Brides for Sale:

Cross-Border Marriages and Female Immigration[*]

Daiji Kawaguchi
Department of Economics
Hitotsubashi University
kawaguch@econ.hit-u.ac.jp

Soohyung Lee
Department of Economics and MPRC
University of Maryland
LeeS@econ.umd.edu

March 2011

Preliminary and Incomplete
Not for Citation or Circulation

[word count:100]

The number of cross-border marriages has been growing, recently consisting of 6 to 40 percent of newlyweds in developed East Asian countries. These marriages mostly take the form of a groom in a developed country bringing over a bride from a less developed country, resulting in female immigration. This paper documents the trend in cross-border marriages in East Asia. Using micro-level datasets from South Korea and Japan, we examine the types of people forming cross-border marriages and the types of countries exporting brides to these countries. This paper then studies the underlying factors that may drive the large demand for non-citizen brides.

1. Introduction

Immigration has been a core topic that economists have been examining because of its prevalence and economic impact on the source and host countries.[1] Adding to the large number of studies on immigration, this paper attempts to shed light on a type of immigration that has been understudied in the economics literature: female immigration through cross-border marriages, which takes place when a bride in one country immigrates to the country where her groom resides. Recently, such female immigration has been observed in various countries on a large scale, and has drawn much attention from the media and policy makers.[2]

To illustrate the importance of cross-border marriages, we use the marriage records of vital statistics in five East Asian countries in the 1990s and 2000s: South Korea, Japan, Taiwan, Singapore and Hong Kong.[3] Figure 1 shows that the marriages between citizen grooms and non-citizen brides consist of a significant fraction of all newlyweds in all the five countries, ranging from 5 percent (Japan) to over 30 percent (Singapore and Hong Kong), whereas marriages between non-citizen grooms and citizen brides remain on a much smaller scale. South Korea has shown the most rapid growth in marriages between citizen grooms and non-citizen brides, starting from less than 1 percent of all newlyweds in 1991 to 8 percent in 2007. In Taiwan, the marriages involving non-Taiwanese and non-Chinese brides consisted of 6 percent of newlyweds in 1998, peaking in 2004 (13 percent of newlyweds), and then stabilizing at about 5 percent in 2007. Figure 2 shows the five countries that supply the most non-citizen brides for each of Korea, Japan and Taiwan. China is the largest exporter of brides to all three countries, ranging from 32 percent to 70 percent of all non-citizen brides among newlyweds. Vietnam is the second largest exporter of brides to Korea and Taiwan. Other

---

[1] The vast literature is reviewed and introduced in Borjas (1999a and 1999b) and Dustmann, Glitz and Frattini (2008).

[2] Examples include the *New York Times* article of February 22, 2007 by Norimitsu Onishi and a US film titled "Russian Brides." [Add policy reviews]

[3] In addition to East Asia, a large number of dating agencies introduce women in Eastern European countries to men in Western Europe and North America. For example, among 1,130 thousand persons who obtained permanent residency status in the US in 2009, 317 thousand obtained it because their spouse was a US citizen, while 144 thousand obtained it because of employment-based preferences (2009 Yearbook of Immigration Statistics).

South East Asian countries such as Philippines and Thailand are important sources countries of non-citizen brides.

Our purpose in this paper is to offer the first study of the economics of immigration due to cross-border marriages.[4] This paper focuses on marriages of citizen grooms and non-citizen brides and investigates the following questions: What type of a man marries a non-citizen bride? What type of a woman becomes a non-citizen bride? What socio-economic factors may account for the prevalence of such marriages? and What type of country is likely to export its women as non-citizen brides to other countries?

We conduct this analysis using administrative datasets from Korea and Japan. Besides the prevalence of cross-border marriages, we chose these two countries because of data quality and regulations on cross-border marriages. Different from countries like U.S., the marriage records of these two countries include the information on nationality and Korean record includes educational attainment. In addition, obtaining legal immigrants status for non-citizens through cross-border marriages is relatively easy in these two economies and there is no legal restriction on the business of international marriage agencies.[5] The analysis of the workings of a market without little regulation is useful to understanding the market forces behind the phenomenon of female immigration through marriage.

Using micro-level datasets between 2000 and 2005, we find that the likelihood of a man marrying a non-citizen woman is highly correlated with educational attainment, occupation, and income. For example, all else being equal, a man with secondary education is about 6 to 10 percent more likely to marry a non-citizen bride than his counterpart with tertiary education. Relative to white-collar workers, a man working in the agricultural sector or a low-skilled job is more likely to marry a non-citizen bride. All else being equal, the likelihood of marring a non-citizen bride increases with a groom's income.

---

[4] There is an academic literature, mainly in sociology, that examines the socio-economic status of women who immigrated through cross-border marriages in the host country (e.g., the degree of assimilation). Examples from this literature are XX (Korea),XX (Japan) .

[5] This is not the case in the US. In fact, due to the upsurge in international marriage through international marriage agencies, US legislators enacted the International Marriage Broker Regulation Act of 2005 and started to restrict the issuance of K-1 fiancée visas.

Next we compare the characteristics of non-citizen brides with those of citizen brides as well as with those of women in the brides' home countries. We find significant difference not only between citizen brides and non-citizen brides, but also among non-citizen brides across their source countries. For example, controlling for the groom's characteristics, brides from China are comparable to citizen brides in Korea or Japan in terms of age but their educational attainment is much lower. In contrast, brides from Philippines are much younger than citizen brides but comparable in terms of educational attainment. We use the census of major countries exporting their brides to Korea and Japan and find that brides are more educated than women in their cohort.

In order to understand the factors accounting for the increase in non-citizen brides, we calculate sex ratios in various age groups of Korea and Japan and find that most sex ratios are fairly balanced, resulting in no significant relationship between sex ratios and the number of non-citizen brides. However, sex ratios among people without tertiary education are positively correlated with the number of non-citizen brides. This correlation suggests that one of the factors is imbalanced *effective* sex ratio caused by the more rapid increase in women's educational attainment relative to men's. By effective sex ratio, we mean the number of men over the number of women who are available and willing to get married given men in the marriage market. Note that, as Angrist (2002) argued, the effective sex ratio can be imbalanced even if the raw sex ratio is balanced. In Korea and Japan, the fraction of women with tertiary education increased faster than that of men. Women with tertiary education are much more likely to remain single than their counterparts without tertiary education, whereas men with tertiary education are more likely to get married than men without tertiary education. Therefore, men with low-educational attainment may get squeezed in the marriage market and be pushed to search for a spouse in a less-developed country where they are likely to find women willing to immigrate to the men's home country.

We then examine what determines selection of brides' countries on the part of the countries with a marriage market imbalance. For these analyses, we compile an aggregate-level dataset consisting of all countries from which Korea and Japan could have imported brides and each country's bilateral relationship with Korea and Japan. The analysis of macro data renders the clear result that the lower GDP per capita a country

has relative to Japan or Korea, the more likely that the country will send its brides to these host countries. A country's likelihood of sending brides is strongly correlated with geographic and economic proximity between source and host countries, measured by the physical distance and the trade volume between two countries.

Beside the economic studies on immigration, this paper is closely related to two kinds of literature. One examines the relationship between sex ratios and marriage market outcomes; the other examines parents' fertility and sex selection choice. Examples of existing studies on sex ratios and marriage market outcomes include Abramitzky et al. (2010), Angrist (2002), Edlund (1999), Foster and Rosenzweig (2001), Lafortune (2009) and Nozaki and Matsuura (2010). Those on fertility and sex selection, particularly on East Asia, include Park and Cho (1995), Das Gupta and Shuzhuo (1999), Oster (2005), Edlund et.al. (2007), Qian (2008), Lin and Luoh (2008) and Wei and Zhang (2009). The findings of our paper suggest that the consequences of imbalanced (*effective)* sex ratio can be globally transmittable and thus household decisions on fertility and sex selection may need to incorporate this global aspect.

The rest of the paper is organized as follows. Section 2 presents summary statistics of our datasets. Section 3 documents the micro-level analysis using Korean and Japanese vital statistics. Section 4 examines. Section 5 concludes the paper.

2. Data and Descriptive Statistics

Both the Korean and Japanese governments require a couple to register its marriage with a local government in order for the couple's union to be recognized as a legal marriage. The collection of registrations for each year is called a "marriage register" and a subset of this information is released to the public as a part of vital statistics. For each bride and groom, both countries collect information about age, marital history, employment status, occupation, current location of residence, and country of origin. By marital history, we mean whether a person was legally married prior to his or her current marriage. Country of origin in the Korean marital registers is the country where a person's parents and the majority of his or her extended family reside.[6] Roughly speaking, the country of origin informs us about the ethnicity of a person regardless of the person's

---

[6] The exact terminology for the information of "country of origin" is *Bonjuk* in Korean.

current citizenship.[7] Japanese marital registers record nationality of both grooms and brides. In addition to this information, Korean marriage registers collect information about educational attainment, which is not available in Japanese marriage registers.

We obtain micro datasets from the Korean and Japanese governments: Korean marriage registers (2004 and 2005) and Japanese marriage registers (2000 and 2005). Tables 1 and 2 show summary statistics. We have about half a million couples for our analysis for Korea and 1.4 million for Japan. In panel A of Table 1, we report the summary statistics of Korean grooms' characteristics depending on their bride's citizenship. In our sample, about seven percent of grooms marry non-citizen brides. Compared to grooms who marry a Korean, on average, men who marry a non-citizen bride are older, less educated, more likely to have been previously married, and more likely to have a job in the agricultural sector or a low-skilled job in a non-agricultural sector. Since marriage registers do not contain income information, we impute a person's annual earnings based on sex, age, education, occupation, and year of marriage using the "Basic Statistics of Earnings Structure," a nationally representative survey of income.[8] Then we convert the imputed income to 2005 Korean won by deflating the annual consumer price index.[9] Among those who have a job, grooms with non-citizen brides are predicted to have lower imputed annual income than those with citizen brides.

Overall, Japanese marriage registers provide only a subset of the information that is available in Korean marriage registers. In particular, a person's educational attainment is not available, and information about employment status and occupation is available only every five years. Therefore, we use the 2000 and 2005 Japanese marriage registers, which provide employment information. By using the same sample selection criteria for the Korean data, we have 1,415,950 couples. We supplement our dataset using the

---

[7] For example, consider a Chinese woman who immigrated to Japan for work and acquired Japanese citizenship. For her marriage to a Japanese man, her current location is Japan but her country of origin is China. By the same token, consider a Korean woman who currently resides in the U.S. for study and registers her marriage. Her current location is the U.S. and her country of origin is Korea.

[8] The survey is conducted every year by the Korean Statistical Office, and is available at www.kosis.co.kr. For our imputation, we classify people based on the following category and use the average monthly earning for the imputed income: sex (men, women), reported year (2002,..,2005), age group(20~24,25~29, 30~34,35~39, 40~44, 45~49, 50~54, 55~59), education(middle school or less, high school, college or more), and occupation (the 12 categories reported in Table 1).

[9] CPI: Bank of Korea, consumer price index. cpi = 88.022 if year==2002, replace cpi = 91.576 if year==2003, replace cpi = 96.105 if year==2004, replace cpi = 100.0 if year==2005

"Employment Status Survey (2002)" that is conducted by the Japanese Ministry of Internal Affairs and Communications every 5 years. We predict a bride's educational attainment and annual income by imputing it with the average of the outcomes of the male workers who have the same age, employment status and occupation.

Panel A of Table 2 reports the characteristics of Japanese grooms in our dataset. In our sample, about 3.7 percent of newly wedded grooms marry non-citizen brides. As we find in Korean marriage registers, the Japanese grooms who marry a non-citizen bride are older, more likely to have been previously married, and more likely to have a job in the agricultural sector or low-skilled non-agricultural job than grooms with a Japanese bride. It is also notable that they are more likely to be self-employed or work for smaller firms. Their imputed educational attainments are, on average, lower and so are their imputed earnings.

3. Empirical Analysis

In this section, we conduct empirical analysis to address the following questions. What are the common characteristics of men who marry a non-citizen bride? Is there any systematic pattern in men's characteristics associated with their bride's home country? What is the tradeoff between marrying a non-citizen bride an marrying a bride from a foreign country? What type of women become non-citizen brides among the population of their home country?

3.1 Groom's Characteristics Depending on His Bride's Nationality

In this section, we first study men's characteristics associated with having a non-citizen bride and then we examine whether there are any systematic differences in men's characteristics depending on what country their brides came from.

Panel A of Tables 1 and 2 show the average characteristics of grooms in Korea and Japan, respectively, depending on the bride's home country. By comparing column 1 with column 2, we find that, in both countries, the grooms who marry a non-citizen bride are, on average, older, less educated, more likely to have a job, and more likely to work for a low-skilled job or agricultural sector than those who marry a non-citizen bride. For example, the average age of grooms marrying a non-citizen bride is 31.3 in Korea and

30.5 in Japan, much smaller than that of their counterparts marrying a non-citizen bride (40.3 in Korea and 42.4 in Japan.) Among the grooms marrying a non-citizen bride, about 6 percent in both countries do not have a job, higher than about 4 percent among the grooms marrying a non-citizen bride.

Columns 3 to 7 of the tables show the average characteristics of grooms who married a non-citizen bride, depending on the bride's home country. For expositional simplicity, we classify the non-citizen brides' home countries into five categories: three major countries in terms of number of brides sending to a host country, developed countries whose GDP per capital exceeds the host country's, and the remaining developing countries. Visible differences exist in the groom's characteristics across bride's home countries. For example, in both Korea and Japan, grooms who marry a bride from a developed country appear to be very similar to those who marry a non-citizen bride. In Korea, the grooms who marry a Chinese bride are older, more likely to have a previous marriage, and less likely to work in the agricultural sector than those who marry a Vietnamese or Filipino bride. In the Japanese case, the differences in the grooms' characteristics across the source countries are not as stark as in Korea. However, overall the grooms who had a previous marriage are more often observed to have a Filipino bride, instead of a Chinese or Korean bride, and those who are relatively more educated and have a professional job more often have a Korean bride, instead of Chinese or Filipino.

Because many characteristics are correlated with one other, we perform the following regression exercises to examine the marginal contribution of each characteristic to predicting a groom's choice of his bride's home country. First, we use a binary choice model to regress whether a man marries a non-citizen bride on the man's characteristics as well as year dummies and provincial dummies. Second, we use a multinomial model to allow for grooms to sort themselves into five different categories in terms of the country where they find their brides.

In Table 3, we regress whether a groom has a non-citizen bride or not on a few sets of groom's characteristics using the Probit model and report the marginal effects (columns 1 to 3 for Korea and columns 4 to 6 for Japan). Note that our results are qualitatively the same if we use the Logit model. Consider the results in column 1. We regress the dependent variable on the man's age, whether he was previously married or

not, then educational attainment, and dummy variables of region and year. Note that the omitted category is tertiary education. We find that a man who has less than a high school education is 7.6 percent more likely to marry a non-citizen bride. An older man is more likely to marry a non-citizen bride. In column 2, we follow the specification in column 1 but additionally include dummy variables for occupation, with white-collar job being the omitted category. The regression results show that, all else being equal, farmers are much more likely to marry a non-citizen bride, relative to white-collar workers, which is the omitted category. In column 3, we use the imputed logarithm of income as an additional control variable and limit our sample only to the grooms who have a job other than military service. We find that, all else being equal, men with a higher income are more likely to marry a non-citizen bride. These estimation results confirm our earlier findings based on descriptive statistics.

In column 4, we regress the dummy variable of marrying a non-citizen bride on a groom's age, whether he was previously married or not, dummy variables for occupation, employer's size, region and year. Similar to our findings from Korea, grooms who marry a non-citizen bride are on average older and more likely to work for the agricultural sector or have a low-skilled occupation than those who marry a non-citizen bride. Opposite to Korean grooms, Japanese grooms who had a previous marriage are more likely to marry a non-citizen bride. Compared to white-collar workers, a man who has a low-skilled job is 2 percent more likely to marry a non-citizen bride. Men working for a company with 100 or more employees are less likely to marry a non-citizen bride than those who do not have a job, are self-employed, or work for a company with fewer than 99 employees. In columns 5 and 6, we include the imputed educational background and income, respectively, as additional control variables. As with our findings for Korea, imputed earnings of grooms are positively correlated with the likelihood of having a non-citizen bride, and the higher a groom's educational attainment, the less likely it is that his bride is from a foreign country. For the specifications that include predicted educational background and log annual income, occupation dummy variables are not included. This is because the information on occupation is a key predictor for educational background and income; thus, occupations are highly correlated with predicted educational backgrounds and income. Separately identifying the effect of occupation from education or income is

prohibitively difficult without having direct information about educational background and annual income in marital records in the Japanese case.

Next we estimate the Multinomial Logit model to estimate a man's choice of his bride's home country from among six categories: his own country (i.e., non-citizen bride), three major countries sending women to his country, other developing country, and developed country. For Korea, we include men's age and dummy variables for marital history, education, occupation, residence, and year as explanatory variables. For expositional simplicity, we report the marginal effects of key variables on the likelihood of marrying a woman from each category in Panel A of Table 4.[10] The results from the Multinomial Logit regression confirm our earlier findings based on descriptive statistics. Consider the row labeled "High school." All else being equal, a high-school graduate groom is 6.6 percentage points less likely to have a Korean bride, but 5.1 percentage points more likely to marry a Chinese bride and 0.9 percentage points more likely to marry a Vietnamese bride, compared to his college graduate counterpart. All else being equal, compared to a white-collar worker, being a farmer raises the likelihood of marrying a non-citizen bride (4 percentage points), particularly one from Vietnam.

For Japan, we include men's age and dummy variables for marital history, occupation, and year as explanatory variables. For expositional simplicity, we report the marginal effects of key variables on the likelihood of marrying a woman from each category in Panel B of Table 4.[11] The results from the Multinomial Logit regression confirm our earlier findings based on descriptive statistics. Consider the row labeled "Age." All else being equal, a one-year-older groom is 0.2 percentage points less likely to have a Japanese bride, but 0.08 percentage point more likely to marry a Chinese bride. By the same token, a groom who has prior marital experience is 0.91 percentage points less likely to marry a Japanese bride, but 0.72 percentage points more likely to marry a Filipino bride. Regarding occupational background, a groom who is a professional or a manager is 0.35 percentage points more likely to marry a Japanese bride but 0.16 percentage points less likely to marry a Chinese or Filipino bride. On the contrary, a

---

[10] The underlying estimation results are available upon request.
[11] The underlying estimation results are available upon request.

groom who is not in work is 1.81 percentage points more likely to marry a Japanese bride while he is 0.74 percentage points less likely to marry a Chinese bride.

3.2 Bride's Characteristics Depending on Her Nationality

In this subsection, we examine the characteristics of brides. Panel B of Tables 1 and 2 report the average characteristics of brides depending on their nationalities. In both Korea and Japan, even among non-citizen brides, there are large differences in brides' characteristics across their nationality. For example, Panel B of Table 1 shows that the average age of brides is 35.3 among Chinese, about 10 years higher than average Vietnamese or Filipino brides. About 65 percent of Chinese brides had a previous marriage, whereas less than 2 percent of Vietnamese and Filipino brides did. A noticeable pattern is that about 11 percent of Vietnamese brides work in the agricultural sector, whereas less than 2 percent of non-citizen brides from China or Philippines do. This result may explain our earlier finding that the likelihood of having a Vietnamese bride is particularly large for grooms who work in the agricultural sector, if male farmers search for a bride who can work with them in agricultural sector production.

Panel B of Table 2 shows the brides' characteristics in Japan. Although not as stark as in Korea, there are large differences in brides' characteristics across their nationality. Chinese brides are, on average, older and more likely to work and to have had a previous marriage than Filipino brides. Filipino brides are much more likely to have a low-skilled job compared to brides from other countries.

Next we examine the non-citizen brides' characteristics compared to those of the women in their home countries. Following the long discussion in the literature on immigration, we are interested in learning whether a positive type of women becomes a non-citizen bride and immigrates to a more-developed country. In particular, we focus on educational attainment using the Korean data because the Japanese marriage records do not contain information about educational attainment. [12] Although the Korean men who married a non-citizen bride generally have lower socio-economic status than Korean brides, ex-ante it is not clear whether non-citizen brides also have low socio-economic

---

[12] Note that we do not focus on occupation because we do not have a good sense of whether a non-citizen bride is not working because she quit her job as a result of marrying a Korean man or simply because she does not work.

status as compared to the population in their home countries. We use the latest census of China (2005), Vietnam (1999), and Philippines (2000).[13] Because some of the brides from Vietnam and Philippines were too young to complete their educational attainment in the census year, we use non-citizen brides who were born before 1980. This restriction allows them to be over 19 years old when the census was carried out. Then, for each of the three countries, we calculate weights such that the weighted distribution of cohorts in the census is the same as that among the non-citizen brides from that country. Lastly, we calculate the weighted distribution of educational attainment of women. As shown in Table 6, about 87 percent of Chinese brides have secondary education, whereas 65 percent of women in China with the same age do. However, the fraction of Chinese brides who have tertiary education is smaller than that in the population. Using the Kolmogorov and Smirnov test we find that the distribution of educational attainment among Chinese brides is statistically different from that in the population at the one percent level.[14] As for Vietnam, Vietnamese brides are clearly more educated than their counterparts in their home country. They are more likely to have tertiary education, as well as secondary education, than women in the population. The hypothesis that the two groups have the same distribution is rejected at the one percent level from the Kolmogorov and Smirnov test. As for Philippines, we calculate two types of the weighted distribution of female educational attainment. One is for all women and the other is for women who are working overseas. For example, about 38 percent of Filipino women have tertiary education, whereas 49 percent of female overseas workers do. Filipino brides who marry a Korean man are, on average, more educated than both the overseas workers and the general population, and these differences are statistically significant at the one percent level. These findings suggest that, in terms of educational attainment, non-citizen brides are positively selected from the population.

3.3 Tradeoffs of Bride's Characteristics Depending on Source Countries of Brides

---

[13] For the 2005 Chinese census, we use the cross tabulation of sex, age, and educational attainment provided by the National Bureau of Statistics of China (http://www.stats.gov.cn/english/). The tabulation reports the number of individuals in each category. The census of Vietnam and Philippines are available at IPUMS international (https://international.ipums.org/international/).

[14] Our findings qualitatively remain the same if we perform the same analysis based on birth year groups instead of pooling all the samples into one.

In this subsection, we perform the following thought experiment. Consider a man who ponders choosing the country where he will look for a bride. What are the tradeoffs he is facing in choosing one country instead of another? As for the characteristics of men we use for this experiment, we use those whose average characteristics are the same as grooms who marry a Chinese bride. This is because China sends the largest number of brides to both Korea and Japan. Note that we cannot address this question based on Panel B of Tables 1 and 2 because the average characteristics of men vary by brides' nationality.

Therefore, to perform this thought experiment, we use the propensity score matching method as follows. First, we define a variable D, treatment status, which is one if a bride is from China and zero if a bride is from Korea. The outcome of interest is the bride's characteristics -- age, marital history, and educational attainment -- and we want to know what type of woman a man will marry by selecting China, instead of Korea, as a source country of brides. We compute the propensity score by estimating a Probit model to predict D based on men's age, marital history, education, occupation, residential location, and year. We then match the two groups (i.e., men who married a Chinese woman and men who married a Korean woman) with the nearest neighbors matching. Then we compare the average characteristics of the brides in these two groups in terms of age, marital history, and education. The average characteristics of Korean men who married Chinese brides and also those of the Chinese brides used in the regression are reported in columns 1 and 2 of Table 7.[15] Assuming that the conditional independence assumption holds, the results suggest that, by switching the source country of a bride from Korea to China, a man can marry a woman who is younger (35.3 instead of 37.5), more likely to have been married previously (64.5 vs. 60.9), and less educated. All these differences are statistically significant at the one percent level. These findings remain the same if we use kernel instead of the nearest neighbors matching, or if we use a Logit model instead of a Probit model.

We conduct a similar exercise using the average characteristics of men who married a Chinese bride. Table 7 Panel B reports the results of the same exercise for

---

[15] There exist some small differences between column 2 and the previous table reporting the average characteristics of Chinese brides. This is because, in this table, we report the average characteristics of Chinese brides for whom we have complete information about age, marital history, education, occupation, and residential area. In contrast, Table 5 includes people for whom we know only a subset of characteristics in computing the average characteristics.

Japan. The pattern of trade-offs is similar to the findings from Korea. Column 1 reports the average characteristics of men whom we examine in this exercise. The propensity score of marrying Chinese is calculated by Probit using men's age, marital history, household type, occupation, residential location, and year as explanatory variables. The average characteristics of those Japanese wives are reported in Column 2. Given the husbands' characteristics, Japanese wives would be 7 years older than Chinese wives, but they would have equal probability of having prior marital experience. By the same token, Filipino wives would be 3 years younger and 32 percentage points less likely to have prior marital experience than the Chinese wives as reported in Column 4. Korean wives would be older and equally likely to have prior marital experience than the Chinese wives as reported in Column 5.

4 Discussions

In this section, we examine what factors may account for the increasing importation of non-citizen brides into Korea and Japan. We then examine the common macro-economic characteristics of countries that export brides to these two countries.

4.1 Determinants of Demand of Non-citizen brides

In this subsection, we aim to examine socio-demographic changes that may explain the rapid increase in demand for non-citizen brides in Korea and Japan. We use four waves of census in the two countries from 1990 to 2005 and report some statistics that may affect marriage market outcomes. The first row of Table 8 reports the fraction of non-citizen brides from among newlyweds in each country and each census year. In Panel A, we calculate sex ratios among individuals whose age is between 20 and 39. Although we select this age group because they are in their prime age for searching for a spouse, our results remain the same if we use different age groups in our analysis.[16] The table shows that, in both Korea and Japan, there is no sign of increase in the relative number of men over women. The number of men per 100 women remains stable: around 104 for Korea and 102 for Japan. Therefore, we reject the hypothesis that the increase in demand for

---

[16] For example, we compute the sex ratio of the entire population, and we also use the average age gap between a husband and wife in order to model the group of people who are in the same marriage market.

non-citizen brides is due to an increase in sex ratios. Next we split the sample based on educational attainment. Among people with tertiary education, the sex ratio sharply decreases because the gender gap in terms of college attendance is closing fast, as shown in Panel B. Although the sex ratio is still less than 100, the change in the sex ratio among people without tertiary education increases coincides with the increase in the demand for non-citizen brides.

Based on these observations, although it is not conclusive, we think the rise in women's educational attainment relative to men may account for the increasing demand for non-citizen brides despite the balanced sex ratios. In panel C of Table 8, we use people whose age is between 30 and 39, old enough to have finished college if they wanted to do so, and we calculate the fraction of singles given sex and educational attainment. Women with tertiary education are much more likely to remain single than women without tertiary education, whereas men with tertiary education are much less likely to remain single compared to those without tertiary education. Therefore, the more women who have tertiary education, the fewer women who are interested in marriage.

In order to understand what might explain why this relatively large fraction of women with tertiary education remain single, we use marriage registers corresponding to each census year and report the sorting patterns along educational attainment. For comparability in Panels A to C, we use couples with brides and grooms whose age are between 30 and 39 and whose mate is a citizen. Panel D of Table 8 shows that a significant fraction of men with tertiary education marry women without tertiary education whereas the likelihood of women with tertiary education marry men without tertiary education is small. In Korea, although the fraction of marriages between college-educated women and high-school educated men increases from 1.9 percent of all newlyweds in 1990 to 9.5 percent in 2010, the magnitude of the increase is small compared to the increase in women's educational attainment. In Japan the marriage between women with tertiary education and men without tertiary education was 10.1 percent in 1992 and increased to 16.2 percent in 2007. This speed of increase is not as fast as the rapid increase of women with tertiary education.

Based on these findings, we speculate that the following mechanism may generate the demand for non-citizen brides: On average, the match quality between a highly

educated woman and a less educated man is lower than the reservation utility of at least one of them. An obvious question of interest is why these highly educated women remain single instead of importing grooms. We find that indeed educated women are more likely to marry a foreign groom from a developed country, but such marriages are much less frequent to men, as shown in Figure 1 (less than 3 percent in Korea, and XX in Japan). We think that because the human capital is not perfectly transferable, a well-educated man from a different country may choose not to immigrate to Korea or Japan and, even if he does, he may not remain a person with human capital.

4.2 Determinants of Trading Partners for Non-citizen Brides

In this section, we examine the common characteristics of the countries from which Korea and Japan accept brides. We perform this exercise to shed light on identifying the countries' macro-economic characteristics that correlate to the likelihood of sending brides to these two countries.

Figure 2 presents the contribution of a country to the share of non-citizen brides in each year from 2000 to 2007. As shown in Panel A of Figure 2, the fraction of Chinese brides out of all non-citizen brides in Korea fluctuated from 50 percent to 70 percent. The fraction of Vietnamese brides increased over time, whereas the fraction of Filipino brides decreased. Panel B of Figure 2 shows that in Japan, China, Philippines, and Korea remain the top three source countries of brides and their shares of non-citizen brides remain stable. The countries that send a large number of brides to either Korea or Japan have GDP per capita lower than each of the two countries, and are located in Asia, indicating that geographic distance may be an important factor.

To formally examine this casual observation, we collect information about 193 countries around the world, from which Korea or Japan could have accepted brides. The information includes a country's economic status (e.g., GDP per capita) and demographic characteristics (e.g., population size), as well as its bilateral relationship with Korea/Japan (e.g., trade volume and physical distance). We compile this information using the databases provided by the *CEPII* (for physical distance[17]) and by the World

---

[17] The dataset is available at http://www.cepii.fr/anglaisgraph/bdd/distances.htm. The CEPII provides two measures of distance between the two countries. One is the physical distance between the two capital cities.

Bank (for the rest of the information). Then, for a given country and year, we combine this cross-country dataset with the number of non-citizen brides from that country who married a Korean (Japanese) man in that year. For the number of non-citizen brides for a country for a given year, we use aggregate tables based on Korean and Japanese marriage registers from 2000 to 2007, instead of using our micro-level datasets. Table 8 shows the summary statistics of our aggregate level dataset. The unit of observation is country times year. We use only the observations for which we have basic information on economic status such as GDP per capita. This procedure yields 1,108 observations for Korea and 1,232 for Japan.

In Table 10, we use the Probit model to regress whether a country sends more than 100 brides each year to either Korea (Panel A) or Japan (Panel B) on a few sets of macroeconomic characteristics. We choose "sending more than 100 brides" as a definition of major countries exporting brides to either Korea or Japan because both governments use that criterion in their official documents[18] and because we do not want to treat a country that incidentally have a few women marrying either Korean or Japanese men equally as a country like China, where more than 35 percent of non-citizen brides come from. As explanatory variables, we use the following variables. We regress the dependent variable on the following explanatory variables. The first variable, $|\ln Y^H - \ln Y^S|+$ with $H \in \{Korea, Japan\}$, which is zero if a potential source country has a higher GDP per capital than either Korea or Japan, and the absolute value of the difference in GDP per capita between the two countries otherwise. The second variable, $|\ln Y^H - \ln Y^S|-$, is zero if the potential source country has a smaller GDP per capita than either Korea or Japan, and the difference in GDP per capita otherwise. The third variable is the logarithm of the trade volume between a potential source country and either Korea or Japan, where the trade volume is the sum of the annual export and import. The forth variable is geographical distance between a potential source country and either Korea or Japan.

The other is the population-weighted distance based on multiple locations. We use the first measure because it is available for a large number of countries and is highly correlated with the population-weighted distance.

[18] In each year, both the Korean and Japanese governments published a summary document of annual vital statistics, which includes the list of major countries that non-citizen brides came from and the number of brides from each source country. By major country, we mean a country that sends more than 100 brides to either Korea or Japan. The remaining countries are classified as "others."

Finally, we use dummy variables for year and regions.[19] We use the difference in GDP per capita between a host and source country as a proxy for the economic gain that a bride may receive from marrying a man in Korea or Japan. We use the logarithm of trade volume to proxy for the extent to which the two countries are closely tied. If the two countries already have a close tie in economic activities, then the cost of establishing business to generate marriages between the two countries may be smaller than otherwise. We use the logarithm of geographic distance and dummy variables for region in order to allow for the possibility that geographical location may explain some non-economic factors such as cultural similarity.[20]

Table 11 reports the estimated coefficients. Standard errors are in parenthesis, estimated by clustering in country-level. Marginal effects are in brackets. Note that for Japan, we cannot separately identify the coefficient of $|\ln Y^H - \ln Y^S|$- because there are only two countries whose GDP per capital exceeds Japan's. Therefore, we drop the two countries in our analysis for Japan. As we conjectured, the poorer a country is compared to either Korea or Japan, the more the country is likely to become a major bridal exporting country. All else being equal, if a country has a close economic or geographic tie with either Korea or Japan, its likelihood of becoming a major bridal exporting country increases. This simple gravity model explains the large variation in the data (the pseudo r-square is over 40 percent). Our results qualitatively remain the same if we use only a subset of years instead of the entire sample period from 2000 to 2007.

5. Conclusion and Implications

This paper presents the empirical findings concerning a type of immigration that is growing yet understudied in economics: female immigration through marriage. Using micro-level datasets from Korea and Japan, we find that, in both countries, men with low socioeconomic status search for brides in countries that are less developed than Korea or

---

[19] In particular, following the World Bank classification, we classify countries into seven categories: East Asia and Pacific, South Asia, Europe and Central Asia, Middle East and North Africa, Sub-Saharan Africa, North America, Latin America and Caribbean.

[20] It is well-known in international trade literature that the trade volume between two countries is highly correlated with geographic distance between to the two (known as the gravity model, see Feenstra, 2004). Therefore, the coefficient in front of geographic distance will be the effect net of that, though affecting the trade volume.

Japan and have close economic and geographic ties with Korea or Japan. Compared to women in the population, well-educated women become brides of these men and immigrate to their groom's country.

Our findings imply that, as China faces increasingly imbalanced sex ratios and becomes more developed, the countries that are located near China, are less developed, and have close economic ties with China, such as Cambodia and Vietnam, are likely to face a large volume of female outflow to China though marriage. Due to China's large population, the increasing demand for non-citizen brides in China may significantly affect countries at risk of losing their women, not only in terms of marriage markets but also socio-demographic outcomes.

References

Josh Angrist (2002) "How do Sex Ratios Affect Marriage and Labor Markets? Evidence from America's Second Generation" Quarterly Journal of Economics Vol. 117, No. 3, Pages 997-1038

Nozaki, Yuko and Katsumi Matsuura (2010) "The increasingly high sex ratio and lifelong unmarried rate in Japan" Journal of Population Research 27:1, 43-57

Missing Women, the Marriage Market and Economic Growth. Andrew D. Foster. Brown University. Mark R. Rosenzweig. University of Pennsylvania. November 2001.

Abramitzky, Ran, Adeline Delavande and Luis Vasconcelos (2010)
"Marrying Up: The Role of Sex Ratio in Assortative Matching" MICROCON Research Working Paper No. 36. Available at SSRN: http://ssrn.com/abstract=1744065

Borjas, George (1999a) The Economic Analysis of Immigration, Chapter 28, *Handbook of Labor Economics*, vol. 3A, Orley C. Ashenfelter and David Card, eds, Amsterdam: North-Holland.

Borjas, George (1999b) *Heaven's Door*, Princeton, NJ: Princeton University Press.

Das Gupta, Monica, and Li Shuzhuo (1999) "Gender Bias in China, South Korea and India 1920–1990: Effects of War, Famine and Fertility Decline." *Development and Change*, vol. 30, no. 3, pp. 619–52.

Dustmann, Christian, Albrecht Glitz, and Tommaso Frattini (2008) "The Labour Market Impact of Immigration," CReAM Discussion Paper No 11/08.

Edlund, Lena (1999) "Son Preference, Sex Ratios, and Marriage Patterns," Journal of political Economy, vol. 107, no.6, pp. 1275–1304.

Edlund, Lena, Hongbin Li, Junjian Yi, and Junsen Zhang (2007) "Sex Ratios and Crime: Evidence from China's One-Child Policy," IZA DP No. 3214.

Feenstra, Robert (2004) Advanced International Trade, Princeton University Press. Lafortune, Jeanne (2009) "Making Yourself Attractive: Pre-Marital Investments and the Returns to Education in the Marriage Market" University of Maryland.

Lin, Ming-Jen, and Ming-Ching Luoh (2008) "Can Hepatitis B Mothers Account for the Number of Missing Women? Evidence from Three Million Newborns in Taiwan." *American Economic Review*, vol. 98, no.5, pp. 2259–73.

Onishi, Norimitsu (2007), "Korean Men Use Brokers to Find Brides in Vietnam" New York Times article, February 22, 2007 http://www.nytimes.com/2007/02/22/world/asia/22brides.html?_r=2&scp=1&sq=korea%20vietnam%20marriage&st=cse

Oster, Emily (2005) "Hepatitis B and the Case of the Missing Woman," *Journal of Political Economy*, vol. 113, no. 6, pp. 1163-1216.

Park, Chai Bin, and Nam-Hoon Cho (1995) "Consequences of Son Preference in a Low-Fertility Society: Imbalance of the Sex Ratio at Birth in Korea," *Population and Development Review*, vol. 21, no. 1, pp. 59–84.

Qian, Nancy (2008) "Missing Women and the Price of Tea in China: The Effect of Sex-Specific Earnings on Sex Imbalance," *Quarterly Journal of Economics*, vol. 123, no. 3, pp. 1251–85.

Republic of Korea. National Statistical Office, National Population and Fertility Survey 1991 – 2005.

_____, National Household Income and Expenditure Survey 2002 – 2005.

Wei, Shung-Jin, and Xiaobo Zhang (2009) "The Competitive Saving Motive: Evidence from Rising Sex Ratios and Saving Rates," NBER Working Paper 15093.

Hong Kong Census and Statistics Department (2007), "Marriage and Divorce Trends in Hong Kong, 1981 to 2006," Hong Kong Monthly Digest of Statistics, November 2007

Singapore Department of Statistics (2011), "Population Brief in 2010"

Singapore Department of Statistics (2010), "Statistics on Marriages & Divorces 2009"

Republic of China, Vital Records

http://ebas1.ebas.gov.tw/pxweb/Dialog/statfile9L.asp

Table 1. Descriptive Statistics of Korean Marriage Records (2002-2005)

Panel A. Groom's Characteristics

| | Korean | Non-Korean | Bride's Home Country | | | | |
| | | | China | Vietnam | Philippines | Other developing | Developed |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. Newlyweds (unit: thousand)	495.16	48.50	35.15	6.22	1.75	3.27	2.10
(% out of all newlyweds)	(91.08)	(8.92)	(6.47)	(1.14)	(0.32)	(0.60)	(0.39)
Age	31.28	41.01	42.33	39.15	38.14	37.57	32.19
Ever married (%)	11.58	43.97	50.50	27.30	28.36	33.86	13.47
Education (%)							
- Junior college or more	62.89	15.11	11.23	10.83	16.89	25.56	74.17
- High school	33.54	58.80	60.81	62.66	53.56	55.56	23.42
- Middle school or less	3.57	26.09	27.96	26.50	29.55	18.88	2.41
Employment status (%)							
- Work for a white-collar job	39.65	24.68	25.00	19.53	19.37	25.91	37.20
- Work for a managerial job	20.43	10.07	9.43	7.25	11.63	13.92	21.76
- Work in the service and retailer sector	18.68	27.24	29.63	20.74	19.49	25.22	16.55
- Work in the agricultural sector	1.31	8.11	4.61	25.91	21.06	9.05	1.07
- Work for a low-skilled job	11.39	25.02	26.71	23.88	23.50	21.79	6.82
- Work for the Military service	2.18	0.10	0.08	0.03	0.12	0.03	0.88
- Not working – Student	2.43	0.85	0.39	0.15	0.70	0.78	10.91
- Not working – Non-student	3.94	3.91	4.16	2.51	4.13	3.31	4.82
Imputed annual income (if working) [a]	22.60	24.50	24.55	24.28	24.26	24.59	24.34

Note: a) for individuals who are working for a job other than military, the earnings are imputed based on sex, age, education, occupation, and year of marriage. The unit is one million 2005 Korean won, roughly comparable to 1000 US dollars

Panel B. Bride's Characteristics

	Korean	Non-Korean	Bride's Home Country				
			China	Vietnam	Philippines	Other developing	Developed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. Newlyweds (unit: thousand)	495.16	48.50	35.15	6.22	1.75	3.27	2.10
(% out of all newlyweds)	(91.08)	(8.92)	(6.47)	(1.14)	(0.32)	(0.60)	(0.39)
% Currently living outside Korea	0.02	96.91	97.45	97.30	95.31	94.25	92.34
Age	28.80	32.61	35.31	22.62	25.80	27.55	30.57
Ever married (%)	13.54	48.60	64.77	1.52	1.46	13.86	11.45
Education (%)							
- College or more	59.89	13.71	6.88	4.46	43.25	47.81	76.27
- High school	36.52	46.41	48.25	45.88	50.41	41.34	22.27
- Middle school or less	3.59	39.87	44.87	49.66	6.33	10.84	1.46
Employment status (%)							
- Work for a white-collar job	24.68	6.07	5.96	2.01	6.78	7.01	17.57
- Work for a managerial job	15.04	2.33	1.45	0.71	4.30	5.40	15.12
- Work in the service and retailer sector	7.74	5.09	5.68	1.62	4.42	4.82	6.63
- Work in the agricultural sector	0.23	2.55	1.21	11.52	0.97	2.22	0.15
- Work for a low-skilled job	1.91	2.16	2.34	1.49	1.45	2.80	0.69
- Work for the Military service	0.18	0.13	0.09	0.12	0.18	0.19	0.59
- Not working – Student	2.15	1.38	0.82	1.01	1.03	4.12	7.66
- Not working – Non-student	48.09	80.30	82.45	81.53	80.88	73.43	51.60

Table 2. Descriptive Statistics of Japanese Marriage Records (2000 and 2005)

Panel A. Groom's Characteristics

	Japanese	Non-Japanese	Bride's Home Country				
			China	Philippines	Korea	Other developing	Developed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. Newlyweds (unit: thousand)	1415.95	54.42	20.72	17.47	11.56	4.18	0.49
(% out of all newlyweds)	(96.30)	(3.70)	(1.41)	(1.19)	(0.79)	(0.28)	(0.03)
Age	30.49	42.43	43.11	42.49	41.46	42.33	34.38
Ever married (%)	15.21	48.46	44.28	55.93	48.33	41.70	19.75
Not working (%)	3.36	4.31	4.26	3.76	4.63	5.64	7.61
Work for a large firm (%, if working)	40.46	25.98	28.97	22.23	24.85	29.09	34.30
Occupation (%, if working)							
- Professional and managers	31.12	25.25	25.35	22.76	28.32	24.48	44.77
- Clerical, information/logistics	18.27	17.80	18.11	17.78	17.87	16.42	15.81
- Sales and service	24.75	23.73	23.07	24.51	26.09	17.79	18.26
- Agriculture	1.22	2.29	2.78	2.03	1.80	2.48	1.11
- Production workers or not classified	21.77	29.47	29.14	31.49	24.68	37.30	17.59
- Security	2.88	1.45	1.55	1.44	1.24	1.52	2.45
Imputed education (%)[a]							
- 4 year college or more	35.01	29.10	27.37	29.48	27.37	28.15	39.66
- Junior college	17.28	12.52	12.98	12.10	12.98	11.81	15.92
- High school	38.77	44.69	46.17	44.54	46.17	45.28	34.79
- Middle school or less	6.36	11.34	11.14	11.49	11.15	12.57	6.13
Imputed annual income[b]	35.98	46.20	45.75	47.33	45.75	45.71	43.65

Panel B. Bride's Characteristics

	Japanese	Non-Japanese	Bride's	Home	Country		
			China	Philippines	Korea	Other developing	Developed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No. Newlyweds (unit: thousand)	1415.95	54.42	20.72	17.47	11.56	4.18	0.49
(% out of all newlyweds)	(96.30)	(3.70)	(1.41)	(1.19)	(0.79)	(0.28)	(0.03)
Age	28.56	31.08	31.36	28.05	34.69	32.35	31.68
Ever married (%)	13.92	32.33	44.31	12.34	40.36	35.27	24.07
Not working (%)	33.60	70.31	66.46	78.46	67.41	66.71	41.36
Work for a large firm (%, if working)	37.17	13.77	15.28	5.00	17.52	15.45	35.44
Occupation (%, if working)							
- Professional and managers	25.09	13.16	14.03	5.85	16.85	9.27	58.60
- Clerical, information/logistics	36.41	14.56	17.01	4.57	22.24	8.55	14.74
- Sales and Service	26.19	31.59	29.74	30.81	37.87	29.74	12.98
- Agriculture	0.26	2.77	4.29	2.02	0.24	4.60	0.00
- Production workers or not classified	11.47	37.28	34.24	56.11	22.27	47.13	12.98
- Security	0.59	0.64	0.69	0.64	0.53	0.72	0.70

a) Educational attainment and earnings are imputed based on sex, age, employment status and occupation using the Japanese Employment Status Survey (2002 and 2007). Those who are not in work is treated as an occupational group. The unit is one hundred thousand Japanese yen, roughly comparable to 1000 US dollars.

Table 3: Determinants of Marrying Foreign Wives

Probit model: marginal effect

	Korea			Japan		
	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.007***	0.007***	0.006***	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ever married	-0.019***	-0.020***	-0.019***	0.008***	0.007***	0.005***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.006)	(0.006)
High school	0.076***	0.100***	0.092***	-	0.094***	0.057***
	(0.001)	(0.001)	(0.001)		(0.012)	(0.001)
Middle school or less	0.165***	0.253***	0.234***	-	-0.010***	0.004***
	(0.003)	(0.004)	(0.004)		(0.0002)	(0.001)
Managerial job	-0.010***	-	-0.017***	-0.004***	-	-
	(0.001)		(0.001)	(0.000)		
Service and retailer sector	0.005***	-	0.010***	0.001***	-	-
	(0.001)		(0.001)	(0.000)		
Agricultural sector	0.069***	-	0.072***	0.006***	-	-
	(0.003)		(0.003)	(0.001)		
Low-skilled job	0.012***	-	0.022***	0.010***	-	-
	(0.001)		(0.001)	(0.001)		
Military/Security service	-0.035***	-	-	-0.010***	-	-
	(0.001)			(0.000)		
Not working – Student	0.039***	-	-	-	-	-
	(0.003)					
Not working – Non-student	-0.019***	-	-	-0.019***	-	-
	(0.001)			(0.000)		
Large firm	-	-	-	-0.010***	-	-
				(0.000)		
Log income	-	0.042***	0.073***	-	-	0.017***
		(0.002)	(0.002)			(0.001)
Pseudo R-sq	0.30	0.31	0.32	0.17	0.17	0.19
No. obs.	534,327	490,437	490,437	1,470,369	1,470,116	1,420,164

Note: Standard errors are in parenthesis. The omitted categories are "junior college or more" for education and "white collar" jobs for occupation. Year dummy variables are included. Educational background and log annual earnings are imputed from age and occupation based on Employment Status Survey 2002. Log income is imputed. Large firms include those working for a firm that employs 100 or more workers or those who are in management. Low-skilled job refers to production workers for Japan. Not working includes both students and non-students who do not have a job for Japan.

Table 4: Choice of Bride's Nationality Based on Groom's Characteristics

Panel A: Korea

(Unit: Percentage points)	Korea	China	Vietnam	Philippines	Other developing	Developed
	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.46	0.34	0.05	0.02	0.04	0.01
Ever married	1.29	-0.77	-0.30	-0.11	-0.11	0.00
High school	-6.55	5.13	0.87	0.26	0.45	-0.16
Middle school or less	-14.81	11.45	1.90	0.81	0.87	-0.22
Service and retailer sector	-4.00	0.51	1.87	0.67	0.92	0.03
Agriculture sector	-0.60	0.33	0.08	0.07	0.18	-0.06
Low-skilled job	-0.34	0.21	0.04	0.05	0.09	-0.05
Not working – Student	2.99	-1.95	-0.35	-0.14	-0.42	-0.13
Not working – Non-student	1.30	-1.09	-0.19	-0.03	-0.15	0.16
No obs., Pseudo R-sq				534,327	0.27	
% obs. (prediction= choice)				91.55		

Panel B: Japan

(Unit: Percentage points)	Japan	China	Philippines	Korea	Other developing	Developed
	(1)	(1)	(2)	(3)	(4)	(5)
Age	-0.20	0.08	0.05	0.04	0.02	0.001
Ever married	-0.91	-0.07	0.72	0.29	-0.02	-0.01
Managerial and Professional	0.35	-0.16	-0.16	-0.02	-0.02	-0.003
Sales and Service	-0.22	0.05	0.09	0.10	-0.02	-0.003
Agriculture	-0.90	0.51	0.19	0.09	0.11	-0.0002
Low-skilled job	-1.01	0.36	0.35	0.13	0.17	-0.0005
Security	0.96	-0.34	-0.29	-0.27	-0.06	0.002
Not working	1.81	-0.74	-0.57	-0.39	-0.13	0.03
No obs., Pseudo R-sq			1,470,369	0.13		
% obs. (prediction= choice)				96.27		

Note: This table reports the marginal effects of multinomial logit regression. We additionally include dummy variables for occupation, year, and region for Korea, a dummy variable for year for Japan. Consider Panel A. among Korean grooms, one year increase in age of a groom is associated with 0.34 percentage point increase in the likelihood of marrying a Chinese bride, 0.05 percentage point increase in the likelihood of marrying a Vietnamese bride and so on, in expense of decreasing the likelihood of marrying a Korean bride.

Table 6: Non-citizen brides in Korea and women in their home country

	Primary	Secondary	Tertiary
			Unit: percent
Panel A. Chinese			
Brides	5.78	87.26	6.96
Population (Women)	27.18	64.72	8.11
Panel B. Vietnamese			
Brides	6.13	85.34	8.53
Population (Women)	35.92	57.77	6.31
Panel B. Filipino			
Brides	1.31	46.42	52.27
Population (Women)	22.37	39.33	38.30
Population (Female overseas workers)	13.64	36.89	49.47

Table 7: Tradeoff between bride's characteristics

Panel A: Korea

	Grooms		Bride's home country			
	Korea	Korea	China	Vietnam	Philippines	Other developing
	(1)	(2)	(3)	(4)	(5)	(6)
Age	42.30	37.52	35.26	23.44	25.93	38.72
Ever married (%)	50.29	60.87	64.49	2.89	2.10	44.53
Education (%)						
- Junior college or more	11.33	22.84	6.93	6.60	42.02	31.60
- High school	61.04	51.62	48.45	48.36	51.60	64.83
- Middle school or less	27.64	25.54	44.61	45.04	6.39	3.57
Not working-not student(%)	4.05	23.72	82.11	76.14	74.46	68.58
Agriculture(%)	4.65	1.80	1.23	10.63	0.18	2.27

Panel B: Japan

	Grooms		Bride's home country			
	Japan	Japan	China	Philippines	Korea	Other Developing
	(1)	(2)	(3)	(4)	(5)	(6)
Age	43.18	38.52	31.42	28.44	36.02	32.28
Ever married (%)	45.85	44.18	44.58	12.58	43.64	32.46
Not working (%)	4.22	5.56	4.22	4.12	4.45	4.06
Agriculture (%)	2.52	2.17	2.52	2.40	2.74	2.54
Low-skilled job (%)	19.44	18.97	19.44	19.49	18.46	18.00

Table 8: Determinants of Demand for Non-citizen brides

	Korea				Japan			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	1990	1995	2000	2005	1992	1997	2002	2007
% non-citizen brides	0.2	2.6	2.2	10.2	2.6	2.7	3.7	4.5
Panel A Sex Ratio [a]								
- all	104.5	103.9	104.0	103.4	102.1	102.6	102.3	102.8
- with tertiary education	182.0	150.6	127.3	111.8	102.4	92.5	88.5	89.8
- without tertiary education	87.0	86.4	89.3	93.6	101.9	104.9	111.5	115.9
Panel B % with tertiary education [a]								
- Men	31.0	39.5	46.8	58.1	39.9	43.2	45.8	53.9
- Women	17.8	27.3	38.3	53.7	40.0	46.3	51.6	59.9
Panel C % Singles [b]								
- Men: with tertiary education	1.8	3.6	9.0	26.7	25.1	29.8	36.2	40.6
- Men: without tertiary education	4.3	8.5	17.5	33.5	28.3	33.9	41.2	44.0
- Women: with tertiary education	5.1	5.7	8.4	17.4	17.4	21.0	28.0	32.3
- Women: without tertiary education	1.6	2.3	4.3	10.1	14.1	18.6	26.3	31.3
Panel D Distribution of marriages [c]								
(Edu. Men – Edu. Women)								
- tertiary – tertiary	5.9	21.9	32.1	54.6	29.1	33.2	35.9	40.5
- tertiary – non tertiary	11.4	10.8	13.1	11.9	15.3	15.7	14.5	14.8
- non tertiary – tertiary	1.9	4.8	7.3	9.5	10.1	11.6	14.1	16.2
- non tertiary – non tertiary	80.8	62.5	47.5	24.0	45.5	39.5	35.6	28.5

Source: Population Census of Korea and Employment Status Survey of Japan.
Note: a) We use people whose age is between 20 and 39 b) We use people whose age is between 30 and 39 so that we do not include people who are still in college for education. c) For columns 1 to 4, we use marriage registers – 1992, 1995, 2000, and 2005. The sample consists of newlyweds whose age is from 30 to 39. Without tertiary education, we mean educational attainment is less than or equal to high school graduates. For columns 5 to 8, we use Employment Status Survey 1992, 1997, 2002 and 2007.

Table 10: Descriptive statistics of aggregate analysis data

	All	Major exporters[a]	Non-major exporters[a]
	(1)	(2)	(3)
Panel A. Korea			
No. obs.	1,135	28	1,107
No. of brides (unit: 1000 persons)	575	2,988	-
GDP per capita (unit: 1000 constant USD)	7,345	13,846	7,181
Volume of trade with Korea (unit: 1 mil. USD)	242	2,713	179
Physical distance (unit: kilometer)	9,515	4,096	9,656
Panel B. Japan			
No. obs.	1,232	49	1,183
No. of brides (unit: 1000 persons)	3,555	4,052	-
GDP per capita (unit: 1000 constant USD) [b]	6,832	8,385	6,768
Volume of trade with Japan (unit: 1 mil. USD)	510	5,313	312
Physical distance (unit: kilometer)	10,172	7,968	10,266

Note: The unit of observations is country times year. a) Major exporters mean the observations that send more than 100 brides to Korea or Japan. b) By constant USD, we mean one 2005 US dollar.

Table 11: Likelihood of Becoming a Major Bridal Exporting Country

	Korea			Japan		Taiwan
	(1)	(2)	(3)	(4)	(5)	(6)
$|\ln Y^H - \ln Y^S|+$	0.616**	1.486***	1.011***	0.312***	0.549***	0.210
	(0.282)	(0.448)	(0.388)	(0.128)	(0.265)	(0.155)
	[0.003]	[0.029]	[0.064]	[0.002]	[0.006]	[0.001]
$|\ln Y^H - \ln Y^S|-$	0.875	1.659	-	-	-	-0.351
	(1.311)	(1.086)				(0.518)
	[0.004]	[0.032]				[-0.002]
ln (Trade)	0.449***	0.632***	0.502***	0.563***	0.857***	0.289***
	(0.147)	(0.231)	(0.188)	(0.175)	(0.275)	(0.087)
	[0.002]	[0.012]	[0.032]	[0.004]	[0.009]	[0.001]
ln (Distance)	-1.351***	-	-	-0.041	-	-0.527***
	(0.486)			(0.508)		(0.208)
	[-0.007]			[-0.0003]		[-0.003]
Region Dummy	No	Yes	Yes	No	Yes	No
Mean of Dep. Var.	0.062	0.137	0.175	0.048	0.130	0.015
N	1108	504	303	1031	377	905
PsudoR2	0.58	0.59	0.51	0.44	0.51	0.436

Note: We use probit model to examine the relationship between macroeconomic characteristics of a country and its likelihood of becoming a major country that exports bride to either Korea or Japan. The unit of observations is country times. Standard errors are clustered at country-level and reported in parenthesis. Marginal effects are reported in brackets. All specifications include year dummy variables.
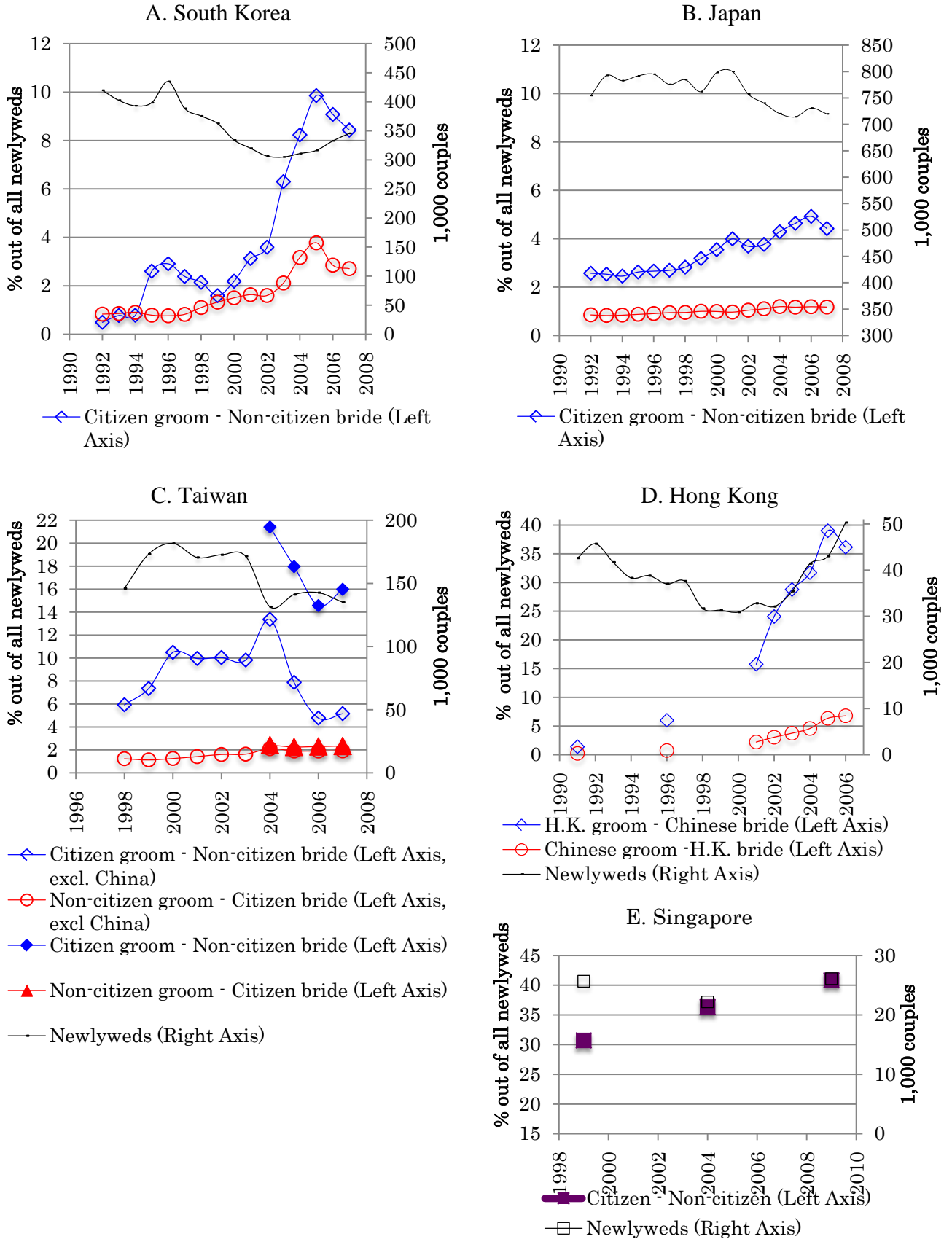
Table 8: Determinants of Demand for Non-citizen brides
Other East Asian Countries

A. Taiwan

Year				
	(1)	(2)	(3)	(4)
Year	1990	1995	2000	2005
% non-citizen brides	0.2	2.6	2.2	10.2
Panel A Sex Ratio[a]				
- all	104.5	103.9	104.0	103.4
- with tertiary education	182.0	150.6	127.3	111.8
- without tertiary education	87.0	86.4	89.3	93.6

B. Hong Kong

C. Singapore

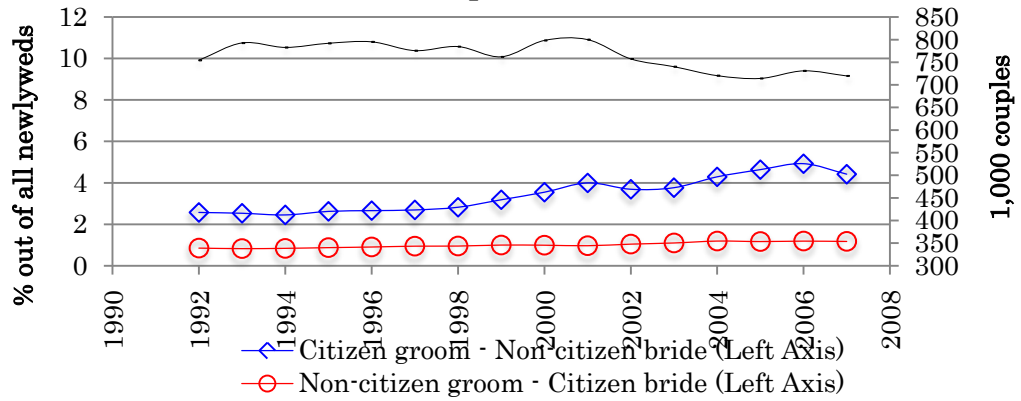# Figure 1 Cross-Border Marriages in East Asia

A. South Korea

Citizen groom - Non-citizen bride (Left Axis)

B. Japan

Citizen groom - Non-citizen bride (Left Axis)

C. Taiwan

Citizen groom - Non-citizen bride (Left Axis, excl. China)

Non-citizen groom - Citizen bride (Left Axis, excl China)

Citizen groom - Non-citizen bride (Left Axis)

Non-citizen groom - Citizen bride (Left Axis)

Newlyweds (Right Axis)

D. Hong Kong

H.K. groom - Chinese bride (Left Axis)

Chinese groom -H.K. bride (Left Axis)

Newlyweds (Right Axis)

E. Singapore

Citizen - Non-citizen (Left Axis)

Newlyweds (Right Axis)

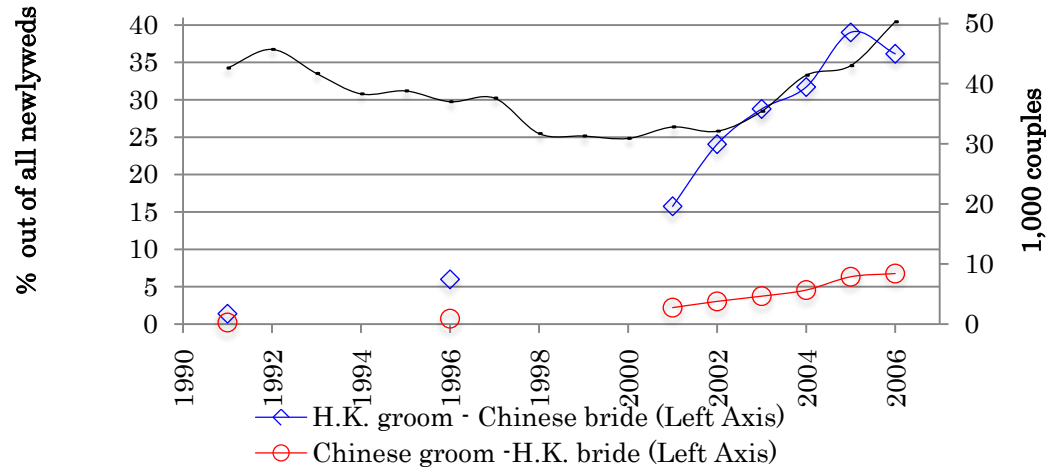# Figure 1 Cross-Border Marriages in East Asia (cont.)

A. South Korea
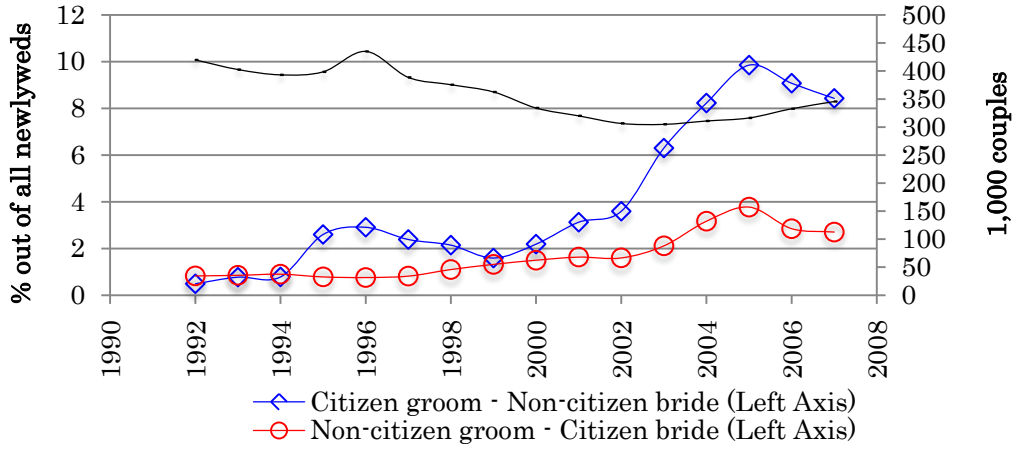
B. Japan
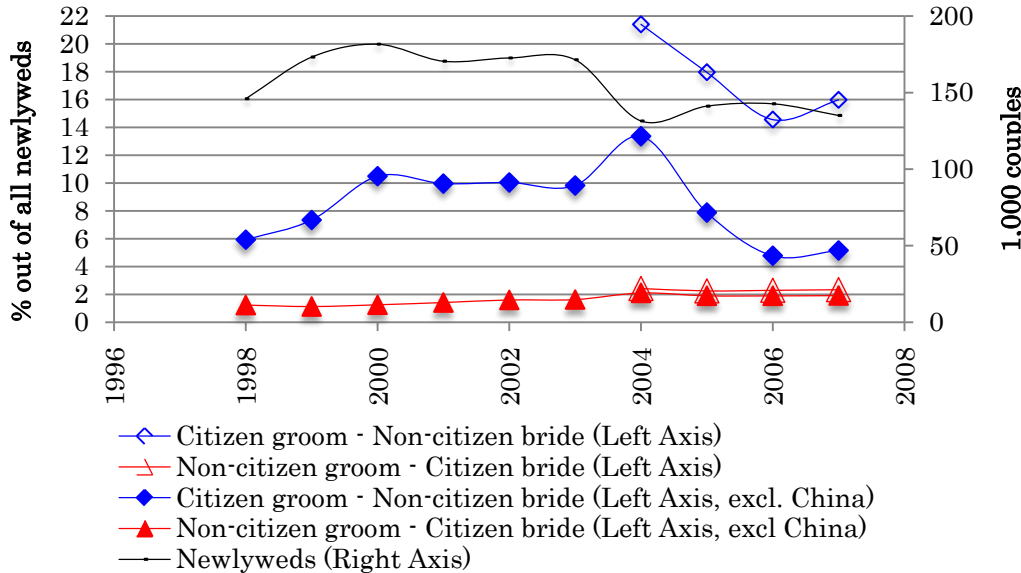
C. Taiwan

Figure 1 Cross-Border Marriages in East Asia (cont.)

D. Hong Kong

Legend:
- H.K. groom - Chinese bride (Left Axis)
- Chinese groom -H.K. bride (Left Axis)

E. Singapore

Legend:
- Citizen - Non-citizen (Left Axis)
- Newlyweds (Right Axis)
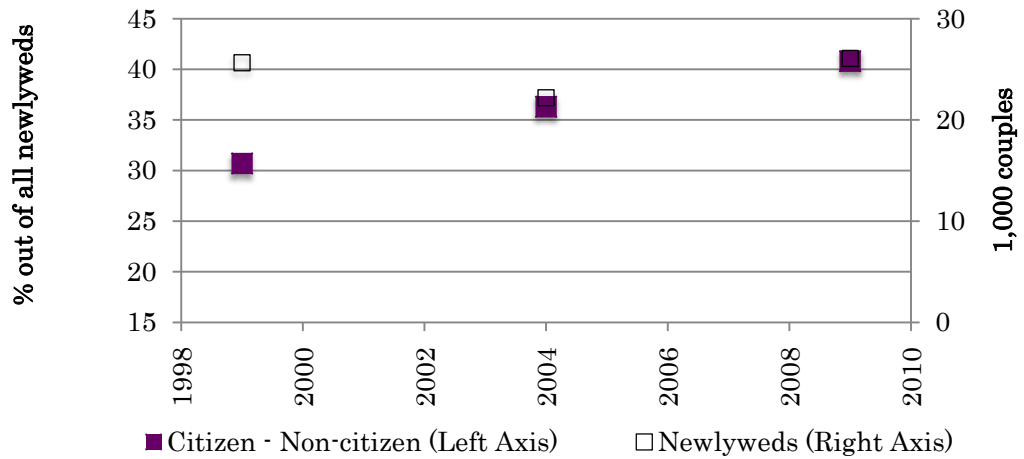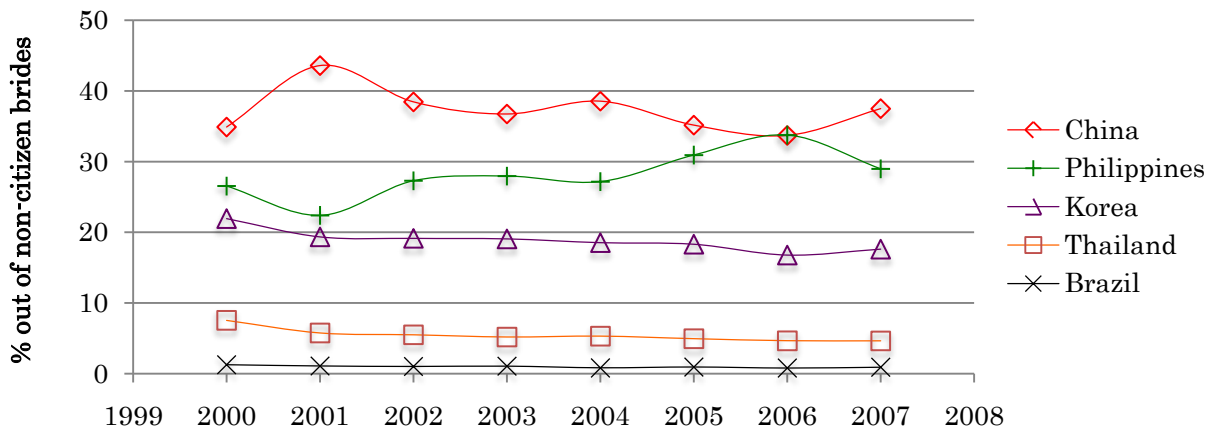
Figure 2 Sources of Non-Citizen Brides

A. South Korea

B. Japan

C. Taiwan