) in anti-immigration when we define the binary dummy *MIG*. We categorize this way because those people tend to choose inaction and, as a result, are not active supporters of immigration reform proposal. However, to compare our results from this grouping, this subsection excludes those unsure or undecided respondents from our analysis. The binary dummy of pro-immigration now takes a value of 1 only for people who agree strongly or somewhat with foreign workers coming to Japan for their work, and 0 for those who strongly or somewhat disagree with them.

Table 5 reports the bivariate probit results from the sample excluding those unsure or undecided respondents. To facilitate comparison with our baseline results, all the explanatory variables are kept the same as before. While most of the main findings remain intact even after excluding those respondents, we find a non-negligible change in the status-quo bias as follows.

In Table 4 for all respondents, status-quo bias is positively related with anti-immigration protectionism and negatively related with pro-immigration free trade, but is not significantly related with the probability of taking different positions between immigration and trade. However, in Table 5, the status-quo bias remains negatively related with pro-immigration free trade opinion and insignificantly related with anti-immigration free trade, but is now significantly positively related with protectionism irrespective of respondents' attitudes toward immigration.

This change can be interpreted as follows. The exclusion of unsure or undecided respondents automatically increases the frequency of {*MIG*=1 and *IMP*=1} and decreases those of the other three groups. Among these three categories, Table 5 shows that {*MIG*=1 and

IMP=0} turns out to be significant. This implies that the other two groups {MIG, IMP} = {0, 1} and/or {0, 0} should particularly decline owing to this exclusion. This in turn suggests that people influenced by status-quo bias, compared with those not influenced, are more likely to be unsure or undecided on immigration irrespective of their trade policy preferences. When status-quo bias dictates decision making, an individual is not particularly likely to choose yes or no clearly for options with unclear outcomes. The exclusion of these respondents weakens the statistical significance of risk aversion on anti-immigration free trade, although the change appears minor compared with the status quo.

As a result, in the limited sample, both risk aversion and status-quo bias affect individual attitudes toward immigration and trade policy preferences in a similar way, not only in the sign but also in the magnitude of the estimated marginal effect. People more influenced by these behavioral biases are significantly more likely to be protectionist and less likely to be pro-immigration free traders. In our survey data, the majority of respondents support import liberalization but oppose immigration. In line with this observation, our estimates suggest that behavioral biases have no significant impact on the probability of choosing the anti-immigration free trade position (MIG=0 and IMP=1). If people are dictated by behavioral biases, the probability of opposing import liberalization (IMP=0) significantly increases but the probability of supporting immigration in addition to import liberalization (MIG=1 and IMP=1) significantly declines.

As suggested by our estimates, the status-quo bias does not necessarily ignite anti-immigrant sentiments but is associated with spreading inaction in policy discussions on immigration. As those people are not likely to be strong active supporters of controversial immigration reform, we have categorized them as a part of the anti-immigration group. Our finding of the relationship between their unclear opinion on immigration and status-quo bias in

this subsection confirms their possible inactiveness in policy discussions. However, the results reported from the limited sample also suggest that people influenced by status-quo bias are not determined supporters for anti-immigrant movements but instead are rather indifferent to this issue or hesitant to take a clear position in divided policy debates.

From the estimates based on our limited sample, we can derive an implication relevant to the policy discussion. As the majority of people agree with import liberalization but oppose immigration, then support for immigration will significantly strengthen if we can alleviate their behavioral biases. Although we cannot pin down exactly what types of policy measures are required from our estimation alone, it will be important to design the presentation of a policy change proposal by taking account of their perceived status-quo option.

Finally, the reason that people tend to choose the “cannot choose or unsure” option for immigration, and not necessarily for imports, is partly driven by our survey design and the Japanese experience. We ask for respondents’ opinions about foreign workers as a neutral question, but we ask for their opinions about further import liberalization, not international trade in general. This difference might lead respondents to choose “cannot choose or unsure” option for immigration and simultaneously oppose trade liberalization, possibly in order to avoid changes from the status quo. Our design of survey items is motivated by the Japanese experience. Imports have been almost completely liberalized in Japan for most goods except politically debated agricultural products, such as rice, but immigration has been extremely tightly controlled for centuries. For example, the share of imported goods in gross domestic product nearly doubled in the decade before the survey (7.6% in 2001 to 13.7% in 2011), while the share of foreigners in the total population remains extremely low (1.3% in 2010). Such trends might lead status-quo biased people to oppose further import liberalization yet form a clear position on immigration. In designing our survey items, we assume that Japanese

respondents are not ready to respond to a hypothetical question on deregulating immigration. For these reasons, we should be cautious about claiming that status-quo bias generally results in unsure or undecided positions on immigration. Even with such caution, however, our finding of behavioral biases as an obstacle to support for immigration should be emphasized.

5.3. Ordered probit results

Our survey asks respondents to choose from five options on immigration and imports. By exploiting this detailed information, we can distinguish between people who strongly favor/oppose immigration from those who somewhat do, although our analyses in the previous subsections have merged them. Table 6 reports the results from a bivariate ordered probit model. The values corresponding to {strongly disagree, somewhat disagree, cannot choose or unsure, somewhat agree, and strongly agree} are {1, 2, 3, 4, and 5}, respectively. Shown as a robustness check are the results with the limited sample excluding those choosing “cannot choose or unsure.” In the latter case, the choices are valued from 1 to 4. To make comparisons with our main binary results easier, we also report alternative ordered results from three-step ordering of {disagree, cannot choose or unsure, and agree} = {1, 2, and 3} by combining “strongly” and “somewhat” agree/disagree.

Table 6 displays bivariate ordered probit results with three alternative orderings. From the estimates, risk aversion and status-quo bias appear weakly related with anti-immigration opinion, but significantly at the 10% significance level only in the three-step ordering. This result is not a surprise, as we find that risk aversion is more strongly related with the divide between free trade versus protection and that the status quo seems associated with unsure or undecided stance on immigration. Significance of unemployment on immigration sentiment is lost too if we disaggregate from three- to four- or five-step ordering. Therefore, we detect no

significant effect of these variables on the distinction between strongly resistant versus somewhat resistant to immigration, although they are generally correlated with anti-immigration.

In the order of trade policy preferences, these two behavioral bias variables remain significant with the expected sign even after disaggregating strong from somewhat support/oppose in any of the three alternative definitions. This confirms a previous report in Tomiura et al. (2016). Other variables strongly significant in our baseline estimation, such as college education and managerial occupation, remain significant with the correct signs in distinguishing the order of attitudes toward immigration.

In addition, Table 6 shows that optimism and foreign acquaintance have significant impacts on opinions not only about immigration but also about imports in this ordered probit model, while we find that these variables appear to be related with pro- versus anti-immigration contrast rather than the protectionist–free trader division in the previous binary probit model. This additional evidence suggests that people who are optimistic about the future or have foreign friends tend to be determined supporters of import liberalization, not merely weakly disagreeing with protectionism. On the other hand, residential mobility and income lose significance in imports and immigration, respectively, possibly because local amenity and fiscal concern might be more critical for immigration. In addition, we find that people who check food safety tend to be sensitive not only to imports but also to immigration if we consider ordering.

6. Concluding remarks

Immigration is among the hotly debated issues in many countries around the globe, especially in developed countries. Anti-immigrant sentiments often appear to intensify side-by-side with protectionist movements, but people are sharply divided on these globalization issues. To

respond to such concerns, this study has examined whether standard economic as well as behavioral variables affect individuals' attitudes toward immigration jointly with import liberalization based on a survey in Japan, a country with tight control on immigration but with a rapidly declining working-age population.

Our estimation results indicate that behavioral biases, especially status-quo bias, could be an obstacle in expanding active support for immigration, while the link with opinions about trade liberalization is stronger, especially for risk aversion. This suggests that traditional economic measures, such as income compensation, alone cannot widen pro-immigration supporters. Presentation of a reform proposal could influence decisions by behaviorally biased people in the short run, but in the long term, expanding opportunities for higher education could be included as a part of a policy package, as college-educated people tend to be more tolerant of cultural diversity, less threatened by foreign workers in the labor market, and less driven by status-quo bias.

While these findings, especially on behavioral biases, bring new insights to policy discussions, some issues remain for future research. For example, it would be informative to compare the impacts of behavioral biases on attitudes toward skilled versus unskilled immigrants.

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Table 1. Summary statistics

Variables	Mean	Std. Dev.	Min	Max
Support for immigration	0.444	0.497	0	1
Support for import liberalization	0.517	0.500	0	1
College educated	0.406	0.491	0	1
Unemployed	0.390	0.488	0	1
Managerial occupation	0.125	0.330	0	1
Rich	0.250	0.433	0	1
Female	0.485	0.500	0	1
Age	49.157	16.309	20	79
Risk averse	0.305	0.460	0	1
Status-quo bias	0.398	0.489	0	1
Optimistic	0.134	0.341	0	1
Patriot	0.357	0.479	0	1
Residential immobility	0.634	0.482	0	1
Foreign acquaintance	0.250	0.433	0	1
No child	0.364	0.481	0	1
Sensitive to food safety	0.135	0.342	0	1
Industry:				
Food manufacturing	0.024	0.154	0	1
Textile and apparel	0.015	0.123	0	1
Paper and printing	0.007	0.083	0	1
Chemical products	0.015	0.123	0	1
Metals and steel	0.013	0.112	0	1
Machine	0.025	0.157	0	1
Misc. manuf.	0.092	0.289	0	1
Mining	0.001	0.031	0	1
Agriculture	0.011	0.105	0	1
Construction	0.055	0.227	0	1
Electricity supply	0.012	0.109	0	1
Transport and distribution	0.040	0.197	0	1
Telecom	0.053	0.224	0	1
Med care	0.075	0.263	0	1
Education	0.071	0.257	0	1
Wholesale and retail	0.107	0.310	0	1
Catering and lodging	0.043	0.203	0	1
FIRE	0.066	0.248	0	1
Misc. services	0.189	0.391	0	1
Public official	0.059	0.235	0	1
Never worked	0.027	0.161	0	1

Table 2. Percentage distributions of opinions

Immigration	Import	Strongly Agree	Somewhat Agree	Unsure or Undecided	Somewhat Disagree	Strongly Disagree	Total
Strongly Agree		2.49	1.88	0.35	0.55	0.15	5.11
Somewhat Agree		4.07	21.35	4.70	8.14	0.75	29.38
Unsure or Undecided		0.72	6.81	7.63	5.44	0.48	21.08
Somewhat Disagree		1.20	11.49	3.78	11.14	1.77	39.02
Strongly Disagree		0.54	1.15	0.48	1.68	1.27	5.41
Total		9.02	42.68	16.94	26.94	4.42	100

Table 3. Correlations between variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Immigration	1															
(2) Import liberalization	0.274	1														
(3) College educated	0.128	0.089	1													
(4) Unemployed	-0.062	-0.012	-0.115	1												
(5) Managerial occupation	0.082	0.136	0.130	0.027	1											
(6) Rich	0.102	0.143	0.227	-0.322	0.238	1										
(7) Female	-0.114	-0.196	-0.280	0.239	-0.245	-0.394	1									
(8) Age	-0.022	0.158	-0.133	0.325	0.211	0.008	-0.009	1								
(9) Risk averse	-0.050	-0.079	-0.064	0.077	-0.034	-0.099	0.140	0.112	1							
(10) Status-quo bias	-0.073	-0.101	-0.087	0.070	-0.074	-0.123	0.210	-0.015	0.263	1						
(11) Optimistic	0.105	0.068	0.094	-0.027	0.036	0.058	-0.085	0.025	-0.003	-0.038	1					
(12) Patriot	0.048	-0.031	0.037	0.040	0.054	0.014	-0.016	0.029	-0.043	-0.048	0.056	1				
(13) Residential immobility	-0.046	0.035	-0.070	0.106	0.068	0.023	-0.051	0.345	0.058	0.024	0.007	-0.013	1			
(14) Foreign acquaintance	0.116	0.057	0.128	-0.042	0.044	0.069	0.010	-0.024	-0.025	-0.043	0.039	0.090	-0.094	1		
(15) No child	0.022	-0.095	0.123	-0.170	-0.143	-0.079	-0.045	-0.513	-0.012	0.011	-0.009	-0.002	-0.229	0.053	1	
(16) Sensitive to food safety	-0.0209	-0.0601	-0.0115	0.0907	-0.0146	-0.0529	0.1348	0.133	0.0406	0.0218	-0.0118	0.1133	0.0017	0.0845	-0.0447	1

Table 4. Bivariate Probit Baseline Results

	(1) P(MIG=1, IMP=1)		(2) P(MIG=1, IMP=0)		(3) P(MIG=0, IMP=1)		(4) P(MIG=0, IMP=0)	
	ME	SE	ME	SE	ME	SE	ME	SE
College educated	0.0551***	[0.00677]	0.0114*	[0.00608]	-0.0111	[0.00774]	-0.0554***	[0.00744]
Unemployed	-0.0133*	[0.00687]	-0.0145*	[0.00831]	0.0175*	[0.0104]	0.0102	[0.00673]
Managerial occupation	0.0624***	[0.0151]	0.00132	[0.00810]	0.00211	[0.0101]	-0.0658***	[0.0156]
Rich	0.0387***	[0.0123]	-0.0101	[0.00788]	0.0152	[0.00979]	-0.0438***	[0.0125]
Female	-0.0819***	[0.00885]	0.0323***	[0.00581]	-0.0460***	[0.00735]	0.0956***	[0.00932]
Age	0.00225***	[0.000368]	-0.00215***	[0.000230]	0.00287***	[0.000282]	-0.00296***	[0.000373]
Risk averse	-0.0364***	[0.00853]	0.0173**	[0.00691]	-0.0242***	[0.00881]	0.0433***	[0.00928]
Status-quo bias	-0.0352***	[0.00864]	0.00191	[0.00562]	-0.00456	[0.00719]	0.0378***	[0.00937]
Optimistic	0.0920***	[0.00758]	0.0283***	[0.00827]	-0.0303***	[0.0106]	-0.0900***	[0.00844]
Patriot	-0.00626	[0.00831]	0.0344***	[0.00609]	-0.0440***	[0.00753]	0.0159*	[0.00823]
Residential immobility	-0.0289***	[0.00896]	-0.00404	[0.00752]	0.00338	[0.00961]	0.0296***	[0.00988]
Foreign acquaintance	0.0798***	[0.00898]	0.0207***	[0.00615]	-0.0215***	[0.00767]	-0.0790***	[0.00913]
No child	-0.0098	[0.00897]	0.0108	[0.00668]	-0.0143*	[0.00837]	0.0133	[0.00925]
Sensitive to food safety	-0.0488***	[0.00944]	0.0243***	[0.00779]	-0.0338***	[0.00975]	0.0583***	[0.00962]
Industry:								
Food manufacturing	0.0221	[0.0304]	-0.0450**	[0.0194]	0.0585**	[0.0243]	-0.0356	[0.0318]
Textile and apparel	0.0892**	[0.0385]	0.00469	[0.0229]	-0.000544	[0.0295]	-0.0933**	[0.0421]
Paper and printing	0.0945**	[0.0453]	0.00259	[0.0384]	0.00244	[0.0493]	-0.0995**	[0.0504]
Chemical products	0.119**	[0.0496]	0.0155	[0.0217]	-0.0125	[0.0275]	-0.122**	[0.0527]
Metals and steel	0.0897***	[0.0286]	-0.00675	[0.0268]	0.014	[0.0340]	-0.0969***	[0.0308]
Machine	0.0807***	[0.0263]	-0.0147	[0.0232]	0.0236	[0.0293]	-0.0895***	[0.0276]
Misc. manuf.	0.0581***	[0.0208]	-0.0179	[0.0139]	0.0262	[0.0177]	-0.0664***	[0.0223]
Mining	-0.13	[0.177]	-0.0679	[0.0515]	0.0783	[0.0560]	0.12	[0.176]
Agriculture	-0.0776**	[0.0358]	0.0525	[0.0356]	-0.0713	[0.0453]	0.0965**	[0.0389]
Construction	0.0627**	[0.0244]	-0.0222	[0.0151]	0.0320*	[0.0194]	-0.0724***	[0.0268]
Electricity supply	0.0756*	[0.0427]	-0.0213	[0.0224]	0.0316	[0.0289]	-0.0859*	[0.0467]
Transport and distribution	0.0594**	[0.0240]	-0.0106	[0.0174]	0.0171	[0.0219]	-0.0659***	[0.0252]
Telecom	0.0538**	[0.0253]	0.00813	[0.0140]	-0.00705	[0.0179]	-0.0549**	[0.0271]
Med care	0.0655**	[0.0269]	-0.0104	[0.0142]	0.0171	[0.0183]	-0.0723**	[0.0292]
Education	0.0423**	[0.0208]	-0.00513	[0.0167]	0.00907	[0.0211]	-0.0463**	[0.0221]
Wholesale and retail	0.0438*	[0.0232]	-0.0116	[0.0119]	0.0174	[0.0152]	-0.0496**	[0.0249]
Catering and lodging	0.0599**	[0.0262]	-0.0125	[0.0165]	0.0196	[0.0204]	-0.0669**	[0.0266]
FIRE	0.0852***	[0.0244]	-0.00614	[0.0152]	0.013	[0.0196]	-0.0920***	[0.0269]
Misc. services	0.0617***	[0.0223]	-0.0261**	[0.0129]	0.0368**	[0.0165]	-0.0725***	[0.0243]
Never worked	0.0684**	[0.0320]	0.0146	[0.0215]	-0.0144	[0.0272]	-0.0686**	[0.0337]

Table 5. Bivariate Probit Model Excluding "not sure"

	(1) P(MIG=1, IMP=1)		(2) P(MIG=1, IMP=0)		(3) P(MIG=0, IMP=1)		(4) P(MIG=0, IMP=0)	
	ME	SE	ME	SE	ME	SE	ME	SE
College educated	0.0464***	[0.00697]	0.00196	[0.00741]	-0.00886	[0.00721]	-0.0395***	[0.00592]
Unemployed	-0.0144	[0.00941]	-0.0181*	[0.0102]	0.0201*	[0.0104]	0.0123	[0.00801]
Managerial occupation	0.0720***	[0.0165]	-0.00856	[0.0112]	-0.00222	[0.0113]	-0.0612***	[0.0141]
Rich	0.0334***	[0.0118]	-0.0203*	[0.0108]	0.0152	[0.0108]	-0.0283***	[0.0101]
Female	-0.0733***	[0.0102]	0.0604***	[0.00784]	-0.0491***	[0.00741]	0.0620***	[0.00877]
Age	0.00242***	[0.000440]	-0.00275***	[0.000269]	0.00237***	[0.000283]	-0.00204***	[0.000375]
Risk averse	-0.0421***	[0.00987]	0.0214**	[0.00942]	-0.015	[0.00923]	0.0357***	[0.00839]
Status-quo bias	-0.0319***	[0.0111]	0.0135**	[0.00680]	-0.00863	[0.00642]	0.0271***	[0.00942]
Optimistic	0.0813***	[0.00976]	0.0104	[0.00959]	-0.0225**	[0.00954]	-0.0693***	[0.00829]
Patriot	-0.0345***	[0.00898]	0.0343***	[0.00711]	-0.0290***	[0.00745]	0.0291***	[0.00766]
Residential immobility	-0.0285**	[0.0117]	-0.00436	[0.0106]	0.00858	[0.00994]	0.0243**	[0.00992]
Foreign acquaintance	0.0867***	[0.0105]	0.0169**	[0.00857]	-0.0297***	[0.00875]	-0.0739***	[0.00895]
No child	-0.000464	[0.0105]	0.0125**	[0.00625]	-0.0124**	[0.00612]	0.000316	[0.00890]
Sensitive to food safety	-0.0763***	[0.0105]	0.0249***	[0.00935]	-0.0134	[0.00958]	0.0647***	[0.00891]
Industry:								
Food manufacturing	0.0406	[0.0377]	-0.0603**	[0.0257]	0.0538**	[0.0250]	-0.0341	[0.0320]
Textile and apparel	0.127**	[0.0513]	0.00505	[0.0302]	-0.0239	[0.0285]	-0.108**	[0.0437]
Paper and printing	0.0748	[0.0562]	0.0229	[0.0436]	-0.0339	[0.0410]	-0.0638	[0.0478]
Chemical products	0.118**	[0.0597]	0.011	[0.0263]	-0.0285	[0.0251]	-0.100**	[0.0508]
Metals and steel	0.0793**	[0.0351]	-0.0228	[0.0326]	0.0108	[0.0321]	-0.0673**	[0.0299]
Machine	0.0956***	[0.0343]	-0.03	[0.0281]	0.0155	[0.0284]	-0.0811***	[0.0292]
Misc. manuf.	0.0773***	[0.0243]	-0.0209	[0.0191]	0.00927	[0.0185]	-0.0656***	[0.0207]
Mining	-0.0913	[0.234]	-0.05	[0.0727]	0.0633	[0.0741]	0.078	[0.199]
Agriculture	-0.102**	[0.0459]	0.0654	[0.0448]	-0.0498	[0.0443]	0.0860**	[0.0390]
Construction	0.0578*	[0.0343]	-0.0301	[0.0189]	0.0213	[0.0178]	-0.0490*	[0.0291]
Electricity supply	0.107**	[0.0517]	-0.0476*	[0.0284]	0.0313	[0.0270]	-0.0905**	[0.0440]
Transport and distribution	0.0686**	[0.0293]	-0.024	[0.0221]	0.0136	[0.0218]	-0.0582**	[0.0249]
Telecom	0.0612**	[0.0297]	0.00284	[0.0178]	-0.0119	[0.0178]	-0.0521**	[0.0253]
Med care	0.0779**	[0.0310]	-0.0124	[0.0178]	0.000671	[0.0173]	-0.0662**	[0.0264]
Education	0.0631**	[0.0258]	-0.00349	[0.0206]	-0.00593	[0.0205]	-0.0537**	[0.0220]
Wholesale and retail	0.0538**	[0.0250]	-0.0151	[0.0167]	0.007	[0.0160]	-0.0457**	[0.0212]
Catering and lodging	0.0810**	[0.0320]	-0.0256	[0.0190]	0.0133	[0.0196]	-0.0688**	[0.0272]
FIRE	0.117***	[0.0261]	-0.021	[0.0195]	0.00342	[0.0186]	-0.0995***	[0.0221]
Misc. services	0.0829***	[0.0238]	-0.0292*	[0.0161]	0.0167	[0.0154]	-0.0704***	[0.0202]
Never worked	0.0718*	[0.0412]	0.0235	[0.0243]	-0.0341	[0.0250]	-0.0612*	[0.0351]

Table 6. Bivariate Ordered Probit model

	3-step ordering			4-step ordering			5-step ordering		
	MIG	IMP		MIG	IMP		MIG	IMP	
College educated	0.116*** [0.0202]	0.0876*** [0.0243]		0.118*** [0.0236]	0.0854*** [0.0277]		0.114*** [0.0208]	0.0714*** [0.0222]	
Unemployed	-0.0618** [0.0298]	0.0161 [0.0252]		-0.0466 [0.0317]	-0.0272 [0.0287]		-0.0423 [0.0271]	-0.00672 [0.0203]	
Managerial occupation	0.150*** [0.0470]	0.192*** [0.0429]		0.151*** [0.0416]	0.146*** [0.0341]		0.144*** [0.0398]	0.161*** [0.0344]	
Rich	0.0443 [0.0381]	0.110*** [0.0352]		0.0333 [0.0339]	0.112*** [0.0386]		0.0425 [0.0328]	0.0990*** [0.0349]	
Female	-0.0362 [0.0233]	-0.277*** [0.0284]		-0.043 [0.0290]	-0.347*** [0.0346]		-0.0426* [0.0241]	-0.256*** [0.0252]	
Age	-0.0007 [0.00115]	0.0120*** [0.00101]		-0.00146 [0.00102]	0.00978*** [0.00102]		-0.00107 [0.000907]	0.0104*** [0.000929]	
Risk averse	-0.0456* [0.0273]	-0.132*** [0.0320]		-0.0179 [0.0251]	-0.0874*** [0.0269]		-0.0224 [0.0229]	-0.0809*** [0.0269]	
Status-quo bias	-0.0438* [0.0239]	-0.0571* [0.0309]		-0.0163 [0.0229]	-0.111*** [0.0283]		-0.0223 [0.0200]	-0.0634** [0.0265]	
Optimistic	0.240*** [0.0303]	0.106*** [0.0352]		0.231*** [0.0382]	0.143*** [0.0287]		0.236*** [0.0334]	0.0960*** [0.0296]	
Patriot	0.00174 [0.0276]	-0.182*** [0.0203]		0.00657 [0.0297]	-0.0231 [0.0271]		0.00903 [0.0266]	-0.112*** [0.0217]	
Residential immobility	-0.0741*** [0.0270]	-0.0627 [0.0385]		-0.101*** [0.0275]	-0.0415 [0.0284]		-0.0875*** [0.0245]	-0.0621** [0.0296]	
Foreign acquaintance	0.241*** [0.0310]	0.137*** [0.0247]		0.258*** [0.0269]	0.179*** [0.0253]		0.239*** [0.0242]	0.164*** [0.0216]	
No child	0.0219 [0.0249]	-0.0478 [0.0294]		0.0155 [0.0315]	-0.0226 [0.0257]		0.0132 [0.0267]	-0.024 [0.0264]	
Sensitive to food safety	-0.116*** [0.0317]	-0.280*** [0.0327]		-0.165*** [0.0335]	-0.122*** [0.0318]		-0.140*** [0.0291]	-0.257*** [0.0370]	
Industry:									
Food manufacturing	-0.0334 [0.0894]	0.195* [0.0999]		0.0491 [0.0909]	0.183* [0.0993]		0.0265 [0.0802]	0.144* [0.0804]	
Textile and apparel	0.270** [0.105]	0.248* [0.133]		0.299*** [0.110]	0.155 [0.143]		0.249*** [0.0952]	0.201* [0.114]	
Paper and printing	0.201 [0.130]	0.166 [0.201]		0.136 [0.123]	0.0934 [0.129]		0.131 [0.112]	0.0787 [0.130]	
Chemical products	0.306** [0.142]	0.221 [0.159]		0.202* [0.112]	0.243** [0.120]		0.212* [0.112]	0.181 [0.138]	
Metals and steel	0.132 [0.107]	0.206* [0.122]		0.0819 [0.119]	0.217* [0.111]		0.0867 [0.109]	0.203* [0.107]	
Machine	0.149 [0.104]	0.212** [0.0954]		0.215* [0.110]	0.228*** [0.0821]		0.185* [0.100]	0.160** [0.0724]	
Misc. manuf.	0.115* [0.0605]	0.230*** [0.0714]		0.143** [0.0679]	0.147* [0.0778]		0.119** [0.0596]	0.176*** [0.0652]	
Mining	-0.324 [0.381]	-0.0585 [0.357]		-0.184 [0.324]	-0.466 [0.484]		-0.233 [0.269]	-0.13 [0.238]	
Agriculture	-0.0676 [0.132]	-0.348*** [0.130]		-0.0592 [0.135]	-0.253* [0.138]		-0.0472 [0.119]	-0.382*** [0.120]	
Construction	0.0572 [0.0767]	0.222** [0.0891]		0.106 [0.0721]	0.183** [0.0908]		0.0852 [0.0663]	0.223*** [0.0785]	
Electricity supply	0.124 [0.113]	0.306** [0.134]		0.0821 [0.119]	0.239* [0.139]		0.0731 [0.107]	0.227** [0.109]	
Transport and distribution	0.0996 [0.0782]	0.220*** [0.0808]		0.0876 [0.0845]	0.137 [0.0853]		0.0803 [0.0757]	0.196*** [0.0659]	
Telecom	0.145** [0.0733]	0.147* [0.0775]		0.144** [0.0707]	0.0715 [0.0805]		0.132** [0.0642]	0.0942 [0.0707]	
Med care	0.137* [0.0726]	0.203** [0.0798]		0.179** [0.0734]	0.166* [0.0860]		0.150** [0.0675]	0.168*** [0.0633]	
Education	0.116* [0.0676]	0.126** [0.0613]		0.158** [0.0701]	0.143* [0.0795]		0.126** [0.0606]	0.120** [0.0563]	
Wholesale and retail	0.0811 [0.0557]	0.163** [0.0720]		0.129** [0.0559]	0.122 [0.0755]		0.103** [0.0485]	0.141** [0.0636]	
Catering and lodging	0.117 [0.0801]	0.207*** [0.0636]		0.165** [0.0814]	0.199** [0.0825]		0.134* [0.0719]	0.195*** [0.0580]	
FIRE	0.216*** [0.0626]	0.283*** [0.0813]		0.272*** [0.0642]	0.242*** [0.0719]		0.236*** [0.0580]	0.267*** [0.0637]	
Misc. services	0.106** [0.0537]	0.275*** [0.0731]		0.167*** [0.0506]	0.164** [0.0664]		0.129*** [0.0458]	0.235*** [0.0594]	
Never worked	0.183* [0.103]	0.121 [0.0967]		0.179 [0.110]	0.149 [0.0996]		0.153 [0.0972]	0.134 [0.0894]	
Obs.	10,093			7,965			10,093		
Log pseudolikelihood	-19,817			-18,457			-26,440		