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# How does Marriage Demand Stimulate Support for Immigration in Asia?

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## Abstract

The previous literature suggests that citizens calculate the benefits of immigrants by assessing their impact on economic prospects. This paper argues that a type of social demand--the demand for marriage--also induces support for more liberal immigration policies. We conducted a survey experiment with 3,000 adults in China, where the population faces a shortage of women in the marriage market. The respondents were assigned to four groups, namely, a control group, a group with low-skilled worker shortage cues, a group with high-skilled worker shortage cues, and a group with marriage market crisis cues. We found that the marriage crisis treatment was effective to male respondents but not to female respondents. A supplementary examination of cross-national survey data showed that a gender imbalance at birth can elicit citizens' higher support for immigration in 13 Asian countries/regions. The results show that, other than economic considerations, citizens' concerns about marriage market competition can also stimulate immigration support.

*Forthcoming at Journal of Ethnic and Migration Studies*

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## Introduction

In the studies of attitudes towards immigration, one outstanding determinant is citizens' rational calculation of their own economic interests – they support more immigrants when they perceive that immigration brings them economic benefits and oppose immigration when they expect economic loss. The evidence is that citizens prefer high-skilled immigrants over low-skilled immigrants because high-skilled immigrants can bring higher economic benefits and a lower fiscal burden to the national economy (Valentino et al., 2019). This economic interest theory suggests that citizens' utility is mainly determined by economic concerns, while it fails to consider the effects of social needs on people's utility and their preference for immigrants.

In this paper, we explore the effects of marriage demand, an important social need, on public attitudes towards immigration. We propose that if the domestic marriage market is highly competitive, the public will prefer relaxing immigration restrictions so that more immigrants can come to meet the marriage demand. We tested this proposition with a survey experiment of over 3,000 respondents in China, where the population faces a high gender imbalance at marriageable age. The results show that concerns regarding marriage demand have positive effects on immigration support, similar to the demands for high-skilled labor. We further used cross-national survey data, specifically, the fourth wave of the Asian Barometer Survey (ABS4), to examine the external validity of the findings. The results show that across thirteen Asian countries/regions, a higher country-level gender imbalance at birth and at the mean marriage age is positively associated with higher individual-level support for immigration. These results suggest that citizens perceive the prospective gender imbalance in

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the near future and thus support accepting more immigrants to relieve this issue.

This paper makes contributions to the literature from two perspectives. First, this study proposes a social-demand perspective in shaping immigration attitudes. We demonstrate that social needs, which are reflected by the marriage demands in this study, can be as effective as an economic need (e.g., high-skilled immigrants) for shaping public support for immigration policy. Second, we present empirical evidence of immigration attitudes in Asia, in which the immigration issue becomes increasingly salient. For example, as one of the largest economies in the world, China is facing increasingly severe problems of an aging society and a shortage of labor. The Chinese government has started to reform its immigration management system and allowed more immigrants in (Zhu & Qian, 2020). Most literature on foreign immigration in China, however, focuses on the institutional parameters or the experience of foreign immigrants, while the public attitudes of Chinese citizens towards immigration policies are largely unexplored. This study, based on an original survey experiment and observational data from a cross-national survey, provides the empirical evidence to understand public attitudes towards immigration policies in China and the Asian region. We show that such social needs are applicable across Asia where marriage immigration has become a salient issue in recent decades (Jones & Shen, 2008). Our findings contribute to the understanding of public attitudes on immigration policies in a non-western context.

### **Public Attitudes towards Immigration**

Hainmueller and Hopkins (2014) categorized the theories of immigration attitudes into a

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political economy approach and a sociopsychological approach. The political economy approach suggests that citizens are worried about labor market competition and the fiscal burden brought by the inflow of immigrants (Facchini & Mayda, 2012; Hainmueller & Hiscox, 2007; Pardos-Prado & Xena, 2019; Scheve & Slaughter, 2001). The literature in the political economy approach argues that public attitudes are shaped by the perceived material benefits that immigrants can bring to their host countries. Such perceived benefits can come from the labor market, in which low-skilled labor is more threatened by immigrants and is thus more negative towards immigration (Scheve & Slaughter, 2001). On the contrary, high-skilled natives, whose job is to secure regarding immigration, are more likely to support new immigrants because the inflow of labor forces reduces the economic cost (Mayda, 2006). Beyond this self-interest argument, Hainmueller, Hiscox, and Margalit (2015) notice that high-skilled immigrants are generally more popular than low-skilled immigrants, regardless of whether natives are high-skilled or not. Valentino et al. (2019) find that in eleven advanced democracies, higher-skilled immigrants are preferred at all levels of native socioeconomic status. This may imply a broader benefit perception that goes beyond self-interest. In addition to the benefits of the labor market, public attitudes are also shaped by how immigrants may affect public finance. Hanson, Scheve, and Slaughter (2007) find that the concerns over whether immigrants will become a burden for public finance and thus trigger tax increases are a major factor that shapes people's attitudes towards immigrants, especially for wealthier people who may have higher tax duties. Furthermore, some studies have noticed that the economic background of immigrants and their countries of origin may also affect public

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attitudes (Coninck, 2020).

Sociopsychological concerns suggest that the real worries about immigrants come from citizens' ethnocentrism, stereotypes regarding immigrants, and the erosion of national identities, social norms, and languages (Chandler & Tsai, 2001; Hainmueller & Hangartner, 2013; Sides & Citrin, 2007; Sniderman et al., 2004). Sniderman, Hagendoorn, and Prior (2004) find that cultural threats are influential in triggering negative attitudes towards immigrants. Factors such as similar cultural backgrounds, religions, values, languages, and ethnic differences can all affect public attitudes (Brader et al., 2008; Leon McDaniel et al., 2011; Newman et al., 2012; Raijman, 2010). Furthermore, studies have shown that threats to security, national identities, and nationalist narratives can also trigger anti-immigration attitudes among the public (Feinstein & Bonikowski, 2021; Jeong, 2013). Both perspectives mention that immigrants can be a threat to the public in host countries, either from an economic perspective or from cultural and national identity perspectives. Some studies, when combining two types of threats together, find that different types of immigrants may bring different threats to the public in the host countries (Hellwig & Sinno, 2017). This implies that society may have heterogeneous needs to accept or resist immigrants based on various attributes.

Although the existing literature has provided tremendous important insights in understanding public attitudes towards immigration, we believe that there are two gaps to which the current literature has given less attention. First, native citizens may also have social concerns about immigrants from the demographic and population perspectives, beyond the economic argument from the labor force perspective. Immigrant inflows impact not only the

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labor market but also the marriage market (Angrist, 2002). Marriage immigration has also caught the attention of scholars (Chung et al., 2016; Constable, 2010). Thus, we argue that when assessing the pros and cons of more immigrants, native citizens also need to consider how these immigrants may change the prospect of marriage for themselves and/or for their offspring. Such considerations may be less salient in countries where the domestic marriage market supply can meet demand. However, in countries where the marriage market is highly imbalanced and competitive, immigrants increase the supply of marriage partners for domestic citizens and satisfy their marriage demand. In these countries, citizens' concerns about marriage may induce their support for more immigrants. Since there is very little literature that studies how the needs and competition of the marriage market may affect attitudes towards immigration, this paper aims to fill this gap.

Second, most of the existing studies focus on public opinion on immigration in western democracies, which is understandable because immigration issues were formerly less salient in Asian countries compared to advanced western economies. Additionally, many Asian countries maintain authoritarian and illiberal systems that make conducting public opinion surveys challenging. With increasing aging problems (in, e.g., China, Japan, and South Korea), however, Asian countries started to reform their immigration policies.<sup>1</sup> Since public attitudes can affect immigration policy reforms, knowledge of public attitudes towards immigrants and immigration policy in the region is necessary. The recent literature also started focusing on Asian countries, including Singapore, Japan, Korea, Israel, Taiwan, Jordan, and making cross-

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<sup>1</sup> See the 2019 International Migration Report from the United Nations at [https://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/InternationalMigration2019\\_Report.pdf](https://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/InternationalMigration2019_Report.pdf)

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national comparisons (Alrababa'h et al., 2021; Barceló, 2016; Craig & Richeson, 2014; Hochman, 2015; H. H.-S. Kim & Kim, 2021; Rajjman, 2010; Shim & Lee, 2018; M.-C. Tsai & Tzeng, 2014; T. Tsai et al., 2019). Nonetheless, how Asia's growing immigration population affects domestic public opinion still deserves more scholarly attention. With an original survey experiment in China and representative data that cover 13 East and Southeastern Asian countries, this paper aims to provide new evidence to enrich this body of literature.

### **Public Attitudes towards Immigrants from a Social Perspective: Marriage Crisis and Immigration**

Following the political economy approach, this paper suggests that immigration attitudes are partially determined by a rational calculation of the utility of immigration. However, the utility of the public is not solely determined by economic concerns. We argue that native citizens also have social concerns such as the demand for marriage. Demand and competition in the marriage market can determine individuals' utility calculation. Since immigrant inflows impact not only the labor market but also the marriage market (Angrist, 2002), native citizens need to consider how immigrants may change the prospect of marriage for themselves and/or for their family members when assessing the pros and cons of immigrants.

The consideration of marriage competition is more salient in countries where the marriage market is imbalanced – i.e., where the supply cannot meet the demand. In these countries, the population at marriageable age may feel challenging (costly) to find a mate. This is usually due to a gender imbalance at the marriageable age when young men significantly

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outnumber young women, or (in rare cases) vice versa. Then, the public may regard introducing more immigrants as a viable solution to address such a marriage crisis.

This theory can generate two empirical implications. First, citizens who are aware of the gender imbalance and marriage crisis are more likely to support a more relaxed immigration policy than citizens who are not aware (**Hypothesis 1**). Second, relaxed immigration policies will receive less support in countries where the domestic marriage market supply can meet demand, with other factors being equal. However, in countries where the marriage market is highly imbalanced and competitive, immigrant inflow can increase the supply of marriage partners for domestic citizens and satisfy their marriage demand. Citizens' concerns about marriage may induce their support for more immigrants. That is, a higher gender imbalance at the potentially marriageable age can increase public support for relaxed immigration policies (**Hypothesis 2**).

### **Marriage Crisis and Immigration in China, East Asia, and Southeastern Asia**

China is a country facing a marriage market crisis because of its high gender imbalance. According to data from the United Nations Population Fund, China's gender ratio is approximately 113.51 (the number of men for every 100 women).<sup>2</sup> According to China's National Bureau of Statistics, the gender ratio was 111 for the population born between 1990 and 2000 and increases to 118 for the population born between 2000 and 2010. This means that Chinese men outnumber women by approximately 34 million.<sup>3</sup> Gender imbalance, i.e., the shortage of women, creates multiple social issues for China and the global community,

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<sup>2</sup> <https://bit.ly/386aBUh>, accessed on 01-02-2021

<sup>3</sup> See: [http://www.stats.gov.cn/tjsj/zxfb/202105/t20210510\\_1817180.html](http://www.stats.gov.cn/tjsj/zxfb/202105/t20210510_1817180.html); accessed on 07-31-2021

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including economic slowdowns, increases in crime rates, and the encouragement of human trafficking in neighboring countries (Golley & Tyers, 2014). Demographers predict that even with China changing the one-child policy to two children, the gender imbalance issue is unlikely to be addressed in the short term (Xu & Pak, 2015). The proportion of unmatched low-skill males of reproductive age could be as high as one in four by 2030 (Golley & Tyers, 2014, p. 126). Chinese official media CCTV called the gender imbalance a “quiet crisis” in a documentary.<sup>4</sup> Internet users in China also give tremendous attention to gender imbalance, including one scholar’s opinion that China should allow one woman to marry multiple men.<sup>5</sup> Since the gender imbalance has created significant marriage pressure, increasingly more men have started to look to foreign females for marriage. When legal marriage immigration is rare, Chinese men turn to illegal immigration and incite the human trafficking of foreign females.<sup>6</sup>

Similarly, marriage is an important issue that also shapes immigration attitudes and policies in other Asian countries (Chung et al., 2016; H.-K. Kim, 2012; Wang & Bélanger, 2008). Similar to China, the gender imbalance problem is prominent in the region. For example, Vietnam had a 1.124 male per one female at birth in 2014. As a result, the shortage of females has created a competitive marriage market (Jones & Shen, 2008).<sup>7</sup>

The need of males “who face problems in their domestic marriage market” becomes a significant driving force for female migration. Marriage immigrants have become common in countries such as Singapore and Korea and are increasingly popular in other countries in the

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<sup>4</sup> <https://bit.ly/3uzKluY>, accessed on 02-26-2021

<sup>5</sup> <https://bit.ly/3pWCtzV>, <https://bit.ly/3qSWKaW>, accessed on 02-26-2021

<sup>6</sup> See a report from the South China Morning Post at <https://www.scmp.com/news/asia/southeast-asia/article/2177493/how-chinas-massive-gender-imbalance-driving-surge-southeast> (accessed on February 21, 2021).

<sup>7</sup> <https://asia.nikkei.com/Economy/Asia-s-gender-imbalance-is-bad-news-for-growth> (accessed on February 21, 2021) and <https://www.straitstimes.com/asia/south-asia/asias-gender-imbalance> (accessed on February 22, 2021)

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region (Jones & Shen, 2008). In Taiwan, about half a million foreigners immigrate for marriage, 20% of whom come from Vietnam. Although they still face discrimination, marriage immigrants now find it easier to settle down and assimilate into their host countries due to social change and policy adjustments. Similarly, about 37% of Singaporean men marry foreigners according to 2019 data. Even for countries with a homogeneous ethnic group, such as Korea and Japan, international marriage has become a noticeable social phenomenon in recent years (it is currently 9.9% in Korea and 3.2% in Japan). Pressure in domestic marriage market facilitates the growing trend of marriage immigration. On a website of a foreign bride agent in Taiwan, failure to find a domestic bride has been listed as one major reason for marrying foreigners.<sup>8</sup> Similarly, Chinese citizens on social media usually attribute the immigration of foreign bride to having difficulty finding a wife.<sup>9</sup> Prominent new media, such as Foreign Policy and the South China Morning Post, have covered how marriage pressure facilitates both the legal match-making trade for international marriage and illegal human trafficking in the region for years.<sup>10</sup> In general, marriage immigrants have become an important social issue in Asia, and the gender imbalance has contributed greatly to this problem.

### **Testing the Effects of Marriage Demands on Immigration Support**

The concerns of the marriage crisis in Asian countries provide us an opportunity to test the theories of marriage demand on immigration attitudes. We conducted two studies. For Hypothesis 1, we conducted a survey experiment in China in which we manipulated an

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<sup>8</sup> See the website <http://www.wwe919.com/zuixinxiaoxi/1147.html> (in Chinese, accessed on July 24, 2021).

<sup>9</sup> See an example: <https://www.zhihu.com/question/41605276> (in Chinese, accessed on July 24, 2021)

<sup>10</sup> See the article from Foreign Policy: <https://foreignpolicy.com/2015/03/26/decoder-asias-bride-market-wives-south-korea-singapore-china-vietnam/> (accessed on July 26, 2021) and articles from the South China Morning Post: <https://www.scmp.com/news/china-insider/article/1354390/illegal-chinese-cross-border-matchmakers-flourish-demand-grows> (accessed on July 26, 2021)

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individual's perception of the marriage crisis based on information we received. For Hypothesis 2, we used observational data from the fourth wave of the Asian Barometer Survey (ABS4), which covers 13 different countries in East and Southeast Asia.

### **Study One: Survey Experiment in China**

We chose China because immigration policy is becoming increasingly salient in the public discussion in China. China's economic openness and ambitious foreign policies such as the Belt and Road Initiative have turned the country into a focal point in global political, economic, and trade activities. More foreigners are willing to travel, work, and stay in China.<sup>11</sup> Reportedly, China has become one of the three most attractive countries for expats--both those who are highly skilled and talented as well as those who are less educated. The city of Guangzhou has the largest African expatriate community in Asia (Miao & Wang, 2019, p. 27).<sup>12</sup> To attract foreign talent, the Chinese authorities have relaxed immigration rules and set up a special, faster channel for foreign experts.<sup>13</sup> However, the Chinese government's effort to relax immigration regulations has encountered pushback from society. In February 2020, an online protest erupted against the revised draft of the Permanent Residency Regulation that would allow foreigners to obtain permanent residency in China more easily.

The prominence of the immigration policy reform and the ongoing marriage crisis in China provides an opportunity to test the effects of marriage demand on public immigration

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<sup>11</sup> <https://www.scmp.com/news/china/society/article/3014670/africa-and-across-asia-students-follow-belt-and-road-map>, accessed on 02-14-2021.

<sup>12</sup> <https://bit.ly/35I6v3f>, accessed on 01-15-2021.

<sup>13</sup> See <https://www.scmp.com/news/china/society/article/3019034/china-relaxes-immigration-rules-attract-and-retain-more-highly>

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attitudes. We took advantage of the survey experiment method to assess the extent to which marriage demand can encourage support for immigration.

If marriage demand does encourage such support, then we hypothesize that support will increase for relaxed immigration policies after exposure to the cue of the marriage crisis (**H1.1**). We also expect that male respondents are more susceptible to the marriage crisis treatment than female respondents, since men are disadvantaged in the marriage market due to the shortage of women (**H1.2**). Finally, we compare the effects of marriage demand to a classic reason for immigration support – the demand for labor. The purpose is to examine whether social demands such as marriage may have similar levels of effects to economic demands.

### **Design and Data**

The survey was conducted between September 28 and October 13, 2020. A Chinese survey company was hired to recruit online volunteers.<sup>14</sup> We collected 3,011 qualified responses, of which 82.8% were younger than 30, 48.8% were male, 81.9% had attended some form of college, and 38.3% had an annual income higher than RMB 60,000 (roughly \$9,200 U.S. dollars). The balance check shows that most control variables are balanced across the experimental groups, except for the gender of the respondents, whether they are state employees and whether they have children. Please refer to the Appendix for details.

An online sample is inevitably nonrepresentative, but it has been widely used in measuring public opinions in both democratic and authoritarian regimes and is shown to produce results comparable to those from representative samples (Huang & Yeh, 2016; Li et al., 2018; Shao &

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<sup>14</sup> The company asked to remain anonymous. The design is approved for human subject research ethical review by the Institutional Review Board of a Major Research University (Ref. 16-033)

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Liu, 2019). Furthermore, we have three additional reasons to believe that our online sample will be effective in addressing our research question. First, a representative sample usually requires a face-to-face survey, which can lead to opinion falsification when respondents answer questions related to politics and policies in authoritarian regimes (Mutz, 2011). An online survey, because of its anonymity, can solicit honest answers from respondents (Mummolo & Peterson, 2019). Second, our sample is skewed towards highly educated, young, and wealthy urban residents, who are the most vocal voices regarding government policies. Their opinions are more likely to affect future government policies than the opinions of other population groups. Lastly, young people are particularly suitable for our investigation because they are at the marriageable age. Our sample, therefore, should be more responsive to the marriage demand than a sample of older generations. In the other words, we believe our sample, which represents the social group that focuses more on the marriage issue and has greater influence on China's future immigration policy, would be more susceptible to the marriage crisis regarding immigration support than the general Chinese population. Nevertheless, we admit that our experiment's sample is nonrepresentative, and audiences should interpret the experimental findings alongside our observational study's findings that are based on a representative sample.

Our experimental design aims to temporarily elicit the concerns of the respondents in the treatment groups on the issues of interest while keeping the control group unchanged to thus create variation in the independent variables across the experimental groups. We randomly assigned the respondents to four groups. The control group directly answered the question on

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immigration attitude. The other three groups are treatment groups that represent the low-skilled labor demand treatment, high-skilled labor demand treatment, and marriage crisis demand treatment. The treatments were constructed as follows.

“China faces increasingly serious population crises. In the future, China will have a **shortage of low-skill labor (T1)/shortage of high-skill labor (T2)/50 million to 80 million men with no marriage partner in 2050 (T3).**”

To further influence the respondents, the treatments are accompanied by an image from social media that suggests a population crisis. We do not provide the picture of the population crisis to the respondents in the control group to keep them from thinking about population issues. One potential risk is that the treatment effect was brought on by the population crisis image rather than the treatment of marriage crisis. The labor shortage treatments, thus, can also serve as placebo groups to estimate the actual effects of the marriage crisis treatment. We further address this issue in the results section.

After the treatment, we asked the respondents about their support for relaxing immigration restrictions: “To what extent do you support China relaxing immigration restrictions to allow more foreigners to migrate to China and obtain Chinese citizenship?” The answer has a 4-point scale that ranges from 1 (do not support at all) to 4 (wholly support), which was rescaled as an index from 0 to 1 for the convenience of interpretation.

## **Results**

**Figure 1** presents the treatment effects on public attitudes towards immigration policy,

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i.e., the different means of immigration support between each of the three treatment groups and the control group.

[

**Figure 1** inserts here]

The results for the full sample indicate that both the marriage crisis and the shortage of high-skilled laborers can increase public support for the relaxation of immigration policies in China. The shortage of high-skilled labor increases public support by 3.7%, while the marriage crisis increases public support by 2.8%. The shortage of low-skilled labor has no significant effect on public attitudes towards immigrants. Our findings regarding the labor shortage factors correspond with existing studies on Western countries that the public prefers high-skilled immigrants and dislikes low-skilled immigrants (Hainmueller & Hopkins, 2015; Valentino et al., 2019). The results also confirm Hypothesis 1.1 that a marriage crisis can increase public support for relaxing immigration policies.

The heterogeneous effects of gender are presented in **Figure 2**. The results confirm Hypothesis 1.2. The male respondents were more susceptible to the treatment of marriage crisis cues, but they were less enthusiastic about the demand for high-skilled labor. For the female respondents, the results were the opposite – they were susceptible to the high-skilled labor demand but not to the marriage crisis. The heterogeneity between the male and female respondents confirms marriage demand as a rational consideration. Chinese men face a highly competitive marriage market. Chinese women, to the contrary, do not have such pressure; thus, they do not feel an urgent need to invite immigrants to address the marriage crisis. In addition,

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although it is outside the scope of this paper, the male respondents' reluctance to welcome immigrants because of high-skilled labor shortages may reflect the gender gap in which males occupy more high-skilled positions than females in China (Ichiro & Ma, 2020).<sup>15</sup>

[Figure 2 inserts here]

To examine the robustness of our findings, we conducted additional tests and robustness checks. First, if marriage demand is rational, then we expect that the marriage crisis would have less influence on people who are already married. Unfortunately, the survey did not ask the respondents about their marriage status. We used “having children or not” as a proxy and conducted an analysis of the heterogeneous effects. Consistent with our expectation, the marriage crisis treatment increases support for relaxing immigration policies only for the respondents who do not have children. Second, we excluded the respondents who reported themselves as students, since students may have different rationales regarding marriage than others do; the results were highly similar. Lastly, we conducted regression and ordinal logit analyses with and without the control variables, including age, gender, education, income, whether participants work for the government, whether they are members of the Communist Party, whether they have urban resident status (urban *hukou*) and whether they have children. The results remain the same and we report all t-test results in Table A5 and the regression results in Table A6 in the Appendix.

One may question whether the image of the population crisis may affect the treatment effect. We believe the treatment effects we found in T2 and T3 are unlikely to come from the

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<sup>15</sup> Additionally, see <https://www.hrw.org/report/2018/04/23/only-men-need-apply/gender-discrimination-job-advertisements-china>, accessed on 01-17-2021.

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population crisis image, which we assigned to all treatment groups. Low-skilled shortage treatment (T1)'s effects are insignificant even with the image, which suggests that the treatment effects come from the high-skilled labor shortage (T2) or the marriage crisis (T3). In addition, if the population crisis image were the cause, we should not observe such heterogeneous effects across respondents' gender in **Figure 2** given that the population crisis image is unlikely to upset only male respondents but not females.

One possible shortcoming of this survey experiment is that we do not have data on respondents' marriage status, and thus, we can only use gender and children as proxies for marriage demand. We encourage future studies to examine our findings with more accurate measurements of marriage status or marriage demands.

Additionally, our treatments do not specify the gender, age, and skill composition of the immigrants because this study did not intend to test which characteristic(s) of immigrants are more attractive to hosting countries. However, the heterogeneous effects of gender and number of children we found in our experiment's results indeed suggest that our respondents assume that immigrants would be suitable for marriage. The existence of such an assumption without explicit information or framing in our experiment may inspire future studies on which types of immigrants are more welcome in hosting countries. We address this point in greater detail in the discussion section, and we encourage future study on it.

In general, our findings from the survey experiment in China demonstrate that the perception of the marriage crisis can increase the support for immigrants and relaxed immigration policies. Such an effect is driven by males and people without children, the

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citizens who have a stronger demand for marriage but are disadvantaged in the marriage market because of the gender imbalance in China. This is consistent with the pattern of marriage immigration observed in Asia (Chang, 2020; Jones & Shen, 2008). Furthermore, the effect of the marriage crisis as a social concern shows a similar strength to the economic concern (high-skilled labor), which is a significant factor that affects immigration attitudes as confirmed by many studies (Valentino et al., 2019). We show that the marriage crisis indeed has a causal effect on the support for relaxed immigration policies.

## **Study Two: Observational Studies from ABS4**

A survey experiment can demonstrate the causation between marriage demand and immigration attitudes, although it is set up artificially and sacrifices external validity. To examine whether marriage demand can explain immigration support in a broader context, we used ABS4, which was conducted between 2014 and 2016 with randomly sampled respondents from 14 Asian countries/regions.<sup>16</sup>

### **Data and Key Variables**

We used the data from all countries included in the ABS4 except for Indonesia.<sup>17</sup> The data for gender imbalances were collected from the World Bank.<sup>18</sup> We collected other demographic, economic, and social information for all the countries in the ABS4 from the World Bank and a

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<sup>16</sup> The list of countries is available in the Online Appendix.

<sup>17</sup> The question concerning immigration attitudes was not asked in Indonesia.

<sup>18</sup> All such data were collected from the World Bank, except for Taiwan, whose data were collected from its government website because the World Bank dataset does not show Taiwan as a separate entity. For the World Bank data, see <https://data.worldbank.org/>. For the data on Taiwan, see <https://statis.moi.gov.tw/micst/stmain.jsp?sys=220&ym=10811&ytm=10911&kind=21&type=1&funid=c0120101&cycle=41&outmode=0&compmode=0&outkind=1&fldspc=0.7.&cod00=1&rdm=adnfbwhk>.

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government website (for Taiwan only). When we matched the data to the survey data in the ABS4, we only matched the data for the respondent's specific country in the surveyed year. For example, the ABS4 in Malaysia was conducted in 2014. We used the country-level data of Malaysia in 2014 to match the Malaysian respondents.<sup>19</sup>

**Dependent Variable.** We used the immigration support question as the dependent variable: "Do you think the government should increase or decrease the inflow of foreign immigrants into the country?" The answer had a four-point scale and was recoded to [0, 0.33, 0.66, and 1], which means that we can interpret the coefficient as the percentage change. When the index is larger, the respondents are more supportive of an immigrant inflow increase. We adopted two measures to process the missing values of the dependent variable. In the first model, we treated these responses as missing data. In the second model, we treated them as the midpoint of the index (0.5). We conducted analyses on both models.

**Independent Variables.** We chose two ways to measure the gender imbalance of marriage. First, we used the five-year average gender ratio (in the survey year of each country) at birth, which is measured by the number of male births per one female birth, to reflect the level of the gender imbalance.<sup>20</sup> Second, we obtained the average marriage age of each country from government sources and the United Nations Department of Economic and Social Affairs. We use the gender imbalance of the age group where the average marriage age falls in, because only the age-group gender imbalance was available from the World Bank. For example, the average marriage age in Hong Kong is 31.4 years; therefore, the gender imbalance at marriage

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<sup>19</sup> Two additional notes are as follows. For the data that is not released every year, the data in the year closest to the survey year was used. Additionally, China's country-level data were from 2015.

<sup>20</sup> The data were from the World Bank, except for Taiwan, whose data came from the government of Taiwan.

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age in Hong Kong is shown for the 30-34-year age group. Table A1-2 in the Appendix shows the data source and corresponding age group for gender imbalance. Taiwan's data were not available, and it was thus excluded in the analysis of the "gender imbalance at mean marriage age" variable.

We calculated the gender imbalance by using the gender ratio at birth minus 1; this value reflects how many more males are born per one female birth. When the value is larger, the country has a greater gender imbalance towards males.

We have two reasons to not use the gender ratio of the entire population. First, it is the gender imbalance at marriageable (or potentially marriageable) age that can cause a marriage crisis. The gender balance of the elder generation is not relevant. Second, the gender imbalance becomes worse only in recent decades.<sup>21</sup> For many countries, the gender ratio in the general population is acceptable, but the gender ratio at birth is unbalanced. One example is Vietnam, whose male to female ratio in the general population is almost 1:1, but the male to female ratio for newborns is approximately 1.12. Vietnam, therefore, has the second-highest imbalanced gender ratio of all countries in the ABS4 and is only behind China. Therefore, we believe that the gender ratios at birth and at the average marriage age are more appropriate measurements.

**Control Variables.** We include a series of control variables in different models to test the robustness of our findings. At the individual level, we include gender, age, marriage status, education, religious belief, employment status, social strata and income level. At the country level, our control variables are the GDP per capita, population (log), immigrant population,

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<sup>21</sup> For example, see <https://asia.nikkei.com/Economy/Asia-s-gender-imbalance-is-bad-news-for-growth> (accessed on January 7, 2021).

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level of democracy (Christian Breunig et al., 2012), percentage of the population in the labor force to the total population, gender imbalance level in the total population, and percentage of females in the total population. The data for the control variables are collected from the World Bank, although a few of the figures for Taiwan are collected from the government website of Taiwan.<sup>22</sup>

## Results

The descriptive statistics of this observational study are presented in Table A2 in the Online Appendix. In general, the average supportive level to immigration is 0.44 (missing data approach) and 0.45 (midpoint approach) on a 0-1 scale. The gender imbalance at birth varies from 0.03 to 0.14, with an average of 0.08. This means that per 100 female births, there are on average 108 male births in the Asian countries surveyed. China has the highest imbalance level of 1.138. Mongolia and Myanmar have the lowest level (1.03). **Figure 3** shows the linear relation between immigration support and gender ratios at birth for each country; the relation is ultimately shown to be positive.

[**Figure 3** Inserts Here]

The OLS regression results are presented in **Table 1**.<sup>23</sup> We used fixed-effect models, and both country-level and individual-level variables were controlled. Across all models, the gender imbalance at birth is positively associated with the support for more immigrants. We report the results of the four models by both including and excluding Taiwan and treat the “don’t know” response in the dependent variable as both a “missing value” and “midpoint”.

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<sup>22</sup> Check the Appendix for a detailed list of each control variable and how it is calculated.

<sup>23</sup> The ordered logit regressions have similar results. See the Online Appendix for details.

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According to Model 1, one more male born per 100 female births (more imbalance towards males) increases immigration support by 29%. These results are consistent with the experimental findings that a gender imbalance induces marriage demand, which, in turn, transforms into support for more immigration.

[Table 1 Inserts Here]

We then present in **Table 2** the OLS regression results that use the gender imbalance in the marriage age group with the fixed effect of country and both the country-level and individual-level control variables. The results remain the same. The level of gender imbalance in the marriage age group is positively correlated with immigration support at a statistically significant level. On average, one more male per 100 females (more imbalance towards males) at the marriage age increases immigration support by approximately 12% depending on the models. The result indicates that the effect of marriage demands on immigration support is robust regardless of whether it is measured by the gender imbalance at the current marriage age or in a future trend.

[Table 2 Inserts Here]

Furthermore, Tables 1 and 2 both show that married respondents are less supportive of immigration across all models. Male respondents are more supportive of immigration, although the results only pass the conventional significance test in some models. Together, the results on gender and marital status are consistent with our theory. Respondents who belong to the group with more potential marital needs are more supportive of the immigrants, indicating that they have a self-interest consideration. We further conducted heterogeneity analysis by examining

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how gender imbalance interacts with a respondent's gender. Although the effect of gender imbalance on immigration support is slightly stronger for male than that for female (as our theory predicted), it is not significant. Unfortunately, ABS4 did not provide data that directly measured respondents' marriage demand. Unlike our experimental treatment, the survey also did not prime respondents about marriage pressure when it presented the immigration support question. Thus, no data was available to further test the gender difference in marriage pressure at the individual level. Therefore, the ABS4 evidence on gender's heterogeneous effects is suggestive. The ABS4 results are more appropriate in confirming the generalizability of the mechanism, which we identified clearly in the experiment, based on a cross-national representative sample. We hope that future surveys consider including questions on marriage pressures/anxieties alongside immigration attitudes to further test our argument.

We conducted several additional robustness checks. First, we use an ordinal logit model to test the effect of gender imbalance at birth on immigration support, and the results remain similar (Table A8 in Appendix). Second, a concern may be that the Chinese respondents influence the result since the Chinese sample is the largest in the ABS4, and China has the largest gender imbalance at birth. In the Appendix (Tables A10 and A11), we show that when the Chinese respondents were omitted from the regression analysis, the effects of gender imbalance at birth and at marriage age remain similar. The results show that the effects of marriage demand on immigration go beyond China and are applicable to Asian countries. Finally, we notice that the gender imbalance in the marriage age group in Hong Kong seems to be an outlier that is much higher than those of other country/regions. We therefore re-run the

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OLS analysis of the gender imbalance at marriage age excluding data from Hong Kong. The results (Table A12 in Appendix) remain the same, which indicates that our results are not driven by any outlier effect.

## **Conclusion**

This paper presents evidence that concerns of a marriage crisis can stimulate support for relaxing immigration restrictions. From the experiment, we find that male respondents are susceptible to the cue of a marriage crisis but not female respondents. Such results show that the consideration of marriage demand is rational – in the cases that we study, the male respondents are disadvantaged in the marriage market, and they thus desire an increase in female immigrant supply, while the female respondents do not have such a crisis and are thus indifferent about relaxing restrictions on immigrants. We also compared the demand for labor to the demand for marriage. The results show that marriage demand, like the demand for high-skilled labor, can boost support for immigration. This means that citizens' social utility (of marriage) is as important as their economic utility. Although our experiment establishes causality between marriage demand and immigration support in China, our analysis of the ABS4 data suggests that the effects of marriage demand have higher external validity in explaining immigrant support across 13 Asian countries.

In our experiment, the causal inference is based on an online sample with respondents who are more educated and younger than China's general population. However, we believe that this result has significant policy implications compared to a survey on average citizens. Since

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no popular election can restrict policy makers in China, the younger and educated population is more likely to voice their policy preferences, especially on the Internet, and thus elicit responsiveness from the government (Chen et al., 2016).

Although our findings show that Chinese respondents are more likely to invite more immigrants to solve the marriage crisis, this does not mean that all immigrants are equally welcome. Since we follow the political economy approach and see marriage demand as a part of a (rational) utility function, we do not examine how sociopsychological factors affect the causal relation between marriage needs and immigration support. We controlled for sociopsychological confounders through randomized experiments. Indeed, certain characteristics of immigrants, e.g., gender, race, etc., may determine marriageability and immigration acceptance in the host countries. For example, men may be less enthusiastic about immigrants when they perceive that inflowing immigrants are mostly men who compete with them in the marriage market (Hernes & Knudsen, 1992). Certain racial and religious groups of immigrants may be less welcome as potential marriage partners due to cultural and ethnic stereotypes. Since our experiment did not aim to test the effect of personal characteristics of immigrants, we are unable to address these possibilities with the current data. Future studies are encouraged to continue to explore these matters.

This paper contributes to the literature in several ways. First, it expands the scope of the political economy approach to immigration attitudes. When deciding their preference for immigration policies, people consider not only their financial gain and loss but also the social aspects, for example, marriage demand. Our results show that marriage demand has positive

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effects on immigration support like those from the demand for high-skilled laborers. Marriage demand is merely one of the factors that fulfill social utility. Future studies may continue to explore how citizens' other social needs influence their attitude on immigration.

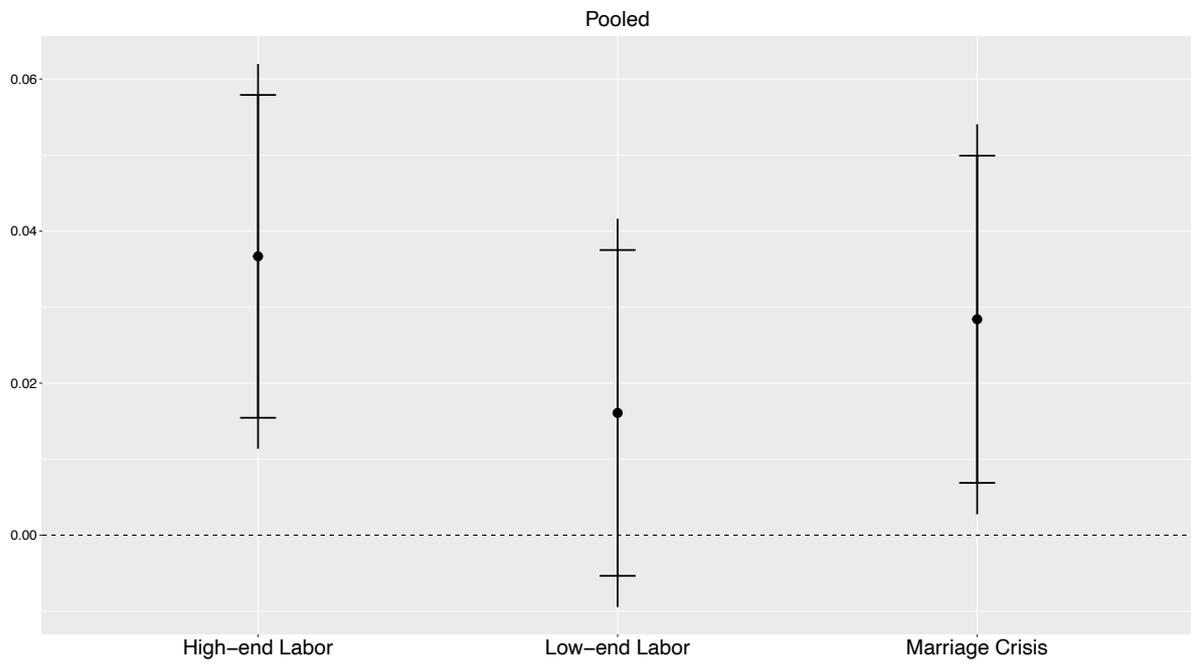
Second, studies on immigration and immigration attitudes have focused overwhelmingly on developed countries in Europe and North America, since they were originally ideal immigration destinations and have accepted a large number of immigrants (Bloom, Arikan, & Courtemanche, 2015; Bloom, Arikan, & Lahav, 2015; Ford, 2011; Hainmueller & Hangartner, 2013; Hainmueller & Hiscox, 2007; Hainmueller & Hopkins, 2015; Sniderman et al., 2004). Studies on developing countries are relatively underdeveloped. This paper contributes to the burgeoning body of literature on developing countries by providing evidence for Asian countries with recently emerging immigration trends, especially China as a case. Our experiment shows that Chinese citizens have shown a preference for high-skilled immigrants, similar to citizens in other countries. More importantly, they also welcome immigrants to address their own imminent problem: the marriage crisis.

Furthermore, our research on the ABS4 indicates that the effects of marriage demand apply to a broader range of East and Southeast Asian countries, a region that consists of countries with various political and economic conditions. With the rapid growth of immigrant populations in the region, marriage immigration from developing countries (e.g., Vietnam and Cambodia) to more developed countries (e.g., Singapore, Japan, and recently Mainland China) is a salient social and political issue that deserves further scholarly attention. This study suggests that practitioners in Asian countries may need to recognize the relation between

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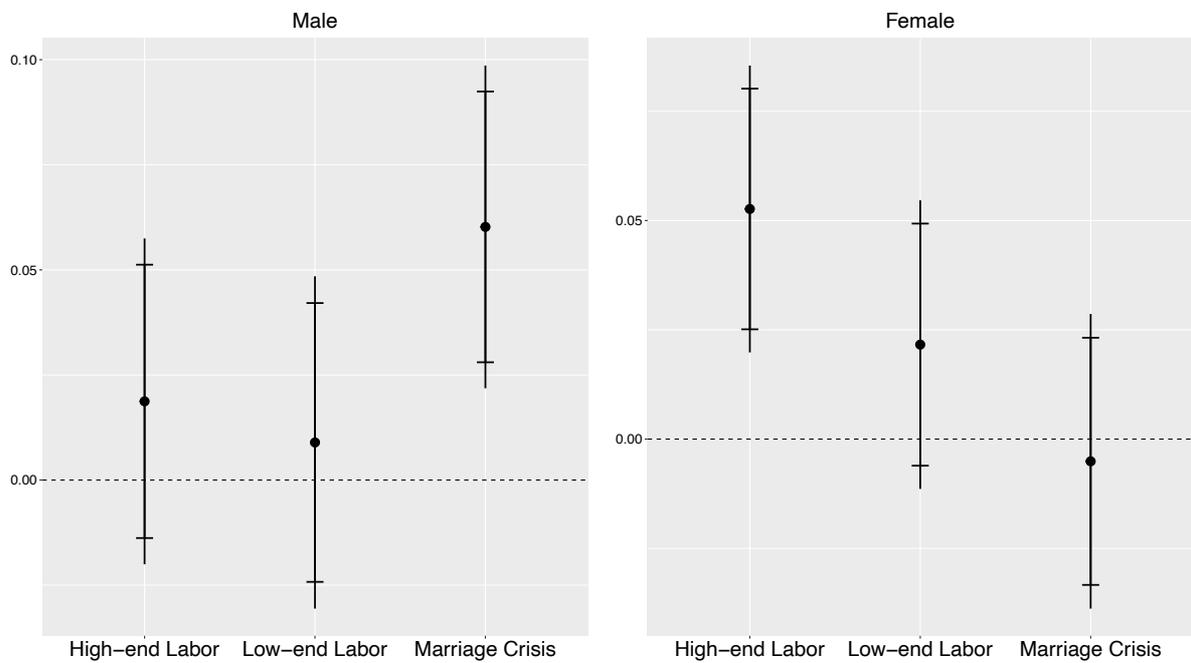
marriage demand and the need to design immigration policies for future challenges of regional governance.

**Figure 1 Treatment Effect of Experimental Groups (Full Sample)**



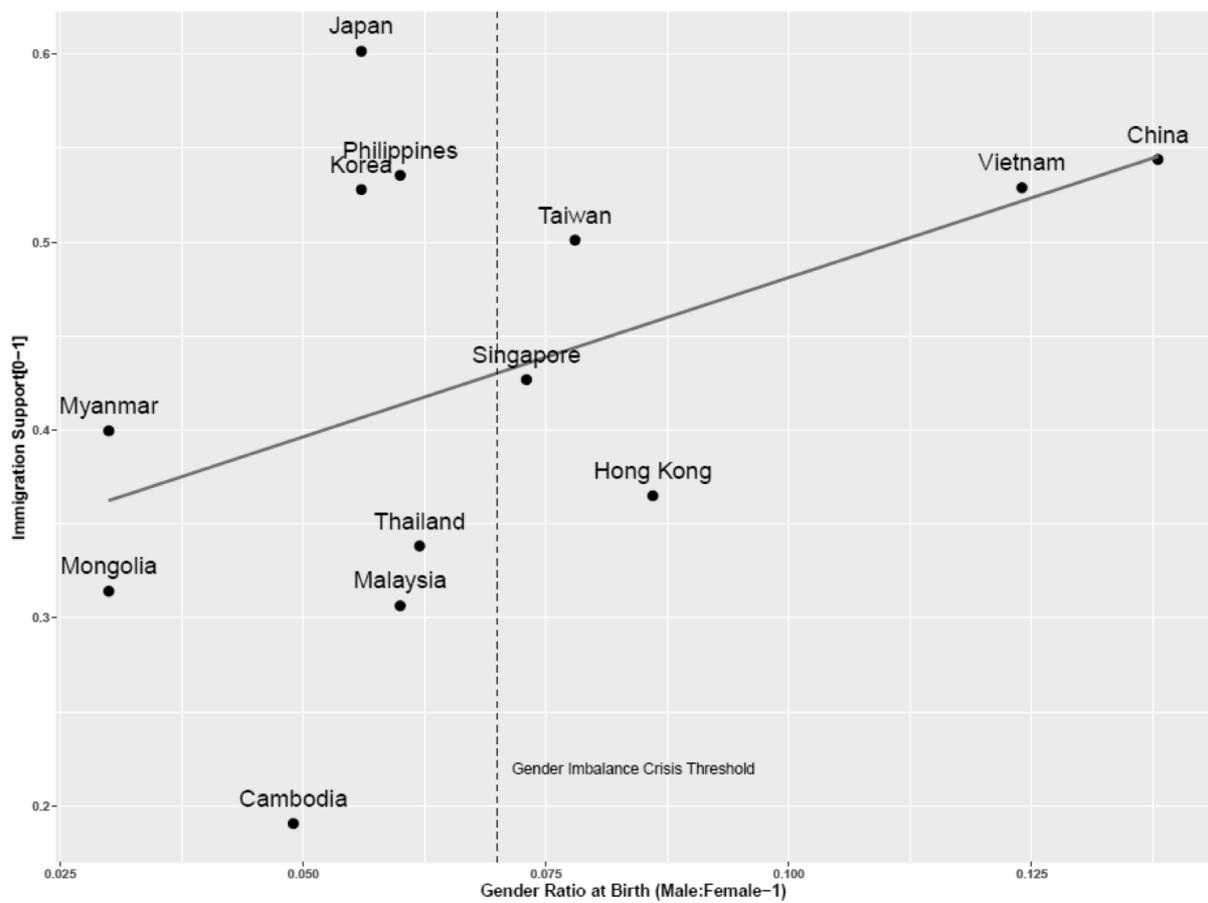
Note: T-test results reported. The baseline is the Immigration Support of the Control Group. CI=95%/90%

**Figure 2 Treatment Effect of Experimental Groups (Gender Heterogeneous Effect)**



Note: T-test results reported. The baseline is the Immigration Support of the Control Group. CI=95%/90%

**Figure 3 Immigration Support and Gender Ratio at Birth (ABS4)**



Note: Source is from ABS4; the line is the linear predictor; the dashed line denotes the conventional threshold of the gender imbalance issue (107:100).

**Table 1 Regression Results of the ABS4 Data (Imbalance at birth)**

	(1)	(2)	(3)	(4)
DV: Immigration Support	Missing No Taiwan	Missing with Taiwan	Midpoint No Taiwan	Midpoint with Taiwan
Gender Imbalance at Birth	29.86*** (2.224)	21.64*** (0.652)	29.60*** (2.070)	20.54*** (0.612)
Male Respondent [0-1]	0.0152 (0.00904)	0.0174* (0.00868)	0.0136 (0.00843)	0.0158* (0.00815)
Married [0-1]	-0.0115* (0.00613)	-0.0133** (0.00565)	-0.0108* (0.00600)	-0.0127** (0.00554)
Other Individual Control	Yes	Yes	Yes	Yes
Country-Level Control	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Constant	2.023*** (0.370)	-0.687*** (0.135)	1.898*** (0.351)	-1.177*** (0.120)
Observations	12,463	13,817	13,320	14,718
R-squared	0.197	0.195	0.194	0.191

Note: Robust standard errors are in parentheses, clustered on countries, and the cross-country weight used was provided by the survey. “Missing” means coding the “unknown/no answer” of the DV question as missing values. “Midpoint” means coding the “unknown/no answer” of the DV question as the middle value (0.5 of [0,1]) of the scale. \* p<0.1, \*\* p<0.05, \*\*\* p<0.01.

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**Table 2 Regression Results of the ABS4 Data (Imbalance at marriage age)**

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	(1)	(2)
DV: Immigration Support	Missing	Midpoint
Gender Imbalance at Marriage Age	12.62*** (0.940)	12.51*** (0.875)
Male Respondent [0-1]	0.0152 (0.00904)	0.0136 (0.00843)
Married [0-1]	-0.0115* (0.00613)	-0.0108* (0.00600)
Other Individual Control	Yes	Yes
Country-Level Control	Yes	Yes
Country Fixed Effects	Yes	Yes
Constant	-11.21*** (0.633)	-11.22*** (0.586)
Observations	12,463	13,320
R-squared	0.197	0.194

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Note: Robust standard errors are in parentheses, clustered on countries, and the cross-country weight used was provided by the survey. “Missing” means coding the “unknown/no answer” of the DV question as missing values. “Midpoint” means coding the “unknown/no answer” of the DV question as the middle value (0.5 of [0,1]) of the scale. Taiwan is not included because of missing data. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

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