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Brides for Sale:

Cross-Border Marriages and Female Immigration[*]

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Abstract

Developed East Asian countries import a large number of women from abroad as brides every year, although such cross-border marriages virtually did not exist 20 years ago. With a theoretical framework and empirical evidence, we argue that developed Asian countries' demand for foreign brides is the result of rapid improvement in women's economic status and persistency in household arrangements that insufficiently incorporate women's improved status in marriage. Our analyses show how a country's marriage-market imbalance has been transmitted globally, which may be useful to understand the global implications of an increasing sex-ratio imbalance in China.

1 Introduction

Every year, a large number of women immigrate to developed countries in East Asia as brides. This phenomenon virtually did not exist until the early 1990s, but foreign brides currently comprise 4 to 35 percent of newlyweds in Japan, South Korea (hereafter Korea), Singapore, and Taiwan.[1] This paper aims to provide the first economic study to systematically explain this phenomenon observed in East Asia on the basis of theoretic and empirical analyses.

Before we lay out our analysis, it may be worth emphasizing that the phenomenon of mass "bride imports" in East Asia deserves in-depth economic study for multiple reasons. For example, large-scale marriage immigration may affect numerous issues that economists care about, such as assimilation of immigrants and discrimination against immigrants and mixed-ethnicity children resulting from these cross-border marriages (see discussions in Yang and Lu (2010) and various media reports, including the *New York Times* (Onishi (2007)). Furthermore, a large influx of foreign brides coincides with the fact that many native women, particularly those who are educated, remain single.[2] Given that families still provide a significant portion of support to retirees/elderly in the East Asia, these women who remain single may exacerbate the demand for formal social securities when they reach their retirement age.

In addition, analyzing the bride imports observed in East Asia may help shed light on some topics that economists have been researching intensively. China, for example, had about 30 million more men than women at age 25 or below in 2005 (Stinebrickner and Stinebrickner (2008)). The excess men cannot be married in the domestic marriage market, and they arguably account for household savings for a marriage motive (Stinebrickner and Stinebrickner (2008)) and crimes (Inoue and Solon (2010)) in China. Therefore, it is reasonable to imagine that China may start importing brides from abroad to ease its marriage-market imbalance. Given the cultural proximity and the large-scale bride imports, developed

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[1] In Hong Kong, less than 2 percent of Hong Kong grooms married brides from China in1991, but the figure grew rapidly in the 2000s and reached 39 percent in 2005. We consider these brides from China as marriage immigrants. However, we do not include Hong Kong in our analysis because of data limitations. For example, we could not access datasets informing us about marriage immigrants from countries other than China.

[2] This phenomenon has received much attention from the media around the world, policy makers, and researchers. Examples include the lead article "Asia's Lonely Hearts" in *The Economist* (August 20-26, 2011), as well as Lee (2008), Park and Choi (2008), Sato (1988), and Wang and Chang (2002).

East Asian countries can be an informative setting for researchers to examine risk factors related to China's potential bride imports.

This paper argues that the rapid improvement of women's socioeconomic status, accompanied by a slow adjustment of household arrangements, accounts for the large-scale bride imports in East Asia. Within a theoretical framework, we show that the dramatic improvement in women's socioeconomic status in a developed East Asian country raises women's reservation utility for marriage, especially for highly educated women. However, its marriage-market institution (e.g., division of work and bargaining power in a household) has not adjusted enough to increase women's gains from marriage accordingly. Therefore, some women, especially highly educated ones, find marriage unacceptable and remain single, which leads to an imbalance in effective sex ratios. As a result, men who are not attractive to women (e.g., those with low socioeconomic status) cannot find a match in the domestic marriage market and seek for a bride abroad, generating cross-border marriage. Furthermore, our model suggests that foreign brides tend to come from developing countries that are close to the developed East Asian country economically, culturally, or geographically. We present empirical results consistent with our model assumptions and its implications using various datasets from Japan, Korea, Singapore, and Taiwan.

An important aspect regarding the large-scale bride immigration is whether immigrants cause "brain-drain" in their home country, which could occur if immigrants are positively selected, in terms of education, for example (Borjas (1987)). Our empirical analysis suggests that foreign brides are, on average, more educated than their native counterparts, while our theoretical model generates ambiguous predictions regarding the direction of selection for marriage immigration.

Why mass bride imports are prevalent in the developed East Asian countries but not in other developed country is an issue worthy of discussion, since developed countries have experienced women's empowerment and slow adjustments in the marriage institution.[3] Goldin (2006), for example, documents in detail that U.S. women who belonged to the early

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[3] A growing number of studies examine the relationship between lagged changes in institutions (social norms or cultures) and household formation in other developed countries. For example, in a U.S. study, Fernández et al. (2004) provide empirical and theoretical evidence that accounts for a lagged change in institutions captured by the perceptions of marrying a well-educated woman. Buchmann et al. (2008) attribute lower fertility rates of some developed countries (e.g., Italy, Spain, Germany and Japan) to a lagged change of social norms behind the enhancement of female labor-market opportunities.

cohorts that experienced sharp improvements in women's status faced a tradeoff between career and marriage, just as well-educated Asian women today in developed Asian countries. Some readers may be skeptical about our hypothesis for the following reason: if the main mechanism behind the bride imports in East Asia is applicable to other settings, similar patterns may occur in the U.S. or other developed countries, but those patterns are not well documented. Multiple factors may account for the difference between East Asian developed countries and the others. First, developed East Asian countries have relatively lenient immigration policies for marriage immigrants compared to other developed countries.[4] Moreover, developed East Asian countries have experienced more rapid change in women's socioeconomic status; thus, they have had less time to ease the need for foreign brides, compared to other developed countries. Finally, strong gender norms in East Asian countries may account for the mass bride imports. Many sociologists and researchers in other related disciplines document that married men in East Asia barely participate in home production, regardless of their wives' economic status (e.g., Tsuya et al. (2000)). This means that, all else being equal, women's surplus from marriage in East Asia is smaller than that in another developed country that has no gender-role-related constraints in household decisions. Therefore, a reduction in the surplus of marriage may push women in an East Asian country to choose singlehood rather than marriage, while women in other developed countries may still view marriage is preferable to remaining single. We formally provide this mechanism in our theoretical model.

Besides the studies discussed earlier, this paper is related to the economics literature on marriage pioneered by Becker (1973), especially to studies on the sex-ratio imbalance and its consequences in marriage markets (e.g. Edlund (1999), Foster and Rosenzweig (2001), Angrist (2002), Abramitzky et al. (2011), Lafortune (2011), see Buchmann and DiPrete (2006, Chapter 3) for an overview of the earlier literature). Our paper contributes to these studies by suggesting that the sex-ratio imbalance can be systematically transmitted to other countries through marriage immigration.

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[4] The International Marriage Broker Regulation Act enacted in 2005 in the U.S., for example, bans brokers who match Americans with foreigners for marriage, and it also restricts the issuance of K-1 fiancée visas. In contrast, such brokers are legal in developed East Asian countries and getting a visa for a marriage immigrant is relatively easy. In Korea, it takes less than 20 days to get such a visa.

This paper also contributes to the vast economic literature on immigration (Card (1990), Altonji and Card (1991), Borjas (1999)), in that non work-related marriage immigration may follow the same economic mechanism behind work-related immigration and that studying both types of immigrations can potentially be beneficial to understanding the nature of immigration and related outcomes.

Finally, this paper is related to many studies on Asian marriage immigration in sociology and other disciplines (see a review in Yang and Lu (2010)).[5] This paper differs from these existing studies in that we provide a formal economic framework and explain the underlying mechanisms behind the mass bride imports across developed Asian countries, instead of providing anecdotal or qualitative descriptions of the same phenomenon.

The rest of the paper is organized as follows. Section 2 presents background information about cross-border marriages in East Asia. Section 3 presents a theoretical framework, and Section 4 shows our empirical analysis. Section 5 discusses additional issues regarding marriage immigration. Section 6 concludes.

2 Institutional Background

We use aggregate statistics from marriage records in Japan, Korea, Singapore, and Taiwan, and plot the fraction of newlywed men whose brides are foreigners among all native grooms in each calendar year (Figure 1). By a "native," we mean a person who holds citizenship of the country of interest, while a foreigner does not. For example, for Japan, a native groom is a groom who holds Japanese citizenship, while a foreign bride is a bride who got married in Japan but does not hold Japanese citizenship. The prevalence of foreign brides has increased over time in all countries except for Taiwan.[6] Japan (blue line) exhibits a steady increase in

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[5] Economics studies of marriage immigration per se are rare but exist. Hryshko et al. (2011), for example, study the Danish policy change that bans an immigrant from bringing a spouse from his/her home country and the policy impact on the immigrants' educational attainment. Nicely summarized in their work, many non-Western immigrants in Scandinavia choose their spouses from their country of origin and bring them to their country of residence. The marriage immigration in East Asia that we study is different from that in Scandinavian countries in two respects. One is that natives, instead of immigrants, bring a spouse from a foreign country; the other is that almost all marriage immigrants in East Asia are women, whereas a significant fraction of marriage immigrants are men in Scandinavia.

[6] It is possible that a foreign bride in a marriage record can be an economic immigrant who later married a native man, and most marriage records do not provide direct information distinguishing marriage immigrants and economic immigrants among foreign brides. However, additional surveys suggest that a significant fraction of foreign brides are marriage immigrants. In Korea, for example, about 79 percent of non-Korean women (including Korean-Chinese) who married Korean men came to Korea because of marriage; only 7.3 percent

foreign brides, reaching about 4 percent of all brides in 2007. Korea (red line) shows the most rapid growth in marriages between native grooms and foreign brides, increasing from less than 1 percent of all newlyweds in 1991 to 8 percent in 2007. In Singapore, foreigners consist of 30 to 40 percent of brides in 1999 and 2009. The graph for Taiwan requires additional explanation. The green line referred to as "TW_exChina" shows the fraction of Taiwanese grooms who have non-Taiwanese brides who are not from Mainland China, Hong Kong, or Macao. We use this data series because it is available for a longer time period than the number of all foreign brides. Note that that data series is highly correlated with the fraction of Taiwanese grooms who have foreign brides (including women from China, Hong Kong, or Macao) as denoted by the dashed green line. The fraction of Taiwanese grooms who have foreign brides steadily increased until 2004 but has dropped since. That is because in 2004 the Taiwanese government strengthened its immigration policies to discourage marriage immigration.
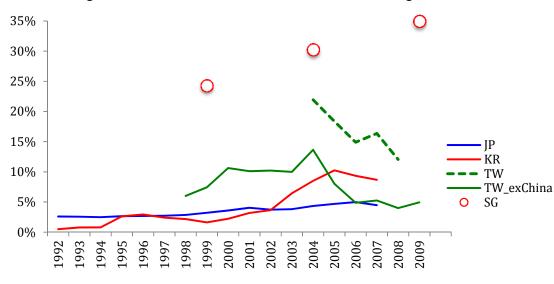
Figure 1 Fraction of Native Grooms Who Have Foreign Brides

Note: The graph shows the number of native grooms who have foreign brides, divided by the total number of native grooms who applied for a marriage certificate in each year. JP, KR, SG, and TW refer to Japan, Korea, Singapore, and Taiwan, respectively. TW_exChina excludes brides from China, Hong Kong, and Macao.

The increasing prevalence of foreign brides is correlated with the improvement in women's socioeconomic status in developed East Asian countries. As a proxy for the

came to Korea for work and then got married (Seol et al. (2009)).

women's status relative to men's, we use the difference in the fraction of college-educated among men and women. For this analysis, we focus our attention on individuals whose age is between 20 and 39, because they are presumably actively participating in the marriage market, and we calculate the fraction of college-educated for each sex (see Appendix 2 for the data source and other details).

Table 1 Cross-border Marriages and Socioeconomic Settings in East Asia

Year	Natives Marrying a Foreigner [a]		College Educated [b]		Diff. in % Unmarried (College vs. Not) [c]		Sex Ratio [d]
	Men	Women	Men	Men – Women	Men	Women	
	(%)	(%)	(%)	(%pts.)	(%pts.)	(%pts.)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Japan							
1992	2.6	0.9	36.1	-1.6	-3.2	3.3	102.1
1997	2.7	1.0	39.0	-4.2	-4.0	2.4	102.6
2002	3.7	1.1	41.6	-6.5	-5.0	1.7	102.3
2007	4.5	1.2	47.9	-7.0	-3.4	1.0	102.8
Panel B. Korea							
1990	0.2	1.0	31.0	13.2	-2.5	3.5	104.5
1995	2.6	0.8	39.5	12.2	-4.9	3.4	103.9
2000	2.2	1.5	46.8	8.5	-8.5	4.1	104.0
2005	10.2	4.2	58.1	4.4	-6.8	7.3	103.4
Panel C. Singapore							
2000	24.3	10.9	39.4	3.0	-4.6	10.8	96.6
2010	35.0	13.2	63.3	-2.6	-10.5	7.8	94.5
Panel D. Taiwan [e]							
1998	5.9	1.2	25.1	1.4	-	-	105.0
2000	10.5	1.3	31.9	0.1	-	-	104.8
2005	8.6	2.3	49.8	-3.8	-	-	103.4
2008	4.0	2.1	55.4	-4.2	-	-	102.2

Notes: See Section 2 of the Appendix for sources and definitions for each country. a) Fraction of native grooms who married foreign brides (column 1) and that of native brides who married foreign grooms (column 2). b) Fraction of college-educated among men whose age is between 20 and 39 (column 3). The numbers in column 4 are the fraction of college-educated men among men minus the fraction of college-educated women among women ages 20 to 39. College includes junior college. c) We use the population whose age is between 30 and 39 to exclude individuals enrolled in a tertiary-education institute who may postpone their marriage because of schooling. For each sex and education level, we compute the fraction of unmarried people. We then report the difference in this fraction between the college-educated and non-college-educated (see details in Appendix 2). d) We use the population whose age is between 20 and 39. Sex ratio refers to the number of men divided by women times 100. e) Foreign brides exclude Chinese brides from Mainland China, HK, and Macao. The drop in the fraction of foreign brides in 2005 and 2008 is caused by immigration policy changes since 2000. The immigration policy changes include language proficiency tests, interviews, and refusal to issue a spouse visa if the age gap between a groom and bride is over 20 years (see Kim et al. (2010) for details).

Column 3 of Table 1 reports the fraction of college-educated men among men aged between 20 and 39, and column 4 reports our measure of the gender gap between men's educational attainment and women's. For all countries, the values in column 4 decrease over time, implying that women's educational attainment relative to men's has been improving. Specifically, the value in the first row (i.e., -1.6) means that the fraction of college-educated among women is 1.6 percentage points larger than that of men. Women's educational attainment relative to men's is significantly correlated with the fraction of foreign brides among newlyweds (reported in column 1 of Table 3).[7] A 1 percentage-point increase in women's college education relative to men's is correlated with a 1.04 percentage-point increase in the fraction of grooms who have foreign brides among newlyweds, and this positive correlation is significant at the 1-percent level (see Table O.1 of Online Appendix).[8] We postpone the discussion of the rest of Table 1 until Section 4.

A substantial number of foreign brides met their spouses in connection with a "marriage tour" (Wang and Chang (2002), Seol, Suh, Lee and Kim (2009), Park and Choi (2008), and Presidential Committee on Social Inclusion in South Korea (2005)).[9] In a marriage tour, a marriage broker in a country, which we will refer to as the host country, recruits men looking for spouses abroad. Another marriage broker recruits a group of women outside the host country (e.g., China, Vietnam, or the Philippines). We refer to the country where these women reside as the source country. When sufficient numbers of men and women are recruited, the two brokers contact one other, and the broker in the host country organizes a group tour of the source country for the recruited men. The men and women have a few group dating sessions, during which they decide whom to marry. When they find their mate, they apply for a marriage license from the bride's local government. Then the groom

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[7] The statistics from Taiwan require some explanation. First, because of data availability, the statistics reported in Panel D exclude brides from Mainland China, Hong Kong, and Macao (see details in Section 2.4 of the Appendix). Second, the decrease in the importance of foreign brides in 2005 and 2009 is caused by immigration policy changes. In particular, the Taiwanese government imposed stricter restrictions regarding marriage immigrants in response to the public outrage over foreign brides (Seol, Suh, Lee and Kim (2009)). Before the policy change was introduced, the fraction of foreigners among brides had continually increased.

[8] Online Appendix is available at www.soohyunglee.com/research.

[9] Developed East Asian countries have more lenient policies to provide visas for marriage immigration than the U.S. Furthermore, they have no legal restriction on the international marriage-brokerage agencies described in the text. In contrast, U.S. legislators enacted the International Marriage Broker Regulation Act of 2005 and started to restrict the issuance of K-1 fiancée visas because of the upsurge in cross-border marriages through such marriage-brokerage agencies.

goes back to his country and applies for a marriage certificate in his country, so that his bride can get a visa to enter his country as a legal immigrant. Grooms generally pay the brokerage fees, legal processing fees, and payments to the bride's family. The total costs are estimated to be approximately 10,000 U.S. dollars.[10] Until marriage, interactions between men and women are minimal because the process is rapid (about 10 days for the marriage tour and 6 months until the women's immigration), and communication takes place through interpreters hired by the marriage brokers because the man and woman often do not speak a common language.

3. Theoretical Framework

This section provides a simple theoretical model to illustrate our main argument of the interaction among women's socioeconomic status, gains from marriage, and demand for foreign brides in a developed Asian country.

3.1 Setup

3.1.1 Overview

There are two countries, R (rich) and P (poor). At time 0 in each country, a unit measure of men are born, as are a unit measure of women. Individuals are endowed with one unit of time and wage rates. At the beginning of time 1, individuals participate in a marriage market consisting of people from both countries (which we will shortly describe formally) and decide whether and to whom they will get married and in which country they will reside. We assume that a person's wage rate and country of birth are observable to other marriage market participants. We assume that a married couple should live in the same country and that an individual born in country $b \in \{P, R\}$ can immigrate to the other country $-b$ only if his/her spouse was born in country $-b$. After marriage decisions are made, people conduct market and non-market productions and receive utilities based on their decisions. We denote by $w_{i,b} > 0$ with $b \in \{P, R\}$, person i's wage rate in country b and by w_i the wage rate in the country where person i chooses to reside at time 1. We assume $w_{i,R} > w_{i,P}$ to capture that

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[10] In Japan, the cost ranges from 10,000 to 15,000 U.S. dollars (authors' own survey). Wang and Chang (2002) report 9,100 U.S. dollars as the average fee charged by agencies in Taiwan that brokered the marriages of Taiwanese men and Vietnamese women in 2000. In Korea, the cost ranges roughly from USD 8,000 to 12,000 (Presidential Committee on Social Inclusion in South Korea (2005)).

country R is more developed than country P. For simplicity, we assume homogeneity in returns from immigration by setting $w_{i,R}$ equal to $\alpha w_{i,P}$ with $\alpha > 1$.

3.1.2 Utility from Being Single

If a person remains single at time 1, person i's utility depends on the consumption of market goods c_i, leisure l_i, and non-market goods from home production H_i as follows:

$$U_i = \ln c_i + \ln l_i + \ln H_i.$$

(1)

With $0 < \rho < 1$, inputting h_i unit of time yields $\rho h_i^{1/2}$ unit of non-market goods if person i is male and $(1 - \rho)h_i^{1/2}$ unit if person i is female. Having $\rho = 0.5$ implies that men and women are equally productive in home production, whereas $\rho < 0.5$ implies that women are more productive than men. Person i maximizes U_i subject to his/her time and budget constraints: $g_i + l_i + h_i \leq 1$ where g_i is person i's time for market production, and $c_i \leq w_i g_i$. We denote the resulting utility as R_i.

3.1.3 Utility from Being Married

Once man m and woman w form a household and decide on a country of residence, they jointly decide how to allocate household income and time to maximize a weighted sum of the two's utilities, subject to resource constraints:

$$\max \quad \mu U_m + (1 - \mu)U_w \qquad (2)$$

$$g_i + l_i + h_i \leq 1 \text{ with } i \in \{m, w\} \text{ and } c_m + c_w \leq w_m g_m + w_w g_w,$$

where $U_i, i \in \{m, w\}$ is defined the same as in equation (1), and parameter $\mu, 0 < \mu < 1$ governs m's bargaining weight in household decisions relative to his wife w. We assume that μ is exogenously given, instead of depending on a person's outside option. Different from a singles person, a married person shares non-market goods as public goods with his/her spouse, that is

$$H_m = H_w = H = \rho h_m^{1/2} + (1 - \rho)h_w^{1/2}.$$

That public good assumption implies that, in our model, marriage can be beneficial to both a husband and a wife compared to remaining single.[11]

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[11] Our assumptions for the household decision follows unitary models developed in the literature of marriage

If their birth countries are different (cross-border marriage), man m and woman w will choose a country of residence by selecting a country that provides a higher weighted sum of the two's utilities are defined as (2). Finally, we denote by $U_{m,w}$ and $U_{w,m}$ man m's utility and woman w's from the household decision made by the two.

3.1.4 Marriage Market

Men and women from the two countries join a unified marriage market and form households on their own. A marriage-market equilibrium is a one-to-one correspondence from the set of men and women in the marriage market onto itself, and, at the equilibrium, by mutual agreement, neither one wants to deviate from his/her marital status, either by switching to remaining single or by forming a household with another person.

We denote by $V_{i,j}$ a person i's net gains from marrying person j from the opposite sex, which is defined as:

$$V_{i,j} = U_{i,j} - R_i - \delta 1(b_i \neq b_j) \tag{3}$$

where $U_{i,j}$ is the utility person i receives from marrying person j defined in Section 3.1.3; R_i is the utility person i receives from remaining single defined in Section 3.1.2; and $1(b_i \neq b_j)$ is one if the two persons were born in different countries and zero otherwise. The term $1(b_i \neq b_j)$ with $\delta > 0$ captures the utility cost associated with cross-border marriage, such as the cost of immigration and the couple's efforts to mitigate cultural differences.

Two features of our marriage market are worth noting. One is that a person's net gains from marriage ($V_{i,j}$) depend only on his/her endowment and household decisions after marriage but not on transfers to/from his/her future spouse prior to marriage.[12] This feature of our model follows a strand of marriage literature based on the "non-transferable utility assumption" (see Smith (2006)), which we discuss further in Section 3.3. The second feature is that an equilibrium of our model is stable matching, which we can compute from running the Gale-Shapley algorithm (see Roth and Sotomayor (1990) for details).

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economics. See Weiss (1993) for detailed discussions of alternative modeling choices for household decisions and gains from marriage.

[12] An example of studies allowing for transfers to (or from) his/her spouse prior to marriage is Borjas (1987).

3.2 Model Implications

We first illustrate the way in which our model formalizes the relationship between women's improved status and demand for foreign brides. We then examine other model implications that are empirically testable.

[P1] **Women's Improved Status, Effective Sex Ratio Imbalance, and Demand for Foreign Brides** Suppose that the cost associated with cross-border marriage δ is sufficiently large so that all men born in country R prefer marriage with women from the same country to marriage with women from country P (referred to as C1). In addition, suppose that a man's relative productivity in home production ρ is sufficiently small so that all men prefer marriage to remaining single (referred to as C2). Then, as each woman's wage rate in country R increases, the effective sex ratio becomes imbalanced. In our model, a woman's net gains from marriage decrease in her own wage rate (see Appendix 1). Therefore, all else being equal, an increase in a woman's wage rate makes her accept a smaller number of men as her future husband. At the same time, the two conditions, C1 and C2, guarantee that all men born in country R may prefer marrying women born in country R to remaining single or women from country P. Therefore, a rise in women's wage rates in country R can make a larger number of men from country R fail to find a spouse from among women from country R (i.e., an effective sex-ratio imbalance). At the same time, C1 and C2 imply that if a man from country R cannot find a spouse from among women from country R, he prefers marrying a woman from country P to remaining single. Thus, a rise in women's wage rates in country R may increase the number of men from country R who would like to bring their wives from a foreign country P. Finally, our model implication for the negative relationship between a woman's wage rate and her gains from marriage can be empirically supported if we find that a high-income-earning woman is more likely to remain single than her counterpart with a low income.

[P2] **Negative Relation between a Man's Economic Status and His Chance to Marry a Foreign Woman** Suppose that C1 holds. Then, if a man born in country R with a wage rate w marries a woman born in country R in an equilibrium, then another man born in country R with a wage rate higher than w will not have a wife from country P. This property relies on the fact that, in our model, all women prefer a man with a high wage rate to his

counterpart with a low wage rate (see Appendix 1). Suppose that the man with a higher wage rate marries a woman from country P in an equilibrium. Because of C1, the man will prefer marrying the wife of the other man whose wage rate is lower than his to marrying a foreign bride. Likewise, the wife of the other man prefers marrying the man with a higher wage rate than her current husband. Therefore, the two will form a blocking pair, contradicting the assumption that such an assignment is an equilibrium (stable matching).

[P3] **Selection into Foreign Brides** Our model generates ambiguous predictions regarding the selection process for being foreign brides; that is, whether or not a high-wage rate woman from country P is more likely to be a foreign bride than her counterpart with a low-wage rate (positive selection vs. negative selection). For example, consider the case in which a woman's wage rate increases her husband's utility from marriage. Then, if all women born in country P are willing to marry men from country R, then a woman with a high wage rate from country P is more likely to be a foreign bride to a man from country R (i.e., positive selection). Alternatively, negative selection can be observed, for example, if a woman's willingness to become a foreign bride decreases in her wage rate.

[P4] **Positive Relationship between Proximity and Export of Brides** In our model, a cross-border marriage provides a higher utility to both the husband and the wife if the associated cost δ decreases. It is reasonable to assume that the cost is negatively correlated with cultural and economic ties between the two countries, which can be accounted for by geographical distance and trade volumes. Then, the model predicts that, all else being equal, country P exports more women as brides to country R as the ties between the two countries become stronger.

[P5] **Positive Relationship between the Development Gap and Export of Brides** As the wage gap between the two countries α increases, a larger number of women in country P want to be brides for men born in country R. This is because an increase in α raises a woman's returns from marriage immigration to country R and the wage of her husband born in country R relative to men born in country P. This property implies that, all else being equal, country P's chance to export its women as brides to country R increases as α, capturing the two countries' development gap, increases.

[P6] **Role of Home Production in Demand for Foreign Brides** Our model assumes that married men cannot participate in home production, which is consistent with empirical

patterns in East Asian countries (see Section 4.5). If a married man can freely input his time to home production, our model implies that the improved socioeconomic status of women in country R does not necessarily increase its demand for foreign brides. This property exists for two reasons. First, since marriage gains are larger without constraint than with constraint, a woman may find a man unacceptable as a husband if he cannot participate in home production, but she may find him acceptable if he can. Second, if men can participate in home production, women no longer uniformly prefer a high-wage man to a low-wage man, which may enable a low-wage man to be acceptable to a wider range of women as a husband. This prediction implies that, all else being equal, the demand for foreign brides will be larger for a country with sex-based home production than its counterpart with sex-neutral home production.

3.3 Discussions

Our model aims to provide a simple theoretical framework to formalize our hypothesis of socioeconomic factors that may account for the rapid increase in foreign brides in East Asia. To achieve this goal, we simplify our theoretical model in various respects. Two issues are especially noteworthy.

First, our model follows the literature using the non-transferable utility (NTU) assumption to form a person's preference among potential spouses (see Weiss (1993), Smith (2006) and Lundberg and Pollak (2007) for details). Alternatively, we could use the transferable utility assumption (TU)--that a person can transfer a part of the utility from marriage to his/her future spouse (e.g., Becker, 1974, Choo and Siow, 2005, Chiaporri et al, 2009)--and generate model predictions similar to those described in Section 3.2. We use the NTU assumption instead of the TU assumption, partly because we think the NTU assumption is more appropriate to capture the reality of marriage markets in East Asia. For example, less than 4 percent of Koreans between the ages of 20 and 39 agree with the argument that only wives should perform household chores (Korean National Statistical Office, 2010), but in reality, husbands rarely participate in home production, which we will discuss in Section 4.5. This stark gap between a man's stated preference and actual participation in home production suggests the possibility that people may not keep their promises made prior to marriage.

Under this limited commitment environment, the marriage surplus may not be fully transferred between a husband and wife, different from the TU model.

Second, we abstract the possibility that a person born in country R could marry another person born in a country richer than country R. As we will discuss in Section 5.2, we abstract this possibility because such marriages are negligible in developed East Asian countries.

4. Empirical Analysis

4.1 Woman's Status, Likelihood of Being Single, and Demand for Foreign brides

This subsection examines the first model implication P1 in Section 3.3 by approximating a woman's wage rate with her educational attainment. As explained in Section 2, we find that women's improved status, as measured by their college education, is positively correlated with the prevalence of foreign brides in developed Asian countries. Next, we examine the relation between a woman's socioeconomic status and her likelihood of remaining single by focusing on women whose age is between 30 and 39. We use this age group because these women are young enough to capture the cohorts who experienced rapid improvement in women's socioeconomic status but old enough to have completed their education. Note that our results are robust to using different age criteria (e.g., using 35 to 44 instead of 30 to 39). We calculate the fraction of singles among college-educated women and women without a college degree. We then report the difference between the two fractions in column 6 of Table 1. A positive value means that a larger fraction of college-educated women remain single compared to women without tertiary education. Consistent with our model implication, we find that college-graduate women more often remain single than those without a college degree in all four developed countries across all censuses.

4.2 A Man's Socioeconomic Status and His Likelihood of Marrying a Foreign Woman

An ideal dataset for testing our model implication P2, the negative relationship between a man's status and his likelihood of marrying a foreign bride, includes both single and married individuals and has information about the nationality of a person and his/her spouse if the person is married. There is, however, no such dataset in the four East Asian countries, to the best of our knowledge. The datasets closest to the ideal are the administrative datasets of marriage records from Japan (2000 and 2005) and Korea (2004 and 2005). The Japanese and

Korean marriage records provide the age of a bride and her groom, marital history, employment status, occupation, current location of residence, and citizenship. By marital history, we mean whether a person had been married prior to his or her current marriage. Korean marriage records also collect information about educational attainment, which is not available in Japanese marriage records (see Appendix Section 2 and Online Appendix Section C for data sources and summary statistics).

Table 2 Likelihood of Having a Foreign Spouse

Probit Model: Marginal effects reported

	Native Grooms		Native Brides	
	Japan	Korea	Japan	Korea
	(1)	(2)	(3)	(4)
Age	0.002***	0.007***	0.0003***	0.002***
	(0.000)	(0.000)	(0.00001)	(0.000)
High school	-	0.076***	-	0.013***
		(0.001)		(0.000)
Middle school or less	-	0.165***	-	0.041***
		(0.003)		(0.002)
Managerial job	-0.004***	-0.010***	0.0007**	0.004***
	(0.000)	(0.001)	(0.0003)	(0.001)
Service and retailer sector	0.001***	0.005***	0.002***	0.026***
	(0.000)	(0.001)	(0.0003)	(0.001)
Agricultural sector	0.006***	0.069***	-0.005***	-0.012***
	(0.001)	(0.003)	(0.001)	(0.001)
Production job	0.010***	0.012***	0.004***	0.028***
	(0.001)	(0.001)	(0.0004)	(0.002)
Military/Security service	-0.010***	-0.035***	-0.003***	0.005
	(0.000)	(0.001)	(0.001)	(0.006)
Not working – Student	-	0.039***	-	0.043***
		(0.003)		(0.003)
Not working – Non-student	-0.019***	-0.019***	-0.024***	0.002***
	(0.000)	(0.001)	(0.0002)	(0.000)
Large firm	-0.011***	-	-0.002***	
	(0.000)		(0.0002)	
Pseudo R-sq	0.17	0.30	0.01	0.16
No. obs.	1,455,349	534,327	1,415,946	501,575

Note: Standard errors are in parentheses. The omitted categories are "junior college or more" for education and "white collar" jobs for occupation. Year dummy variables are included. Large firm includes 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. The asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

If our model prediction holds in reality, then a man's likelihood of having a foreign bride will be negatively correlated with his educational attainment and having a well-paid job

(e.g., working for a firm employing 100 or more workers in Japan, and having a managerial job in Korea). Using a Probit model, we regress a dummy indicating whether a groom has a foreign bride on all variables available in each country's marriage records. The results are consistent with our model prediction (see Table 2). For instance, all else being equal, a high-school-graduate groom in Korea is 7.6 percentage points more likely to have a foreign bride than his counterpart with a college degree. We conduct various robustness checks using imputed education and income, and our results remain qualitatively the same (see Online Appendix: Section C and Table O.4).

A possible concern regarding the Probit analysis described above is that selection into marriage may account for our finding of a negative correlation between a man's socioeconomic status and the probability of having a foreign bride. For example, it is possible that an educated man may remain single rather than having a foreign bride more often than his less-educated counterparts. However, we argue that this possibility is unlikely to account for the negative correlation we found. As reported in column 5 of Table 1, a man's chance of getting married is positively correlated with his educational attainment in both Japan and Korea. Therefore, selection bias may mitigate the negative correlation between a man's socioeconomic status and his chance of having a foreign bride, instead of causing a negative correlation in our sample.

4.3 Selection for Being a Foreign Bride

Our model allows for both positive and negative selections for being a foreign bride. Thus, we empirically examine which of the two is more likely to occur. We compare the educational attainment of female marriage immigrants with their peers remaining in their home countries. We conduct this analysis only for marriage immigrants to Korea because of data availability.[13] We further narrow our sample to brides from China, Vietnam, and the Philippines because they make up most of the foreign brides in Korea. The first rows in each panel of Table 3 report the distribution of foreign brides' educational attainment depending on what country the women came from. The second rows in each panel report the distribution

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[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. The tabulation reports the number of individuals in each category. The censuses of Vietnam (1999) and the Philippines (2000) are available at IPUMS international. Because some brides from Vietnam and the Philippines were too young to have completed their educational attainment in the census year, we limit our sample to foreign brides who were over 19 years old when the census was carried out.

of educational attainment for the women from the same country.[14] Note that we use weights that make the weighted distributions of cohorts in the census of China, Vietnam, or the Philippines the same as the raw distributions of cohorts among foreign brides from each of these three countries. We find that, overall, foreign brides are generally more educated than the women in their home countries, and the difference is statistically significant based on Kolmogorov and Smirnov tests. Interestingly, Filipino brides are more educated, on average, than their peers in the Philippines, as well as female overseas workers.

Table 3 Education of Foreign Brides in Korea
Compared to Peers in their Home Countries

Unit: Percent

	Primary	Secondary	Tertiary
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

Source: Marriage Records of Korea (2004, 2005) and Population Censuses of China (2005), Vietnam (1999), and the Philippines (2000).

4.4 Export of Brides, Proximity, and the Development Gap

This subsection tests the model predictions P4 and P5, regarding the effect of a country's proximity and relative development to developed East Asian countries on its bride exports. We compile a cross-country dataset of 193 potential countries from which a developed East Asian country could bring a foreign bride in 2005. We use geographical distance and the trade volume between two countries as a proxy for the two countries' proximity, while we use the difference in GDP per capita as a proxy for the wage premium (discount) that a person receives from moving from one country to another.[15] We estimate a Tobit model to

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[14] It is possible that marriage immigrants may be included in the census of their home country. However, the number of marriage immigrants to Korea is much smaller than the number of women in the census and thus will not affect our findings.

[15] For Korea and Japan, we used the World Bank Development Indicator to collect all variables except for physical distance. For physical distance between two countries, we use a dataset from the *CEPII*. The CEPII

quantify the relationship between the logarithm of the number of brides from a country to a developed Asian country and explanatory variables because the dependent variable is often censored.[16]

Columns 1 and 2 of Table 4 report the results based on a pooled sample of Japan, Korea, and Taiwan.[17] Consistent with our model prediction P4, negative coefficients of geographical distance and positive coefficient of trade volumes suggest that the number of female marriage immigrants from a country is positively correlated with the country's socioeconomic ties to a host country. To test our prediction regarding development gap P5, we use two variables: $|\ln Y^H - \ln Y^S|+$ is the absolute value of the per-capita GDP gap between the two countries if the destination country H is more developed than country S, and zero otherwise. Likewise, $|\ln Y^H - \ln Y^S|-$ is the absolute value of per-capita GDP gap if country S is more developed than country H, and zero otherwise. Note that we refer to a developed East Asian country as a host country as it hosts a couple from the cross-border marriage that we analyze, and we refer to the country where a foreign bride currently resides as the source country.

If the model prediction P5 holds, then the coefficient of $|\ln Y^H - \ln Y^S|+$ will be positive, which is supported by our results reported in columns 1 and 2 of Table 4. For example, column 1 suggests that a 1-percent increase in the GDP per capita gap is correlated with 1.8 percent increase in the number of brides from the country, controlling for

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provides two measures of distance between the two countries. One is the physical distance between the two capital cities. 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 population-weighted distance. For Taiwan, we gather GDP per capita from the World Bank Development Indicator, trade volume from the Bureau of Foreign Trade of Republic of China, and physical distance from *GEOBYTE* and *GlobeFeed*.

[16] The 2005 Korean marriage record allows people to report their nationalities from over 200 countries, and our dataset records a country that has zero bride export to Korea if no woman in 2005 chose it as her nationality. Our dataset for Taiwan includes a person's nationality out of 25 countries and "Other." We consider a country's bride export to Taiwan as zero if there is no foreign bride from that country or the country is classified as the rest. A Japanese marriage record classifies a person's nationality into 10 countries and the rest. We take a country's bride export to Japan as zero if there are no foreign brides from that country or the country is classified as "Other." This limited information related to a person's nationality observed in Taiwan and Japan has, we believe, only limited effects on our results because the countries a person can choose for his/her nationality in Taiwanese or Japanese marriage records are the major countries from which brides originate. Furthermore, the difference in censoring across the three countries is captured by the host-country dummies in our pooled sample analysis, as described in Table 4.

[17] Our regression analysis follows the gravity models popularly used in international trade literature. We omit our analysis for Singapore because we do not have sufficient information about the nationalities of marriage immigrants.

geographical and economic proximity. It is worth noting that the coefficients of $|\ln Y^H - \ln Y^S|-$ will be negative if the mechanism behind P5 holds between a developed Asian country and another country that is more developed than that Asian country. However, we find no significant relationship between $|\ln Y^H - \ln Y^S|-$ and the logarithm of the number of foreign brides. This finding emerges because only a limited number of countries are more developed than Japan, Korea, or Taiwan and because female immigration from those countries is small and idiosyncratic. Our findings remain qualitatively the same across various robustness checks (see Table O.5 of Online Appendix).

One may be concerned about the possibility that the GDP gap $|\ln Y^H - \ln Y^S|+$ reflects the proximity of two countries that cannot be captured by trade volume or physical distance. We argue that this possibility is unlikely to hold in our sample for the following reason. If $|\ln Y^H - \ln Y^S|+$ captures proximity between a developed Asian country and another country, then it will be positively correlated with other types of immigrants, such as male marriage immigrants to the developed Asian country. However, we find that $|\ln Y^H - \ln Y^S|+$ has no strong relationship with the inflow of male marriage immigrants to developed Asian countries (see columns 3 and 4 of Table 4).

Table 4 Source Countries of Foreign Spouses

Tobit Model: Coefficients Reported

	Log (Brides)		Log (Grooms)	
	(1)	(2)	(3)	(4)
$|\ln Y^H - \ln Y^S|+$	1.793***	2.249***	1.120*	0.782
	(0.645)	(0.712)	(0.639)	(0.681)
$|\ln Y^H - \ln Y^S|-$	1.083	0.447	2.994	3.734*
	(2.348)	(2.369)	(2.120)	(2.234)
ln (Trade)	2.116***	2.105***	3.113***	3.140***
	(0.407)	(0.389)	(0.588)	(0.583)
ln (Distance)	-3.842***	-2.917***	-0.035	-0.650
	(1.023)	(1.206)	(1.041)	(1.183)
Region Dummy	No	Yes	No	Yes
% with Non Zero	8.23	8.23	7.74	7.74
No obs.	462	462	462	462
PseudoR2	0.26	0.29	0.31	0.34

Note: The unit of observations is the country from which Japan, Korea, or Taiwan would bring marriage immigrants. Heteroskedasticity robust standard errors are reported in parentheses. The pooled regression model includes host country dummy variables. Region dummy variables are defined for 6 regions: East Asia and Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa.

4.5 Role of Home Production in the Demand for Foreign Brides

This subsection provides evidence supporting our model assumptions regarding married men's home production in developed East Asian countries. Note that we omit testing the model prediction P6 because we do not have information about the number of foreign brides in other developed countries. If we did, we could have tested P6 by examining the correlation between a country's amount of foreign brides and married men's participation in home production.

Table 5 Husband's Time on Household Duties in Japan, Korea, and the U.S.

OLS regression, Pooled Sample of Married Men (aged 30 to 59), Minutes a Day

	(1)	(2)	(3)
Japan	-127.234***	-128.332***	-119.145***
	(5.202)	(5.266)	(4.998)
Korea	-118.914***	-112.551***	-104.731***
	(5.260)	(6.044)	(5.740)
Constant	167.216***	418.445***	471.843***
	(5.145)	(69.595)	(65.996)
Own and wife's: age, age-squared, college education, no. of children	No	Yes	Yes
Own and wife's: labor force participation	No	No	Yes
Observations	55,372	55,372	55,372
R-squared	0.17	0.19	0.21

Note: Standard errors are in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Sampling weight is reconstructed so that three countries have the same weight in total. Labor-force participation is defined by usual employment status.

Our theoretical model in Section 3 assumes that a married man in a developed East Asian country does not participate in home production. This assumption is used to capture a socioeconomic condition in East Asia, where a married woman is expected to perform most of home production regardless of her and her husband's comparative advantages. Consistent with our assumption, many researchers report that East Asian countries still retain a traditional gender norm, setting an expectation that women take care of all household duties (see Jones (2012)).

Our assumption of constraining a married man's home production as zero in a developed Asian country is stark but not far from the reality. We analyze time-use surveys from Japan, Korea, and the U.S. by focusing on married men whose age is between 30 and

59.[18] On average, married men in the U.S. spend 167 minutes per day in home production, whereas Japanese husbands spend only 40 minutes and Korean husbands spend 48 minutes. The difference between Japan/Korea and the U.S. is statistically significant (see column 1 of Table 5). Our finding that husbands in Japan and Korea spend much less time than their U.S. counterparts still holds when we include detailed control variables, including a man and his wife's labor-market status (see columns 2 and 3 of Table 5). Specifically, we estimate an OLS regression and find that Japanese or Korean husbands spend around 110 minutes a day less than their U.S. counterparts, even after we control for detailed characteristics of a married man and his spouse, as well as his household characteristics.

5. Discussions

This section discusses two alternative mechanisms that may account for the prevalence of foreign brides in East Asia (sections 5.1 and 5.2). We then discuss whether the increasing importance of foreign brides in East Asia is likely to continue over time or is a temporary phenomenon (section 5.3).

5.1 Sex Ratio Imbalance in Sub-Populations

Contrary to our main hypothesis, a reader might consider that raw sex-ratio imbalances may account for the increase in foreign brides. For example, it is possible that raw ratios among people participating in the marriage market may become more imbalanced over time. To examine this possibility, we report raw sex ratios among people whose age is between 20 and 40, the prime cohort searching for a spouse, in each calendar year (column 7 of Table 1). The decrease in sex ratios means that, all else being equal, a man will be in a better position for finding a spouse in his marriage market; therefore, if a sex-ratio imbalance among marriage-market participants causes the demand for foreign brides, then the sex ratios should be positively correlated with the demand for foreign brides. In contrast, we find that raw sex

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[18] We used the Korea time-use survey (*Saeng-whal-shi-gan-cho-sa*) 2009, the Japan time-use survey (*Shakai Sei katsu Kihon Chosa*) 2006, and the American time-use survey 2009. Sampling weight is applied. For Korea, home production includes housework, child-care, and caring and nursing. For Japan, home production includes housework, child-care, caring and nursing, and shopping. For the United States, home production includes household activities, caring for and helping household members, caring for and helping non-household members, consumer purchases, professional and personal care services, household services, and government services and civic obligations.

ratios are negatively correlated with the number of foreign brides (see Table O.1 of the Online Appendix for details).

Relatedly, some may think that regional variation in sex ratios may account for the increase in marriage immigrants (e.g., Morgan and Hoffmann (2007)). It is true that, in a given year, a man residing in a location with a sex-ratio imbalance (e.g., a farmer in a rural area) is more likely to marry a foreign woman. We find, however, that the fraction of single men who live in such an area decreased over time, while the prevalence of foreign brides increased. Therefore, the sex-ratio imbalance hypothesis alone cannot explain the time trend, although it may explain the allocation of foreigners across regions in a given year.

5.2 Male Marriage Immigrants

Another alternative explanation might be that, developed East Asian countries may have had an increase in male marriage immigrants, for example, because of a change in guest-worker systems, and this increase may account for the increase of female marriage immigrants. To examine this possibility, we report the fraction of native brides who have foreign grooms in column 2 of Table 1. Although this fraction is positively correlated with the fraction of foreigners among brides in each calendar year, the number of male marriage immigrants is much smaller and slowly increasing, compared to female marriage immigrants. Therefore, this alternative is unlikely to account for the increase in female marriage immigration in East Asia.

It is worth noting that male marriage immigration in the East Asian countries appears not to share the underlying mechanism behind importing foreign brides. First, a country's development status has only a weak correlation with the number of foreign grooms marrying native women (columns 3 and 4 of Table 4), different from the case for explaining foreign brides (columns 1 and 2 of Table 4). Second, the systematic pattern of international marriage that a native person with lower status marries a partner from a less-developed country is observed only for marriage between a native groom and a foreign bride, not for marriage between a native bride and a foreign groom. For example, native brides who have foreign grooms do not necessarily have low socioeconomic status. We estimate a Probit model regressing an indicator of having a foreign groom on native brides' observable characteristics. Different from native grooms who have foreign brides (columns 1 and 2 of

Table 2), we find that compared to a woman with a white-collar job, a managerial worker is more likely to have a foreign groom, and a woman in the agricultural sector is less likely to have a foreign groom (columns 3 and 4 of Table 2). This finding is accounted for by the fact that, unlike native grooms, brides who have foreign grooms are more diverse in their socioeconomic status.

5.3 Sustainability of a Large-Scale Import of Foreign Brides

Almost all developed countries have had transition periods from traditional gender roles in home production toward a modern gender-neutral model (see Fernández, Fogli and Olivetti (2004), which explicitly studies an intergenerational mechanism governing gender roles across cohorts). Therefore, if developed East Asian countries complete the transition in their institutions governing home production and family decisions in the near future, they may no longer need mass imports of foreign brides.

However, we cautiously predict that the prevalence of foreign brides in East Asia will persist for two reasons. First, the institutions governing gender roles in home production, which affects gains from marriage, seem to change rather slowly in East Asia, particularly among men. To confirm this point, we use the World Value Surveys (2005-2006), which cover the whole population age 15 and above around the world. The survey includes a few questions regarding opinions on gender roles.[19] We find that people in developed East Asian countries carry more traditional views of women's roles than other developed countries (e.g., the U.S.). As an example, we report our results based on a person's response to the statement, "when jobs are scarce, men should have more right to a job than women" across four countries: Japan, Korea, Taiwan, and the U.S. We find that the fraction of men who disagreed with that gender-biased statement is much smaller in the East Asian countries than the U.S. (i.e., 60% for U.S., 16% for both Japan and Korea, and 36% for Taiwan).[20] This difference does not shrink even if we control for individual-level characteristics. We estimate

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[19] Examples include "when jobs are scarce men should have more right to a job than women," "men make better political leaders," "university is more important for a boy," or "men make better business executives than women do."

[20] We do not include Singapore in this analysis because the World Value Survey did not survey Singapore.

a Probit model predicting that a respondent would disagree with the statement and report marginal effects in columns 1 and 2 of Table 6.[21]

Table 6 Perceived Gender Roles

Dependent Variable: 1 if a person disagrees with the statement that

men should have more rights to jobs than women and 0 otherwise

Probit Model: Marginal effects reported

	Men		Women	
	(1)	(2)	(3)	(4)
Japan	-0.349***	-0.287***	-0.509***	-0.467***
	(0.017)	(0.063)	(0.018)	(0.062)
Korea	-0.381***	-0.157*	-0.437***	-0.432***
	(0.018)	(0.091)	(0.022)	(0.074)
Taiwan	-0.217***	-0.289***	-0.398***	-0.379***
	(0.022)	(0.059)	(0.023)	(0.077)
Age/10	-0.026***	-0.020*	-0.059***	-0.056***
	(0.007)	(0.011)	(0.008)	(0.013)
College	0.054**	0.045	0.216***	0.314***
	(0.024)	(0.058)	(0.027)	(0.096)
Japan × College		-0.002		-0.130
		(0.077)		(0.108)
Korea × College		-0.149**		-0.145
		(0.061)		(0.103)
Taiwan× College		0.117		-0.053
		(0.075)		(0.111)
Japan × Age/10		-0.023		-0.014
		(0.020)		(0.021)
Korea × Age/10		-0.052**		0.006
		(0.021)		(0.022)
Taiwan× Age/10		0.013		-0.009
		(0.016)		(0.021)
Pseudo R-squared	0.13	0.14	0.18	0.18
Observations	2,287	2,287	2,387	2,387

Note: Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Consider column 1 for men's perceptions. The negative coefficients of Japan, Korea, and Taiwan imply that, compared to people in the U.S., respondents from the three Asian countries are less likely to disagree with the statement that men should have more right to a job than women. Column 2 allows for the possibility that educated or younger cohorts in East Asian countries may catch up with U.S. gender norms by introducing interaction terms

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[21] Answer choices are "agree," "neither," or "disagree." Those who "disagree" are coded as the ones who disagree with the statement. Our results qualitatively remain the same if we classify "neither" as disagreement against the statement or estimate an ordered probit/logit model instead of using a probit model.

between a country dummy and education/age slope. For example, if the coefficient of Japan × Age/10 or Japan × College is positive, then a younger and more educated Japanese man is more likely to avoid the gender-biased view than his counterpart in an older, less-educated cohort. Therefore, this suggests the possibility that, as time goes by, Japan may catch up with the U.S. in terms of a gender-neutral view of work. However, we find no evidence supporting that possibility. The interaction terms are generally insignificant (for Japan and Taiwan) and even negative (for Korea).

In contrast, a larger fraction of female respondents disagreed with that statement than men for all countries (75% for the U.S., 20% for Japan, 39% for Korea, and 42% for Taiwan). College-educated women are more likely to disagree with the statement than women without a college degree, and this tendency is common across the four countries. We find no robust relationship, however, between education and responses for men (columns 1 and 2 of Table 6). This difference across men and women suggests that the expansion of higher education in East Asia may widen the gap between men and women in terms of their perception of gender roles in market and home production. This gap is captured in our model as an insufficient adjustment in institutions governing household decisions and gains from marriage, which makes marriage become less attractive among educated women in developed East Asian countries.

In addition, the supply of foreign brides may increase the bargaining position of native grooms in East Asian countries and thus slow the change of institutions to reflect native women's improved economic status in gains from marriage.

The second reason we believe that accepting foreign brides will persist is because of the declining cost of immigration. A large body of literature on immigration suggests that a person's cost of immigration to a destination decreases with the size of existing immigrants residing in that destination. Therefore, initial international immigration often induces a further inflow of immigrants (e.g., Card (1990) and Altonji and Card (1991)). This general principle of international migration may well apply to the case of marriage immigration in East Asian countries. Therefore, the current mass bride imports have a dynamic effect on marriage markets in East Asia by reducing immigration costs, which may sustain or even increase the trend of importing foreign brides.

6. Conclusion

This paper documents the recent yet significant marriage immigration commonly observed in developed East Asian countries. Using an economic framework, we explain that this phenomenon is accounted for by both rapid advancements in women's socioeconomic status and insufficient adjustment in women's gains from marriage. We conduct empirical analyses using datasets from Japan, Korea, Singapore, and Taiwan and find evidence supporting the assumptions and the model implications of our economic framework.

This paper raises various follow-up questions that may lead to fruitful research for both researchers and policy makers in the future: How does the large influx of marriage immigrants affect natives' marriage opportunity, marriage surplus, and divorce? To what extent will a cross-border marriage be similar to a marriage between two natives in terms of fertility, divorce, and other outcomes? How does sending a large number of women to other countries as brides affect the brides' home country, for example, in terms of investment in child education and fertility? How much would it be worth to become a marriage immigrant for a woman and her family? Would this monetary value be determined similarly to a dowry, as observed in India or other societies?[22]

Another important area of research will be identifying and explaining the socioeconomic factors that affect women's choice from among possible countries to immigrate through cross-border marriages and, likewise, men's choice of a country from which they bring their wives. The results presented in this paper suggest that economic factors (e.g., wage gap or trade volumes between two countries) may play an important role in explaining marriage immigration. Therefore, a change in a country's economic status could influence marriage immigration accordingly (e.g., rapid development in China may reduce the gains of Chinese women becoming marriage immigrants to developed Asian countries). In particular, this analysis can help people predict marriage markets in East Asia when China becomes a net importer of brides instead of an exporter, and thus competes with other developed Asian countries for women from the rest of the world.

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[22] Many economists theoretically and empirically study dowries in a marriage market. Examples of such studies include Botticini and Siow (2003) and Anderson (2003).

References

Abramitzky, Ran; Adeline Delavande and Luis Vasconcelos. 2011. "Marrying Up: The Role of Sex Ratio in Assortative Matching." *American Economic Journal: Applied Economics*, 3(3), 124-57.

Altonji, Joseph G. and David Card. 1991. "The Effects of Immigration on the Labor Market Outcomes of Less-Skilled Natives," National Bureau of Economic Research, Inc.

Anderson, Siwan. 2003. "Why Dowry Payments Declined with Modernization in Europe but Are Rising in India." *Journal of Political Economy*, 111(2), 269-310.

Angrist, Joshua. 2002. "How Do Sex Ratios Affect Marriage and Labor Markets? Evidence from America's Second Generation." *Quarterly Journal of Economics*, 117(3), 997-1038.

Becker, Gary S. 1973. "A Theory of Marriage: Part I." *Journal of Political Economy*, 81(4), 813-46.

Borjas, George. 1999. "The Economic Analysis of Immigration," O. C. Ashenfelter and e. David Card, *Handbook of Labor Economics,* . Amsterdam: North-Holland.

Borjas, George J. 1987. "Self-Selection and the Earnings of Immigrants." *American Economic Review*, 77(4), 531-53.

Botticini, Maristella and Aloysius Siow. 2003. "Why Dowries?" *American Economic Review*, 93(4), 1385-98.

Buchmann, Claudia and Thomas A. DiPrete. 2006. "The Growing Female Advantage in College Completion: The Role of Family Background and Academic Achievement." *American Sociological Review*, 71(4), 515-41.

Buchmann, Claudia; Thomas A. DiPrete and Anne McDaniel. 2008. "Gender Inequalities in Education." *Annual Review of Sociology*, 34(1), 319-37.

Card, David. 1990. "The Impact of the Mariel Boatlift on the Miami Labor Market." *Industrial and labor relations review*, 43(2), 245-57.

Edlund, Lena. 1999. "Son Preference, Sex Ratios, and Marriage Patterns." *Journal of Political Economy*, 107(6), 1275–304.

Fernández, Raquel; Alessandra Fogli and Claudia Olivetti. 2004. "Mothers and Sons: Preference Formation and Female Labor Force Dynamics." *Quarterly Journal of Economics*, 119(4), 1249-99.

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

Goldin, Claudia. 2006. "The Quiet Revolution That Transformed Women's Employment, Education, and Family." National Bureau of Economic Research, Inc.

Hryshko, Dmytro; María José Luengo-Prado and Bent E. Sørensen. 2011. "Childhood Determinants of Risk Aversion: The Long Shadow of Compulsory Education." *Quantitative Economics*, 2(1), 37-72.

Inoue, Atsushi and Gary Solon. 2010. "Two-Sample Instrumental Variables Estimators." *Review of Economics and Statistics*, 92(3), 557-61.

Jones, Gavin W. 2012. "International Marriage in Asia: What Do We Know, and What Do We Need to Know?" National University of Singapore.

Lafortune, Jeanne. 2011. "Making Yourself Attractive: Pre-Marital Investments and the Returns to Education in the Marriage Market." University of Maryland.

Morgan, Charlie V. and John P. Hoffmann. 2007. "International Marriages in Japan: A Prefecture-Level Analysis." *International Journal of Sociology and the Family*, 33(1), 157-82.

Onishi, Norimitsu. 2007. "Korean Men Use Brokers to Find Brides in Vietnam." February 22, 2007. New York Times.

Park, Dae-Shik and Kyung-Eun Choi. 2008. "Current Situation of Rural Multi-Cultural Families and Policy Tasks." Korea Rural Economic Institute.

Presidential Committee on Social Inclusion in South Korea. 2005. "International Marriage Brokerage System – the Case Study of Vietnam and Philippines, Document in Korean." Korean Government.

Roth, Alvin E. and Marilda Sotomayor. 1990. *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis*. Cambridge: Cambridge University Press.

Seol, Dong-Hoon; Moon-Hee Suh; Sam-Sic Lee and Myoung-Ah Kim. 2009. "A Study of the Medium- to Long-Term Prospects and Measures of Multicultural Family in Korea: On the Focus of the Population Projection of Multicultural Family in Korea, and the Analysis of Its Socio-Economic Impacts on Korean Society." Ministry of Health, Welfare and Family Affairs.

Smith, Lones. 2006. "The Marriage Model with Search Frictions." *Journal of Political Economy*, 114(6), 1124-44.

Stinebrickner, Ralph and Todd R. Stinebrickner. 2008. "The Causal Effect of Studying on Academic Performance." *The B.E. Journal of Economic Analysis & Policy*, 8(1).

Tsuya, Noriko O.; Larry L. Bumpass and Minja Kim Choe. 2000. "Gender, Employment, and Housework in Japan, South Korea, and the United States." *Review of Population and Social Policy*, 9, 195-220.

Wang, Hong-zen and Shu-ming Chang. 2002. "The Commodification of International Marriages: Cross-Border Marriage Business in Taiwan and Viet Nam." *International Migration*, 40(6), 93-116.

Weiss, Yoram. 1993. "The Formation and Dissolution of Families: Why Marry? Who Marries Whom? And What Happens Upon Divorce," M. R. Rosenzweig and O. Stark, *Handbook of Population and Family Economics*. Elsevier.

Yang, Wen-Shan and Melody Chia-Wen Lu eds. 2010. *Asian Cross-Border Marriage Migration*. Amsterdam: Amsterdam University Press.

Appendix

1. Model

As a result of high wage rates in country R, it is easy to show that a married couple prefers residing in country R rather than country P (see Online Appendix Section A for proof). Next, we examine a person's net utility from marrying another person. The simplicity of our model allows us to have a closed-form solution for a married couple when the couple allocates its resources over consumption, leisure, and home production (see Online Appendix Section A for details). If a wife participates in market work, we can express her husband's utility from marriage as $U_{m,w}$,

$$U_{m,w} = \frac{5}{2}\ln(w_m + w_w) - \ln w_m - \frac{1}{2}\ln w_w + d_m,$$

and the wife's utility as $U_{m,w}$,

$$U_{w,m} = \frac{5}{2}\ln(w_m + w_w) - \frac{3}{2}\ln w_w + d_w,$$

where w_m and w_w are wage rates for a husband m and wife w, respectively, and d_m and d_w are terms that are not dependent on wage rates. Person i's utility from being single is $R_i = \ln w_i + e_i$, with e_i as a term that is not dependent on w_i. Therefore, we can express husband m's net utility from marrying woman w as $V_{m,w}$,

$$V_{m,w} = \frac{5}{2}\ln(w_m + w_w) - 2\ln w_m - \frac{1}{2}\ln w_w + d_m - e_m - \delta 1(b_m \neq b_w),$$

and wife w's net utility from marrying man m as,

$$V_{w,m} = \frac{5}{2}\ln(w_m + w_w) - \frac{5}{2}\ln w_w + d_m - e_m - \delta 1(b_m \neq b_w),$$

where b_m and b_w are man m and woman w's country of birth, respectively. With the expressions above, we can easily show that $V_{w,m}$ increases in w_m and decreases in w_w. See Online Appendix A for full derivations and the case for corner solutions.

2. Data

2.1 Japan

We use the "Employment Status Survey (1992, 1997, 2002, 2007)" published by the Japanese Ministry of Internal Affairs and Communications to calculate the sex ratio and educational attainment among people aged 20 to 39. We define a person as college-educated if he/she attended or has a degree from a 2-year or 4-year college or a polytechnic called *Kosen*. We use the corresponding marriage records from the vital statistics to calculate the fraction of foreigners among brides or grooms. By "foreigners," we mean persons who do not hold Japanese citizenship. We obtain micro-level datasets of marriage records for 2000 and 2005. These two years are selected because occupational information is recoded in years ending with 0 or 5.

2.2 Korea

We use the Korean Population Census to construct educational attainments and sex ratios among people whose age is between 20 and 39; the data are available on the website of the Korean National Statistical Office. We define a person as college-educated if he/she attended or has a degree from a 2-year or 4-year college. We use Korean marriage records, which are released as a part of "National Population and Fertility Survey." We regard a person as a marriage immigrant if he/she currently resides outside South Korea and his/her *bonjeok* is outside South Korea. A person's *bonjeok* roughly refers to the geographical location where the person is originally from and has legal residency. For example, consider a woman who is in Seoul as a guest worker but has citizenship in China. In a Korean marriage record, her *bonjeok* is China, although her address is in Seoul. Therefore, we can identify female guest workers from female marriage immigrants using both current location and *bonjeok*. As for our micro-level analysis, we use marriage records for 2004 and 2005 only, although we could extend our sample to other years of marriage records for the following reasons. The Korean Statistical Office changed its classification of countries in 2004. Fewer than 10 categories of

countries were used in marriage records prior to 2004, while marriage records from 2004 onward report the name of the country that a bride/groom resides in and has citizenship from. Importantly, some countries that sent a large number of women to Korea as brides (e.g., Vietnam and Philippines) were classified as "Other" prior to 2004. Therefore, we choose marriage records from 2004 onward for comparability in some of our analyses (e.g., brides' characteristics depending on their home countries). We then limit our analysis to marriage records for 2004 and 2005 because our Japanese datasets are available up to 2005. Note that our empirical analyses, such as the characteristics of grooms who have a foreign bride, remain qualitatively the same when we extend our sample by, for example, including marriage records from 1998 to 2003.

2.3 Singapore

We use the Singaporean Population Census (2000 and 2010, Education of "Resident Non-student Population") to compute the educational attainment and sex ratio for individuals aged 20 to 39. Following the Census classification, we regard a person as having a college education if he/she has a diploma from a university, polytechnic, or an equivalent institution. To compute the fraction of singles depending on sex and tertiary education, we combine the population census and tables from the "Population in Brief 2010" published by the Singapore Department of Statistics. "Population in Brief 2010" provides a table reporting the fraction of people who remain single depending on multiple levels of educational attainment, as of 1999 and 2009. We assume that the distribution of educational attainment in 1999 (2009) is the same as that in 2000 (2010). For each year, we then compute the fraction of singles among college-educated men (women) and among non-college-educated men (women). We refer to "Statistics on Marriages & Divorces 2009," published by the Singapore Department of Statistics in 2010, to report the prevalence of cross-border marriages. We consider a person as a marriage immigrant if he/she did not have citizenship or permanent residency in Singapore but married a Singaporean citizen or permanent resident.

2.4 Taiwan

We use statistics provided by the Taiwanese Ministry of Education. Using the age- and sex-specific distribution of educational attainment, we compute the fraction of college-educated

among individuals whose age is between 20 and 39 and the sex ratio. We consider a person as having a tertiary education if he/she graduated from or attended a 2-year or 4-year college. We use the tables from "Marriage Registrations," available from the Taiwanese National Statistics Bureau. Note that the Taiwanese government classifies a person as a "foreigner" if the person is neither overseas Taiwanese nor Chinese from Mainland China, Hong Kong, or Macao. In contrast, our paper considers a bride from Mainland China, for example, as a foreign bride (thus marriage immigrant to Taiwan). The information on the fraction of Taiwanese grooms/brides who have a spouse from a foreign country, as defined by the Taiwanese government, is available from 1998, but the fraction of Taiwanese grooms/brides who married Chinese from Mainland China, Hong Kong, or Macao is available from 2004.

[[Not For Publications]]

Online Appendix for "Brides for Sale: Cross-Border Marriages and Female Immigration" by Kawaguchi and Lee

This document provides details of the analyses cited in the main text of this paper, as well as additional results for robustness checks.

Index

A. Theoretical Framework

A.1 An Individual's Utility Depending on Marital Status

A.1.1 Remaining Single

If a person remains single at time 1, his/her utility depends on the consumption of market goods c_i, leisure l_i and non-market goods from home production (H_i):

$$U_i = lnc_i + lnl_i + lnH_i.$$

An input of h_i unit of time produces H_i unit of non-market goods:

$$H_i = \begin{cases} \rho h_m^{1/2} & \text{if } i \text{ is male} \\ (1-\rho)h_w^{1/2} & \text{if } i \text{ is female} \end{cases},$$

where ρ with $\rho \in (0, 1)$ determines the relative productivity of a husband's time to a wife's for home production. The resource constraints that person i faces are:

$$w_i g_i \geq c_i, \text{ and } 1 \geq l_i + g_i + h_i,$$

where g_i denotes the amount of time person i spends on market production. We denote by R_i the utility that person i gets from maximizing U_i subject to his/her resource constraints.

We can compute the utility of remaining single for person i whose wage rate is w_i by solving the first-order condition. The utility from remaining single is:

$$R_i = lnw_i + ln\rho + 2\ln\frac{2}{5} + \frac{1}{2}\ln\frac{1}{5} \qquad \text{if person } i \text{ is male,} \tag{1}$$

$$R_i = lnw_i + \ln(1-\rho) + 2\ln\frac{2}{5} + \frac{1}{2}\ln\frac{1}{5} \quad \text{if person } i \text{ is female.} \tag{2}$$

A.1.2 Utility from Marriage Given Country of Residence

Consider a case in which man m and woman w get married to each other. They need to decide what country they will reside in and then allocate their time across market and home production, and leisure. We first examine man m and woman w's household decisions given their choice of the country of residence. We then compare their utilities if the couple chooses country R with the utilities when the couple chooses country P in Section A.1.3.

Consider the case in which man m and woman w get married to each other and reside in a country where their wage rates are w_m and w_w, respectively. Then, the household problem can be summarized as:

$$\max \mu U_m + (1-\mu)U_w,$$

$$\text{where} \quad U_i = lnc_i + lnl_i + lnH_i \quad \text{with } i \in \{m, w\},$$

$$H_m = H_w = H = \rho h_m^{1/2} + (1-\rho)h_w^{1/2},$$

$$\text{subject to } w_m g_m + w_w g_w \geq c_m + c_w,$$

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$$1 \geq l_i + g_i + h_i, \text{ with } i \in \{m, w\}, \text{ and } h_m = 0.$$

The solution of this household problem is one that provides higher utilities to the household out of the two solutions described below.

Case 1: Interior Solution

Suppose that woman w inputs a positive amount of time for market production $g_w > 0$. Then, the solution of this problem is:

$$c_m = \frac{2}{5}\mu(w_m + w_w), l_m = \frac{2}{5}\mu\left(\frac{w_m + w_w}{w_m}\right), h_m = 0,$$

$$c_w = \frac{2}{5}(1-\mu)(w_m + w_w), l_w = \frac{2}{5}(1-\mu)\left(\frac{w_m + w_w}{w_w}\right), \text{ and } h_w = \frac{1}{5}\left(\frac{w_m + w_w}{w_w}\right).$$

Therefore, the utilities that man m and woman w receive from this marriage are:

$$U_{m,w}^I = \frac{5}{2}ln(w_m + w_w) - lnw_m - \frac{1}{2}lnw_w + 2ln\left(\frac{2\mu}{5}\right) + \ln(1-\rho) + \frac{1}{2}\ln\left(\frac{1}{5}\right), \tag{3}$$

$$U_{w,m}^I = \frac{5}{2}ln(w_m + w_w) - \frac{3}{2}lnw_w + 2ln\left(\frac{2(1-\mu)}{5}\right) + \ln(1-\rho) + \frac{1}{2}\ln\left(\frac{1}{5}\right). \tag{4}$$

Case 2: Corner Solution

Since h_m is set to be zero, h_w should be positive given the utility function. Therefore, we just need to check the case in which g_w is zero. Then, the solution of the household problem is:

$$c_m = \frac{\mu}{1+\mu}w_m, l_m = \frac{\mu}{1+\mu}, h_m = 0,$$

$$c_w = \frac{1-\mu}{1+\mu}w_m, l_w = \frac{2(1-\mu)}{3-2\mu}, \text{ and } h_w = \frac{1}{3-2\mu}.$$

The utilities associated with the optimal choice are:

$$U_{m,w}^C = lnw_m + 2ln\mu - 2\ln(1+\mu) + \ln(1-\rho) - \frac{1}{2}\ln(3-2\mu), \tag{5}$$

$$U_{w,m}^C = lnw_m + 2\ln(1-\mu) - \ln(1+\mu) + ln2 + \ln(1-\rho) - \frac{3}{2}\ln(3-2\mu). \tag{6}$$

A.1.3 A Household's Choice for Country of Residence

In our model, both man m and woman w face a higher wage rate (by factor of α) in country R to

country P. Therefore, it is easily shown that residing in country R provides each household member with a higher utility than residing in country P (i.e., $2\ln\alpha > 0$) more utility for the case of selecting interior solution and $\ln\alpha > 0$ for the case of selecting corner solution). Therefore, once a cross-border marriage takes place, the couple always chooses to reside in country R.

A.1.4 Net Gains from Marriage

Consider a case in which man m and woman w get married to each other and both of them were born in country $b \in \{P, R\}$. Then, net gains from marriage for man m and woman w are expressed as $V_{m,w}$ and $V_{w,m}$, respectively:

$$V_{m,w} = max\{U^I_{m,w}, U^C_{m,w}\} - R_m,$$
$$V_{w,m} = max\{U^I_{w,m}, U^C_{w,m}\} - R_w,$$

where $U^I_{m,w}, U^C_{m,w}, U^I_{w,m}, U^C_{w,m}, R_m$, and R_w are defined as equations (1) to (6).

If man m and woman w were born in a different country, then their net gains from marriage are:

$$V_{m,w} = max\{U^I_{m,w}, U^C_{m,w}\} - R_m - \delta,$$
$$V_{w,m} = max\{U^I_{w,m}, U^C_{w,m}\} - R_w - \delta,$$

where $U^I_{m,w}, U^C_{m,w}, U^I_{w,m}, U^C_{w,m}, R_m$, and R_w are defined as equations (1) to (6). As discussed in Section A.1.2, the wage rates for man m and woman w are their wage rates available in country R as they will choose to reside in country R.

A.2 Model Implications

A.2.1 P1: A woman's wage rate and her gains from marriage

By comparing $U^I_{w,m}$ in equation (5) and $U^C_{w,m}$ in equation (6), we can easily show that given w_m, there is a w^*_w such that for any $w_w \geq w^*_w$, $U^I_{w,m}(w_w) > U^C_{w,m}(w_w)$. For the region of w_w where the couple selects the interior solution, an increase in a woman's wage rate decreases her net gains from marriage as $\frac{\partial V_{w,m}}{\partial w_w} = \frac{5}{2(w_m + w_w)} - \frac{5}{2w_w} < 0$. For the region of w_w where the couple selects the corner solution, an increase in a woman's wage rate also decreases her net gains from marriage as $\frac{\partial V_{w,m}}{\partial w_w} = -\frac{1}{w_w} < 0$.

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A.2.2 P2: A man's wage rate and net gains from marriage

A woman's net gains from marriage increase in her husband's wage rate for the range of w_m where given w_w the interior solution is selected, as well as the range of w_m where the corner solution is selected:

$$\frac{\partial V_{w,m}}{\partial w_m} = \begin{cases} \frac{5}{2(w_m+w_w)} > 0 & \text{if } U_{w,m}^I > U_{w,m}^C \\ \frac{1}{w_m} > 0 & \text{if } U_{w,m}^I < U_{w,m}^C \end{cases}.$$

A.2.3 P3: A woman's wage rate and a man's net gains from marriage

In our model, an increase of a woman's wage rate does not necessarily increase her husband's gains from marriage. For example, for the case of the interior solution selected, man m's utility from marrying a woman w is related to the woman's age rate as follows:

$$\frac{\partial V_{m,w}}{\partial w_m} = \frac{4w_w - w_m}{2w_w(w_m+w_w)} \begin{cases} > 0 & \text{if } 4w_w > w_m \\ < 0 & \text{otherwise} \end{cases}.$$

A.2.4 P4 and P5: Proximity and Development Gap between the Two Countries

Consider a married couple of man m born in country R and woman w born in country P. The net gains from marriage for both m and w decrease in δ because $\frac{\partial V_{m,w}}{\partial \delta} = \frac{\partial V_{w,m}}{\partial \delta} = -1$. The net gains for woman w from marrying man m increase as the wage gap between countries P and R because $\frac{\partial V_{w,m}}{\partial \alpha} = \frac{2}{\alpha} > 0$.

A.2.5 P6: Role of Home Production

All else being equal, a person's net gains from marriage is larger if the person and his/her spouse can optimally choose the husband's time for home production, rather than facing the constraint that husbands cannot participate in home production. Next, we need to show that under the unconstrained case, women no longer uniformly prefer men with a high wage rate. Consider a couple who solves its problem with a interior solution (i.e., $h_m, h_w, g_m, g_w > 0$). Then, the solution will be:

$$c_m = \frac{2}{5}\mu(w_m + w_w), l_m = \frac{2}{5}\mu\left(\frac{w_m+w_w}{w_m}\right), h_m = \frac{\rho^2 w_w}{5(\rho^2 w_w+(1-\rho)^2 w_m)}\frac{w_m+w_w}{w_m},$$

$$c_w = \frac{2}{5}(1-\mu)(w_m + w_w), l_w = \frac{2}{5}(1-\mu)\left(\frac{w_m+w_w}{w_w}\right), \text{ and } h_w = \frac{(1-\rho)^2 w_m}{5(\rho^2 w_w+(1-\rho)^2 w_m)}\frac{w_m+w_w}{w_m}.$$

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The associated utilities from marriage for man and woman are expressed by $U_{m,w}$ and $U_{w,m}$, respectively, as below:

$$U_{m,w} = \frac{5}{2}ln(w_m + w_w) - \frac{3}{2}lnw_m - \frac{1}{2}lnw_w + \frac{1}{2}ln(\rho^2 w_w + (1-\rho)^2 w_m) + 2ln(\frac{2\mu}{5}) + \frac{1}{2}ln(\frac{1}{5}),$$

$$U_{w,m} = \frac{5}{2}ln(w_m + w_w) - \frac{3}{2}lnw_w - \frac{1}{2}lnw_m + \frac{1}{2}ln(\rho^2 w_w + (1-\rho)^2 w_m) + 2ln(\frac{2(1-\mu)}{5}) + \frac{1}{2}ln(\frac{1}{5}).$$

Then, we can show that $U_{w,m}$ no longer always increases in the man's wage rate, different from the prediction of our baseline model (P1):

$$\frac{\partial U_{w,m}}{\partial w_m} = \frac{5}{2(w_m + w_w)} - \frac{1}{2w_m} + \frac{(1-\rho)^2}{\rho^2 w_w + (1-\rho)^2 w_m}.$$

B. Prevalence of Foreign Spouses, the Gender Gap, and the Sex Ratio

In this section, we report the empirical results cited in Sections 4 and 5 of the main text. The unit of observations is country–year. The data consists with the statistics reported in Table 1 except for the statistics of Taiwan in 2005 and 2008. We omit the two Taiwanese observations because of changes in immigration policies aiming to discourage marriage immigration.

Table O.1 Prevalence of Foreign Brides

	(1)	(2)	(3)
% of college edu: Men – Women	-1.044		
	(0.256)***		
Sex Ratio (20~39)		-0.301**	
		(0.092)	
Fraction of foreign grooms			3.225
			(0.561)***
Korea	15.458	11.293	-2.236
	(4.033)***	(3.850)**	(1.348)
Taiwan	31.521	30.216	-9.200
	(2.390)***	(2.634)***	(6.366)
Singapore	10.645	9.125	4.180
	(2.469)**	(2.687)**	(1.554)**
Constant	-1.662	30.016	-0.011
	(1.696)	(8.304)***	(1.072)
Observations	12	12	12
R-squared	0.97	0.96	0.98

Note: OLS. Heteroskedasticity robust standard errors are reported in parentheses. The dummy for Japan is omitted. The asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

We regress the fraction of native grooms who have a foreign bride on the gender gap regarding college education and dummy variables for countries. To measure the gender gap in college education, we first calculate the fraction of college-educated among native men whose age is between 20 and 39 and that of native women. We then take the difference and refer to it as the gender gap. A positive value of this variable means that men have a tertiary education more often than women in that age group. A positive value means the opposite. Our model predicts (P1) that these two variables are negatively correlated, a prediction supported by our estimation result in column 1 of Table O.1.

In column 2, we regress the fraction of native grooms who have a foreign bride on raw sex ratios (number of men for every 100 women) and country dummies. As discussed in Section 5.1 of the main text, if sex ratios account for the rise of female marriage immigration, then it should be positively correlated with the prevalence of female marriage immigrants. That is because a large value of sex ratios means that there are a larger number of men per native woman, thus pushing more native men to have a foreign bride. Our empirical finding shows the opposite, however. The negative point estimate in column 2 implies that the number of men per woman is negatively correlated with a larger number of foreign brides. Therefore, this finding invalidates a commonly raised speculation that a sex-ratio imbalance may account for the increase in foreign brides in these developed East Asian countries.

In column 3, we examine the relationship between the number of foreign brides and the number of foreign grooms. We estimate an OLS by regressing the fraction of native grooms who have a foreign bride on the fraction of native brides who have a foreign groom and country dummies (see Section 5.2 of the main text). The fraction of foreign brides and the fraction of foreign brooms are positively correlated as expected, but the estimated coefficient, 3.225, implies that the change of foreign brides is about 3 times as large as the change of foreign grooms. This quantitative difference implies that globalization in general does not explain the increase of foreign brides.

C. Summary Statistics of Micro-level Marriage Records
Both 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. We refer to the collection of registrations for each year as marriage records. A subset of this information is released to the public as a part of vital statistics. For each bride and groom, both Korea and Japan collect

information about age, marital history, employment status, and occupation. By marital history, we mean whether a person was legally married prior to his or her current marriage.

Japanese marital records include the nationality of each groom and bride and also contain locational information about where the couple registered its marriage.[1] We regard a person as a foreigner (marriage immigrant) if the person does not have Japanese citizenship.[2]

Korean marriage records include the location where each groom and bride currently resides. Instead of citizenship, the Korean records include a person's *bonjeok.* Roughly speaking, a person's *bonjeok* means the geographic location/country where he/she grew up, regardless of the person's current residence. For example, a Korean who resides in the US will have a locality in Korea as his/her *bonjeok*, while a Chinese who temporarily stays in Korea for visit has China as his/her *bonjeok*. We regard a person as a foreigner (marriage immigrant) if the person does not live in Korea and has a *bonjeok* outside Korea. In addition, Korean marriage records collect information about educational attainment, which is not available in Japanese marriage records.

We obtain micro datasets from the Korean and Japanese governments: Korean marriage records (2004 and 2005) and Japanese marriage records (2000 and 2005). Tables O.2 and O.3 show summary statistics. There are about .5 million couples in our analysis for Korea and 1.4 million for Japan.

C.1 Grooms

Characteristics of Native Grooms Who Have a Foreign Bride

In panel A of Table O.2, we report the summary statistics of Korean grooms' characteristics depending on their bride's citizenship. In our sample, about seven percent of grooms marry foreign brides. Compared to grooms who have Korean brides, men who marry foreign brides are, on average, 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 records 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.[3] Then we convert the imputed income to 2005 Korean

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[1] Nationality of groom and bride is classified into Japan, Korea, China, Philippines, Thailand, the US, the UK, Brazil, Peru and miscellaneous.

[2] Koreans account for about one-third of foreign nationals living in Japan, as of 2005: 473,000 Koreans out of 1,556,000 foreign nationals (Population Census of Japan 2005). A non-negligible fraction of them were born and grew up in Japan and speak Japanese as their first language. Identifying them in Japanese marriage records is impossible. However, excluding Koreans from our regression analysis does not change the results qualitatively.

[3] The survey is conducted every year by the Korean Statistical Office, and is available at www.kosis.co.kr.

won by deflating the annual consumer price index provided by the Bank of Korea. Among those who have jobs, grooms with foreign brides are predicted to have larger imputed annual incomes than those with citizen brides. This income difference is accounted for by the fact that men who have a foreign bride are on average over 10 years older than the rest.

Panel B of Table O.2 reports the characteristics of Japanese grooms in our dataset. In our sample, about 3.7 percent of newly wedded grooms marry foreign brides. As we find in Korean marriage records, Japanese grooms who marry foreign brides are older, more likely to have been previously married, and more likely to have a job in the agricultural sector or a low-skilled non-agricultural job than grooms with Japanese brides. It is also notable that they are more likely to be self-employed or work for smaller firms. Since marriage records do not contain income information, we impute a groom's annual earnings based on his age, employment status, occupation, and year of marriage using the "Employment Status Survey" conducted by the Japanese Ministry of Internal Affairs and Communications. The survey is conducted every calendar year ending with 2 and 7. Therefore, we use the 2002 employment status survey to impute incomes of grooms included in the 2000 marriage records and the 2007 employment status survey for the 2005 marriage records. Like our findings for Korea, grooms who have a foreign bride are less educated but have a larger income than the other native grooms.

Characteristics of Native Grooms Depending on Brides' Nationalities

Columns 3 to 7 of Table O.2 show the average characteristics of grooms who married foreign brides, depending on the bride's home country. For expositional simplicity, we classify the foreign brides' home countries into five categories. For Korea, we use the three major source countries of foreign brides (China, Vietnam, Philippines), developed countries whose GDP per capita exceeds Korea's, and the rest, which are referred to as "other developing countries." Visible differences exist in the grooms' characteristics across brides' home countries. Korean grooms who have brides from a developed country appear to be very similar to those who marry a Korean woman. Grooms who have a Chinese bride are on average older, more likely to have a previous marriage, and less likely to work in the agricultural sector than those who have a Vietnamese or Filipino bride.

As for Japan, we use a slightly different classification. In Japanese marriage records, a non-Japanese citizen records his/her citizenship as one out of the following 9 categories: Korea, China, Philippines, Thailand, the US, the UK, Brazil, Peru, and miscellaneous. We group them into five

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For our imputation, we classify people based on the following categories and use average monthly earnings for the imputed income: sex (men, women), reported year (2004, 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 O.2).

categories: three major source countries of foreign brides (China, Philippines, Korea), the US and the UK, and the rest. We refer to the category including the US and UK as "developed" and the category of "the rest" as "other developing countries" in Table O.2. The reason we use this reference is because the most foreign brides from "the rest" are from Brazil and Peru. Just like Korea, Japanese grooms who marry brides from a developed country appear to be very similar to those who marry foreign brides. In Korea, grooms who marry Chinese brides are older, more likely to have had a previous marriage, and less likely to work in the agricultural sector than those who marry Vietnamese or Filipino brides. In the Japanese case, differences in grooms' characteristics across source countries are not as stark as in Korea. Overall, however, grooms who have had a previous marriage are more often observed to have Filipino brides, instead of Chinese or Korean brides, and those who are relatively more educated and have a professional job more often have Korean brides, instead of brides that are Chinese or Filipino.

Table O.2 Grooms: Descriptive Statistics of Marriage Records

Panel A. Korea (2004, 2005)

| | Korean | Non-Korean | Bride's Home Country | | | | |
| | | | China | Vietnam | Philippines | Other developing[b] | Developed[b] |
	(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
(% 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 in a white-collar job	39.65	24.68	25.00	19.53	19.37	25.91	37.20
- Work in 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 in 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

Notes: a) For individuals who are working in a job other than military service, earnings are imputed based on sex, age, education, occupation, and year of marriage. The unit is one million 2005 Korean won, roughly comparable to 1,000 US dollars. b) A country is referred to as "developed" if its GDP per capita is larger than that of Korea.

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Panel B. Japan (2000, 2005)

	Japanese	Non-Japanese	Bride's Home Country				
			China	Philippines	Korea	Other developing[c]	Developed[c]
	(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
(% 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]							
- College or more	52.29	41.62	42.30	40.61	44.15	40.86	49.80
- High school	38.77	44.69	44.67	46.16	43.12	45.53	35.80
- Middle school or less	6.36	11.34	11.63	10.90	10.98	12.98	6.38
Imputed annual income[b]	36.14	46.41	47.54	45.94	45.36	45.92	43.86

Notes: 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 working are treated as an occupational group. b) The unit is 100,000 Japanese yen adjusted for 2005 price level using the Consumer Price Index, roughly comparable to 1,000 US dollars. c) "Developed" includes the US and the UK and "other developing" includes Brazil, Peru, and the rest of countries excluding from columns 3–5, and 7. Note that most brides from a country in "other developing" are from Brazil and Peru.

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C.2 Brides

Table O.3 reports the average characteristics of brides depending on their nationalities. In both Korea and Japan, there are large differences in brides' characteristics across nationalities, even among foreign brides. For example, consider foreign brides in Korea (columns 3 to 7 of Panel A of Table O.3). The table shows that the average age of brides is 35.3 among Chinese, which is about 10 years older than the average for Vietnamese or Filipino brides. About 65 percent of Chinese brides have 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 foreign brides from China or Philippines do.

Panel B of Table O.3 shows the brides' characteristics in Japan. Although not as stark as in Korea, there are large differences in brides' characteristics across nationalities. 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.

Table O.3 Brides: Descriptive Statistics of Marriage Records

Panel A. Korea (2004, 2005)

	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
(% 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 in a white-collar job	24.68	6.07	5.96	2.01	6.78	7.01	17.57
- Work in 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 in 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

Panel B. Japan (2000, 2005)

	Japanese	Non-Japanese	China	Philippines	Korea	Other developing	Developed
			Bride's Home Country				
	(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
(% 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

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D. Education and Likelihood of Having a Foreign Spouse

In Table O.4, we regress whether a native groom has a foreign bride instead of a native bride on groom's characteristics. We use a 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, educational attainment, and dummy variables of region and year. 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 foreign bride. An older man is more likely to marry a foreign bride. In column 2, we follow the specification in column 1 but additionally include dummy variables for occupation, with a white-collar job being the omitted category. The regression results show that, all else being equal, farmers are much more likely to have foreign brides, relative to white-collar workers, which is the omitted category.

In column 3, we use the imputed logarithm of income (level and squared) as an additional control variable and limit our sample to grooms who have a job other than military service. We find that the logarithm of income has a concave relationship with a groom's likelihood of having a foreign bride. The estimated magnitude implies that among grooms who have no tertiary education, income is positively correlated with their likelihood of having a foreign bride, while the two variables are not correlated among grooms who have tertiary education. These results make sense if we recall that a man needs to pay for brokerage fees and all costs associated with bringing a foreign bride to his home country, as described in Section 2. Consider a man who is not attractive to native women and who also does not have enough income to cover the costs associated with obtaining a foreign bride. Then, this man is likely to remain single (thus not shown in a marriage record) or, if he gets married, his bride likely will be a native bride (thus shown in a marriage record). Therefore, among grooms who have low socioeconomic status, income can be overall positively correlated with the likelihood of having a foreign bride. In contrast, for grooms who have high socioeconomic status, their likelihood of having a foreign bride is minimal and their income is overall not correlated with their likelihood.[4]

In column 4, we regress the dummy variable of having a foreign 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 for Korea, grooms who marry a foreign bride are, on average, older and more likely to work for the agricultural sector or to have a low-skilled occupation than

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[4] Note that we did not adjust standard errors to incorporate errors in imputation because the sample size of the labor survey and marriage records is huge.

those who marry a foreign bride. Compared to a white-collar worker, a man who has a low-skilled job is 2 percent more likely to marry a foreign bride. Men working for a large firm (100 or more employees) are less likely to marry a foreign bride than those who do not have a job, are self-employed, or work for a small- or medium-scaled firm. In columns 5 and 6, we include the imputed educational background and income, respectively, as additional control variables. As with our findings for Korea, a groom's imputed income has a concave relationship with his likelihood of having a foreign bride, and a groom with a tertiary education is less likely to have a foreign bride than his counterpart without a tertiary education.

Our results drawn from the Korean data and Japanese data described above are generally consistent except for two variables. One is marital history: All else being equal, Japanese grooms who have had a previous marriage are more likely to marry a foreign bride, which is the opposite of the results for Korea. We suspect that the following may account for the opposite results. Singlehood is less prevalent in Korea than in Japan. For example, the fraction of singles among men between the ages of 30 and 39 is over 40 percent in Japan, which is about 10 percentage points higher than that in Korea. Therefore, it is possible that all else being equal, not having a previous marriage may indicate that, in Korea, a groom is not attractive to native women so he remains single, while in Japan, where singlehood is much more prevalent, not having a previous marriage does not carry very negative implications about the groom's underlying quality.

Another difference is regarding grooms who have only middle-school degrees. In Korea, a groom who attended up to middle school is more likely to have a foreign bride than his counterpart who attended/graduated from high school but did not have a tertiary education. In Japan, we find the opposite result (column 5 of Table O.4), although the difference between the two groups of grooms is small. We suspect that our imputed variables for education largely capture the income effect; that is, compared to his counterpart who is a high-school graduate, a middle-school-graduate man may not be able to afford a foreign bride and thus is more likely to remain single or to have a native bride if he gets married.

Table O.4 Native Grooms: Likelihood of Having a Foreign Bride

	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***	0.008***	0.005***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
High school	0.076***	0.096***	0.092***	-	0.002***	-
	(0.001)	(0.001)	(0.001)		(0.000)	
Middle school or less	0.165***	0.240***	0.234***	-	-0.003***	-
	(0.003)	(0.004)	(0.004)		(0.000)	
Managerial job	-0.010***	-	-0.017***	-0.004***	-0.004***	-0.004***
	(0.001)		(0.001)	(0.000)	(0.000)	(0.000)
Service and retailer sector	0.005***	-	0.010***	0.001***	0.001***	0.001***
	(0.001)		(0.001)	(0.000)	(0.000)	(0.000)
Agricultural sector	0.069***	-	0.072***	0.006***	0.006***	0.006***
	(0.003)		(0.003)	(0.001)	(0.001)	(0.001)
Low-skilled job	0.012***	-	0.022***	0.010***	0.010***	0.010***
	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)
Military/Security service	-0.035***	-	-	-0.010***	-0.010***	-0.010***
	(0.001)			(0.000)	(0.000)	(0.000)
Not working – Student	0.039***	-	-	-	-	-
	(0.003)					
Not working – Non-student	-0.019***	-	-	-0.019***	-0.019***	-0.019***
	(0.001)			(0.000)	(0.000)	(0.000)
Large firm	-	-	-	-0.010***	-0.010***	-0.010***
				(0.000)	(0.000)	(0.000)
Log income	-	1.311***	0.927***	-	-	0.030***
		(0.064)	(0.064)			(0.009)
Log income^2	-	-0.084***	-0.057***	-	-	-0.001
		(0.004)	(0.004)			(0.001)
Pseudo R-sq	0.30	0.31	0.32	0.17	0.17	0.17
No. obs.	534,327	490,437	490,437	1,470,369	1,455,098	1,407,513

Note: Probit Model, Marginal Effects. Standard errors are in parentheses. The omitted categories are "junior college or more" for education and white collar/clerical jobs for occupation. Year dummy variables are included. For Japan, educational background and log annual earnings are imputed from age and occupation based on the Employment Status Survey 2002 and 2007. For Korea, log annual income is imputed based on the Basic Statistics of Earnings Structure of each year. Large firms include those men working for a firm that employs 100 or more workers or those who are in management. Not working includes both students and non-students who do not have a job for Japan. The asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

E. Source Countries of Marriage Immigrants

This section provides an additional empirical analysis for Sections 5.2 and 6.1 of the main text. We estimate a Tobit model where the dependent variable is the logarithm of the number of marriage immigrants, in 2005, that Korea, Japan, and Taiwan each imported from a particular country. In Table O.5, we regress the logarithm of the number of female immigrants each country sends to Korea (columns 1, 2), Japan (columns 3, 4), and Taiwan (columns 5, 6). Similar to the estimation results from the pooled sample in the main text of this paper, $|\ln Y^H - \ln Y^S|+$ is positively correlated with the logarithm of the number of female marriage immigrants whom a country sends to a host country, although the correlation is not statistically significant for some specifications.

Similarly, we report our Tobit model estimates by regressing the logarithm of male immigrants on observables in Table O.6. As with our pooled regression results in Table 5 of the main text, we find no systematic pattern between the number of male marriage immigrants a country sends to a host country and the GDP per capita gap between the two countries.

Table O.5 Source Countries for Foreign Brides

	Korea		Japan		Taiwan	
	(1)	(2)	(3)	(4)	(5)	(6)
$|lnY^H\text{-}lnY^S|+$	3.657**	7.034***	1.393	2.482*	1.632**	0.797
	(1.505)	(1.478)	(1.046)	(1.370)	(0.749)	(0.713)
$|lnY^H\text{-}lnY^S|-$	5.166	9.273*	-	-	1.432	0.321
	(6.191)	(5.278)			(1.547)	(1.350)
ln (Trade)	1.547**	1.990***	3.841***	4.986***	1.964***	1.763***
	(0.720)	(0.517)	(0.809)	(1.073)	(0.500)	(0.264)
ln (Distance)	-6.702***	-	-1.755	-	-1.936	-
	(1.842)		(3.319)		(1.318)	
Region Dummy	No	Yes	No	Yes	No	Yes
% with Non Zero	8.73		5.19		10.44	
No obs.	126	126	154	154	182	182
PseudoR2	0.33	0.38	0.25	0.35	0.34	0.39

Note: Tobit Model. The unit of observations is a pair of source and host countries. Heteroskedasticity robust standard errors are reported in parentheses. Region dummy variables are defined for 6 regions: East Asia and Pacific, Europe and Central Asia, Latin American and Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa.

Table O.6 Source Countries for Foreign Grooms

	Korea		Japan		Taiwan	
	(1)	(2)	(3)	(4)	(5)	(6)
$|lnY^H\text{-}lnY^S|+$	3.379*	-1.668	0.949	1.818	0.966	-0.701
	(1.922)	(1.631)	(0.943)	(1.164)	(0.676)	(1.887)
$|lnY^H\text{-}lnY^S|-$	10.984**	-0.074	-	-	0.974	3.742
	(4.411)	(4.014)			(1.460)	(2.685)
ln (Trade)	4.112***	4.047***	3.352***	4.479***	2.511***	4.202***
	(0.899)	(0.977)	(0.793)	(1.045)	(0.444)	(1.364)
ln (Distance)	1.358	-	-0.729	-	0.420	-
	(1.595)		(3.117)		(0.991)	
Region Dummy	No	Yes	No	Yes	No	Yes
% with Non Zero	6.35		5.19		9.89	
No obs.	126	126	154	154	182	181
PseudoR2	0.33	0.42	0.25	0.35	0.36	0.40

Note: Tobit Model. The unit of observations is a pair of source and host countries. Heteroskedasticity robust standard errors are reported in parentheses. Pooled regression model includes host country dummy variables. Region dummy variables are defined for 6 regions: East Asia and Pacific, Europe and Central Asia, Latin American and Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa.