Immigration and Intermarriage Economic Premium:

Evidence from Mainland China Immigrants Inflow in Hong Kong

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Abstract: The study of ethnic intermarriages is important not only because it has profound implications on family formation, but it also has relevance regarding social mobility, societal openness, and intergroup relations. The case of Hong Kong is interesting because it has always been an immigrant society during British rule and after its retrocession. Unlike other countries, its experience can serve as a natural "laboratory" to study the impact of intermarriages without confounding influences due to dissimilar cultural practices. Using representative census and survey data in Hong Kong, I examine whether the intermarriage economic premium exists among mainland immigrants. Based on the difference-in-differences method with propensity score matching, the observed premium not only disappears after controlling for selectivity, there is actually some slight indication of penalty for female and premium for male immigrants, though none are statistically significant. Nevertheless, female immigrants who experienced upward job mobility are more likely to intermarry.

Key words: mainland immigrants, intermarriage, economic premium

1. Introduction

As many developed countries have experienced a steady inflow of immigrants, considerable studies have endeavored to explore the resources and impacts of the assimilation process. Intermarriage, which is commonly defined as marriage between foreign-born individuals and native-born ones, has often been used as a proxy for the extent of immigrant societal integration between different groups. Marriage between immigrants and natives in the host country are paid special attention not only because they could measure the socioeconomic assimilation but also it could be a key factor to produce this integrated process.

A rich literature exists to focus on measuring the economic assimilation of immigrants and analyzing their performance and impact on the labor market. Recently, there have been more efforts to study the impact of intermarriage on the economic integration of immigrants measured by socioeconomic status or earnings. Generally speaking, there are mainly two propositions: (1) Productivity proposition: it believes that intermarriage could make immigrants quickly adapt to the local environments to boost their labor market performance by having more access to the local social networks improving the immigrant's legal status improving one's language acquisition (Chiswick and Miller 1995; Dustmann and Van Soest 2002; Dribe and Lundh 2008; Meng and Meurs 2009); and (2)Selection proposition: it argues that intermarriage is a side product for those immigrants with high degree of adaptability and commitment to stay in the host countries or cities, and therefore there is no intermarriage premium once *selection bias* is accounted for or *unobserved heterogeneity* is incorporated (Kantarevic, 2004; Nottmeyer, 2010). To make causal interpretation seems challenging in this case as there is endogeneity between either status or earnings and partner selection.

Consistent with previous studies, I adopt instrumental variables to capture the exogenous effect. What's more, this paper extends previous studies by using a difference-in-differences method with propensity score matching approach to further compare the economic outcomes on groups with similar characteristics. The results indicate that the economic premium not only disappears after controlling for selectivity, there is actually some slight indication of penalty for female and premium for male immigrants. At the same time, I am trying to explore the mechanism of intermarriage and intra-marriage. In another word, the second research question is that who are more likely to get intermarried. The result shows that female immigrants who experienced upward job mobility are more likely to intermarry, indicating that those immigrants who are with higher adaptability and ability in the host place have higher probability to be exposed to natives and they may be highly motivated to marry up in the host city by marrying a Hong Kong citizen.

2. Background

As a former British colony, Hong Kong has a continuous immigrant inflow from Chinese Mainland. With a surge of refugees from China during and after the Cultural Revolution in the 1950s and 1960s, a very strict policy was implemented to prevent the influx of illegal immigrants before the mid-1960s, according to which illegal immigrants would be repatriated immediately once found. However, since 1967, all mainland immigrants were granted permanent residence once they reached Hong Kong out of labor shortage in Hong Kong (So, 2003). From 1974 to 1980, the policy became what was known as the "touch-base" policy. Immigrants who managed to avoid being caught and repatriated at the border, once they reached an urban area could get permission to apply for an identification card and to reside and work in Hong Kong (Lam and Liu, 1998). During 1950

to 1978, over 1 million legal or illegal mainlanders' came to Hong Kong. After 1978, China gradually opened up the country and encouraged cross-border economic activities between Hong Kong and mainland China. As a result, border control of the mainland side weakened and there were soaring numbers of illegal immigrants. Between 1978 and 1980, the Chinese immigrants, about half of which are illegal, were estimated to be more than 400,000 (Siu, 1999). Since 1982, One-way Permit (OWP) Scheme was launched and it is still implemented nowadays. Until now a total of nearly 1 million Mainland Chinese immigrants had been admitted through this route. Since 1993, immigration policy has favored family reunification, and admitted more children and spouses from the Mainland (Siu, 1999). In 1997, the sovereignty over Hong Kong was transferred to Communist Chinese rule. This event directly encouraged more and more mainland migrants to Hong Kong and the number has been an increasing trend since then.

Corresponding to the immigration policy and its geographic location as a port city, Hong Kong also has a long history of cross-border marriage. According to Ge and Ma (2008), the total cross-border marriages from both sides would account for 57% of the registered marriages in Hong Kong in 2005; meanwhile, there is a sharp increase in immigrant females to Hong Kong: in 1996, there were 105,241 female temporary residents who obtained a resident permit for a period of between 3 months to 7 years in Hong Kong, and this number increased to 178,415 in 2001. As a result, as what Figure 1 shows, the sex ratio of males and females are greatly unbalanced when the immigrants are accounted for.

[Figure 1 about Here]

3. Literature Review

The ways individuals sort into marriage have significant implications not only for individual outcomes such as fertility, employment and income but also for the socioeconomic inequality

between households and across generations. Rich literature in the social sciences, economics and even biology shows that partnership formation is more likely to take place among individuals with similar characteristics on ascribed characteristics such as height, weight, IQ, ethnicity and religion as well as achieved traits like education and income (Johnson 1980; Kalmijin 1991, 1993; Mare 1991). However, different from the general positive assortative mating, there are several possible benefits from intermarriage.

One of the possible benefits is that intermarriage may provide access to social networks. Since an immigrant could obtain some knowledge of local labor market via a native spouse's social networks, he or she may get better employment opportunities and have higher returns. At the same time, having a native spouse could help an immigrant overcome cultural differences in the host place and encourage them have better social assimilation. One prominent example is language acquisition since a native-born spouse can help an immigrant improve local language skills much faster. Several studies analyzing the role of native language acquisition suggest that immigrants with better language skills assimilate much faster (Chiswick and Miller 1995; Dustmann and Van Soest 2002). Another possibility is that intermarriage may improve the immigrant's legal status in the local labor market. Because employers would often prefer to hire workers staying with the company for a long time, intermarriage may serve as a signal that the immigrant plans to stick around. More importantly, with permanent resident status, an immigrant may have higher possibility to work full-time legally and enjoys higher earnings.

Among the literature on the relation between economic assimilation and intermarriage, different hypotheses are proposed. Those studies support productivity hypothesis conclude that intermarriage premium exist, although the extent varies by different host countries.

Baker and Benjamin (1997) focused on immigrant women in United States and found that those intermarried female immigrants do better in the labor market than their counterparts from a non-intermarried family, as immigrant women can afford to search and wait for jobs that promise a better future than those from an endogamous marriage. With intermarriage, not only immigrant women, but also immigrant men could get earning premium. Georgarakos and Tatsiramos (2009) paid attention to the labor market outcomes such as network effects and self-employment, and find positive effects from intermarriage on immigrant men in the United States. As a whole groups of immigrants, several studies done in different countries Meng and Gregory (2005) found that a positive intermarriage premium of 15 to 23 percent among immigrants in Australia after taking account of human capital endowments and endogeneity of intermarriage, and they claimed that the premium is mainly attributable to a faster speed of assimilation rather than any difference in labor-market quality between intermarried and non-intermarried immigrants at the point of arrival. Similarly, positive effects on wages can also be found among Swedish and French intermarried immigrants (Dribe and Lundh, 2008; Meng and Meurs 2009).

However, studies based on selection hypothesis show no such benefits once selection bias is accounted for (Kantarevic, 2004). This hypothesis claims that there is reverse causality between intermarriage and labor market outcomes, that is, immigrants who are more integrated and have better labor market outcomes before marriage may be more likely to marry natives than their counterparts. Once unobserved heterogeneity is incorporated, advantageous effects from intermarriage vanish and do not differ from premiums from marriage between immigrants (Nottmeyer, 2010). Furthermore, based on Kantarevic (2004), economic premiums may be also different by the specific characteristics of the immigrant population among countries of residence.

In this paper, whether there is intermarriage premium should be closely checked as the specialties of the relationship between Hong Kong and Mainland China. Unlike the intermarriage in United States or Europe, Hong Kong as a historically immigrant society provides us a good social "laboratory" to study the impacts from intermarriage by reducing or even eliminating the confounding effects due to intergroup dissimilar cultures, races and religions. Based on the previous studies, I firstly propose the following hypothesis:

H1a: The intermarriage economic premium would disappear for mainland immigrants in the mature labor market of Hong Kong after the selection bias is controlled for;

Since the majority of the mainland immigrants are from Guangdong Province and their native language is also Cantonese[1], and they could work full-time based on the immigration policies even if they were illegal in the earlier period, the access to local social networks may be one of the major ways to get higher earnings and better occupations for the intermarried immigrants. Thus, I would propose a competing hypothesis as follows:

H1b: The intermarriage economic premium does exist for mainland immigrants and the major assimilation channel is via the social network of native spouses;

Meanwhile, due to different divisions of labor and work trajectories for men and women in Hong Kong, I further propose the following:

H2: The intermarriage economic premium for mainland immigrants in Hong Kong differs by gender.

To examine these hypotheses, I would use representative census and survey data in Hong Kong and do analysis for males and females separately.

4. Data and Descriptive Statistics

[1] Even if the immigrants are from other provinces, Cantonese as traditional Chinese language is much easier to be learned by mainland Chinese.

4.1. Data

One dataset used is the 5% 2011 population censuses in Hong Kong, which contain consistent measurements of one's marital status, education, birth place, nationality, usual and other spoken languages, types of quarters and duration of stay in Hong Kong.

I use census data in our research instead of survey data to avoid coverage bias that is common in relative small-scale survey data. Problem arising from the later are high because many of those who are old cannot or difficult to be included in our sample. Instead, using data constructed from the censuses could avoid under-coverage problem since they should be representative of our intended target population. However, one of the major limitations is that we only have the current information on earnings of the respondents, and we cannot distinguish those who get intermarried before coming to Hong Kong and those who did not as there is no information on one's marriage year in census data.

To overcome these shortages, the other dataset I use is the Hong Kong Panel Study of Social Dynamics (HKPSSD)[2], which is the first-ever household panel study in Hong Kong collected by the Center for Applied Social and Economic Research in Hong Kong University of Science and Technology. The first-wave benchmark survey was completed in March 2012 and over 3,214 households, 7,218 adults aged 15 or above, and 958 children (under age 15) were interviewed. Among them, there are 1,685 married couples, and more than one thousand Chinese born adults arriving at Hong Kong after 1980.

In the Immigration Module of this survey, there are detailed information on one's first and last occupations before coming to Hong Kong, and the first and current occupations after coming to Hong Kong. Another big advantage of this survey is that the respondents were also asked

[2] See details in http://caser.ust.hk/en/projects/HKPSSD/ and the second-wave would be available soon.

about their occupation, educational levels while they were getting married. The retrospective information could help us control the effects from different assimilation processes for immigrants in Hong Kong.

4.2. Restricted Samples and Variables

In HKPSSD, to avoid those who migrated with parents and received education in Hong Kong, who are more likely to be assimilated during teenage, sample is restricted to those who migrate to Hong Kong after 18 years old. Meanwhile, to exclude those who migrate through intermarriage with Hong Kong natives, I further restrict the mainland migrants getting married after getting their first Job in Hong Kong. The sample distribution and categories are presented in Table 1 and 2.

[Table 1 about Here]

[Table 2 about Here]

Respondents' annual income is the dependent variable in the analysis of economic premium while using 2011 Hong Kong census data; however, we only have information on individual's occupational history in HKPSSD. Therefore, I prefer to adopt the International Socio-Economic Index (ISEI) of Occupational Status as the main dependent variable while using the survey data. Theoretically, the ISEI measures the attributes of occupations that convert a person's education into income. As a result, the estimation by ISEI is empirically consistent with that by income itself; accordingly, the ISEI index is generated by the optimal scaling of occupation unit groups to maximize the indirect effect of education on income through occupation and to minimize the direct effect of education on income, net of occupation (Ganzeboom et al. 1992; Ganzeboom and Treiman 1996).

The main independent variables include intermarriage (dummy), Hong Kong arrival year age, Cantonese level while arriving, marriage year, 1st Job Year, spouse's current Occupation of in Hong Kong, spouse's occupation while getting married, respondent's education while getting married, respondents' highest education attainment , age, gender, Work Hour so on and so forth.

5. Model Specification

The biggest challenge of this analysis is that it is not easy to exclude the possibility that intermarried immigrants are systematically different from immigrants who are intra-married to immigrants. It may result in biased estimates due to sample selection bias. Since we only observe the earnings and occupations of the immigrants who chose to marry natives and the immigrants who choose to marry immigrants, a comparison of the average earnings between the two immigrant groups would yield biased estimates of intermarriage premium. As pointed out by Kantarevic (2004), intermarried immigrants may possess characteristics that are valued in both labor and marriage markets, for example, personal ability, physical appearance, language proficiency and social networks. Meanwhile, it is also possible that the immigrants who intermarry with natives might be more open-minded of cultural and social differences, which may help them to adjust to new environment faster. What's more, the decision to marry a native or an immigrant may be based on the expected benefits from marriage. As a result, in the presence of sample selection, it would not be clear whether the economic premium enjoyed by intermarried immigrants is due to the intermarriage itself or due to some other unobserved features possessed only by those immigrants who self-select into intermarriage.

Furthermore, another impediment to the identification of the intermarriage effect arises while the intermarriage is influenced by other factors, like motivation, ability and earning within different family types. For example, it is quite possible that immigrants with higher earnings are

more likely to get intermarried if they have many native colleagues and friends with similar background in either workplace or social meeting places. If that is the case, it is also difficult to make the causality conclusions due to this endogeneity bias.

According to the previous studies, there are several ways to correct for selection bias and endogeneity issue. One way is to use longitudinal data to analyze intermarried immigrants' economic integration before and after marriage. Another way is to use two-stage estimation procedure which treats the sample selection bias as an omitted variables problem. In addition, sample selection could also be regarded as "missing data" problem, which could be dealt with by constructing counterfactuals of earnings/ISEI for intermarried immigrants under alternative conditions. In this research, I will firstly instrument for the intermarriage indicator using Hong Kong census data and then reconstruct the survey data and track individuals' information to compare the intermarried and intra-married immigrants' economic integration before and after marriage by adopting difference-in-differences (DID) with Propensity score matching.

5.1. Instrumental Variables (IV)

Consistent with the previous studies by Kantarevic (2004) and Meng and Gregory (2005), I would use an instrumental variable to reflect marriageability within one's age-ethnic group. I firstly use the combined1991-2011 Hong Kong census data to calculate the number of single and married males and females aged 20-45 for each year. For males, I adopt the formula F_i / F_n to calculate the instrumental variable, where F_i is the number of unmarried mainland-born women from China and F_n is the number of unmarried native-born women in Hong Kong. For females, I use a similar one: $M_i / M_{n,}$ where M_i is the number of unmarried mainland-born men from China and M_n is the number of unmarried native-born men in Hong Kong.

5.2. Difference-in-differences (DID) with Propensity score matching

In HKPSSD data, I explore the relationship between intermarriage and immigrant's ISEI when he/she was getting married (i.e. the time point before marriage), and also the relationship between intermarriage and one's current ISEI. I choose to adopt difference-in-differences (DID) with Propensity score matching, and in order to maintain the small sample size in the analysis, I prefer Kernel-based Propensity Score DID. It is similar to one-to-one propensity score matching where a predicted probability of participating is estimated for each member. However, instead of matching a unique control group member to each participant, each participant is matched to a weighted average of all controls as described by Heckman et al. (1997). In other words, this weighted average person is calculated by a Kernel function which gives weights to all controls where similar people get higher weights. To be specific, at the first stage, it runs a Probit model and generates the variables weights that contains the weights derived from the kernel density function, and at the second stage, it runs a regression applying the average weights obtained from the propensity score. In this analysis, the model equation can be expressed in the following way:

$$ISEI_i \bullet Weights_i = \beta_0 + \delta_1 \text{ Intermarriage}_i + \delta_2 \text{ Period}_i + \delta_3 \text{ Intermarriage}_i * \text{Period}_i + \beta_k X_{k,i} + \varepsilon_i$$

Here, δ_1 estimate the treatment effect from intermarriage, δ_2 estimate period effects by measuring the ISEI changes before one gets married and the time when one gets married, and also the ISEI changes at the time one gets married and current situation (post marriage). δ_3 is the difference in differences impact. X_k are covariates controlled in the model and ε_i is the error

term. To make it clearly, I will estimate two separate models to compare the ISEI differences for respondent's three time points: pre-marriage, at marriage and post-marriage.

6. Empirical Results

6.1. Main results from OLS and IV estimation

Ordinary Least Squares (OLS) is used as the baseline model to examine the relationship between intermarriage and immigrant's current annual income using 2011 Hong Kong Census data. Table 3 clearly shows us that intermarriage is positively related with one's current annual income and the positive effects are larger for males than for females. Furthermore, IV estimations are also shown for males and females respectively. Differently, although IV-2SLS estimation for males is still significant, while for female, the result is not consistent with the OLS result: the sign of the coefficient for intermarriage becomes negative, indicating that intermarriage may lead to less income for immigrant females. This is contrary to theoretical expectations and one potential problem is that the endogeneity problem cannot be solved by IV-2SLS estimation.

[Table 3 about Here]

As a matter of fact, it would be too rush to make any conclusion among females here, since there are two distinguished groups: one is female immigrants who get intermarried before arriving Hong Kong and the other group is those who marry native spouses after arriving Hong Kong. For the former group, they are more heterogeneous and the casual direction between intermarriage and immigrants' economic performance is ambiguous.

6.2. Main results from DID with Propensity score matching

In HKPSSD survey data, even if we do not have enough information on one's income, it is robust to use one's ISEI to measure immigrants' economic premium, theoretically and

empirically. From OLS estimation, Table 4 also shows that intermarriage has a significantly positive relationship with immigrant's current ISEI, especially for males. What's more, immigrants' ISEI at marriage is correlated with his or her ISEI before; and their current ISEI is also associated with ISEI of his or her spouse. Interestingly, intermarriage effect even has a marginal significant effect (3.674) with immigrant's ISEI when they get married. These results indicate that immigrants' economic premium may exist before their intermarriage and there exist selection bias and endogeneity as people are more likely to marry native spouse with similar level of economic attainment or background.

[Table 4 about Here]

After getting Kernel-based Propensity Score in Table 5, the DID results shown in Table 6 illustrate that there is no significant difference of ISEI for inter-married and intra-married male immigrant, while there is significant difference for immigrant females (6.338).

[Table 5 about Here]

[Table 6 about Here]

There are several possible explanations for the gender differences. One is that women are more likely to have high motivation to stay in Hong Kong. In Chinese culture, men should take the responsibility to take care of elder parents and live close with their hometown; while women do not have this constraint and parents would expect their girls to marry up in a bigger city to realize social upward mobility. Another reason may be because women are usually with higher adaptive ability like communication and language ability to quickly find their position in Hong Kong. And the gender difference may also due to the service-oriented economy in Hong Kong. In Hong Kong, females could benefit from the specific economic structure in this international

finance and service center, while manual male workers are not in high demand in this labor market.

For immigrant females, the results from Table 6 also show that they have different probability to enter intermarriage. Figure 2 drawn from Table 6 clearly presents that immigrant women with increasing ISEI since their first job in Hong Kong have significantly higher probability to get intermarried. In other words, if immigrant women experience an upward mobility in native labor market during the period of their first job in Hong Kong and their marriage, they are more likely to find a native spouse; on the contrary, if they suffer a downward mobility, they have higher probability to choose an immigrant spouse, controlling other variables constant. This is consistent with one of our previous concerns that immigrants with higher earnings are more likely to get intermarried if they have many native colleagues and friends with similar economic background in their work and social activities.

[Figure 2 about Here]

To examine whether there is intermarriage economic premium for immigrants, my focus lastly put on the comparison of the immigrant's ISEI at marriage and post-marriage. After getting Kernel-based Propensity Score in Table 7, the DID results shown in Table 8. Surprisingly, for both immigrant males and immigrant females, there is no statistically significant effect on economic premium from intermarriage. Moreover, there is actually some slight indication of penalty for female and premium for male immigrants, though none are statistically significant.

[Table 7 about Here]

[Table 8 about Here]

Therefore, I conclude that after controlling for selection bias, there is no intermarriage premium for mainland immigrants in Hong Kong labor market. Further, although there is no gender difference for the intermarriage effect, gender difference does exist on entering intermarriage. That is, our hypothesis 1a and hypothesis 2 are supported by the above analysis.

7. Robustness Check

7.1. Placebo test

The sample of this analysis above was restricted to those who get married after getting their first job in Hong Kong, and the result from DID with propensity score matching shows that there is no significant difference for the two groups of intra-married and intermarried immigrants before marriage and at marriage (see column 3, row 1 for female and row 4 for male, in both Table 6 and Table 8).

For robustness check, it is reasonable to expect that there is significant difference for the intra-married and intermarried immigrants if the sample of analysis is restricted to those immigrants who get married before they enter Hong Kong. The results in Table 9 and 10 present the differences and they confirm our concern that those female immigrants who get married in mainland China actually possess significant different characteristics from their counterparts, while consistent with the result before, they does not have significant different with the similar intra-married immigrants in the labor market after getting intermarried.

[Table 9 about Here]

[Table 10 about Here]

7.2. Social network channel

Even if Hypothesis 1a has been supported, it is necessary to further check whether there is any possible effect on immigrants' economic performance from the native spouses' social

network. After controlling respondents' own family background and current ISEI of their spouses, possible proxies for spouses' social network like sibling size and their parents' education when the spouse was 14 years old are added in the analysis. The results shown in Table 11 suggest that social network of native spouses did not play a significant role in the occupational status for both male and female immigrants in Hong Kong labor market.

[Table 11 about Here]

8. Discussions

Different from previous studies choosing a whole county as the analysis unit on this research topic, I prefer to study a city like Hong Kong to examine the economic premium for immigrants. There are mainly two advantages: firstly, there is less diversity for the host place; and secondly, the immigrants from mainland China possess similar characteristics with the natives. Therefore, it is easier to capture the pure effect of intermarriage per se. What's more, since language acquisition and legal status are not big concerns in this case, the effects from the access to native social network by intermarriage could also be explored specifically.

Due to data limitation of Hong Kong census, it is impossible for us to distinguish the intermarriages in different marriage markets. However, the results do show us that there is intermarriage effect for males while that for females is quite inconclusive. By using HKPSSD, the detailed information could make us to track one's occupations before marriage, at marriage and after marriage, which make it possible to construct a quasi-longitudinal dataset. The general results show that in this service-oriented city, there is no intermarriage effect on one's economic premium in labor market for both immigrant males

and females. However, immigrant females who have higher ability to move upward in the native job market are more likely to enter intermarriage.

Two possible explanations could be made for this result: firstly, people who could go upward in the local labor market may have more chances to be exposed to native workers, colleagues and friends, and secondly, it seems to be a kind of hypergamy (i.e. marry up) for immigrants to marry a Hong Kong native. According to Davis-Merton theory of marriage exchange (Davis 1941; Merton 1941), there is an asymmetrical pattern in intermarriages for dominance and subordination groups. In this case, mainland immigrants are able to compensate their seemingly inferior ascribed status with superior achieved status to marry natives, largely due to the advanced economic development in Hong Kong and the policies on "One country, two systems".

What should also be noted is that there are several limitations of the current analysis. Firstly, the sample size here is quite small after posing several restrictions to the first wave of HKPSSD dataset. Meanwhile, HKPSSD is highly representative of low-income class in Hong Kong. Thus, the conclusion in this analysis may not be valid to infer the whole population in Hong Kong. Secondly, some immigrant females are more likely to leave labor market after getting marriage or during giving birth. For them, ISEI may not be a good measure of their socioeconomic mobility and intermarriage benefit when they still have earnings while without any occupations. It would be promising to track respondents' job mobility and work histories when the HKPSSD second wave data is released. Nevertheless, this study contributes to the existing literature on the debate of assimilation role of intermarriage between immigrants and natives by excluding those unobserved cultural and social factors between immigrants and natives.

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Tables and Figures:

Table1: Sample Description

	2011 HK Census		2011 HKPSSD	
Couple Type	Frequency	Percent	Frequency	Percent
1. HK Husband & Wife	6,463	62.06	612	43.5
2. HK Wife & Mainland Husband	792	7.61	117	8.32
3. HK Husband & Mainland Wife	1,426	13.69	176	12.51
4. Mainland Husband & Wife	1,733	16.64	502	35.68
Total	10,414	100.00	1,407	100.00

Table 2: Distribution of Immigrants over Periods

Period	Husband	Wife
<1982	497 (76.34)	284 (38.17)
1982-1997	100 (15.36)	218 (29.30)
1998-2011	54 (8.29)	242 (32.53)
Total	651 (100.00)	744 (100.00)

Table 3: OLS and IV Estimation (2011 Hong Kong Census)

Dependent Variable:	Male		Female	
Annual Income	OLS	IV-2SLS	OLS	IV-2SLS
Intermarriage	0.362***	3.353*	0.295***	-4.220**
	(0.065)	(1.709)	(0.0736)	(1.412)
Junior high education	-0.496***	-0.700***	0.00218	-0.343
	(0.124)	(0.205)	(0.142)	(0.237)
Senior high education	-0.302*	-0.799*	-0.0476	-0.460
	(0.126)	(0.331)	(0.145)	(0.251)
Some college	-0.240	-0.854*	-0.0717	-0.191
	(0.148)	(0.404)	(0.175)	(0.261)
College and above	0.223	-0.619	0.164	-0.197
	(0.133)	(0.513)	(0.159)	(0.262)
Stay 4-7 yrs. in HK	-0.490***	-0.635**	-0.506***	-0.403*
	(0.149)	(0.219)	(0.107)	(0.162)
Stay 8-10 yrs. in HK	-0.641***	-1.026**	-0.439**	-0.624**
	(0.164)	(0.312)	(0.135)	(0.209)
Stay 11-15 yrs. in HK	-0.770***	-1.188***	-0.806***	-1.000***
	(0.138)	(0.302)	(0.134)	(0.208)
Stay 16-20 yrs. in HK	-0.791***	-1.475***	-0.988***	-0.934***
	(0.134)	(0.431)	(0.149)	(0.221)
>20 yrs. in HK	-0.706***	-2.079**	-0.851***	0.733
	(0.127)	(0.803)	(0.117)	(0.523)
Age	-0.244	-0.393*	-0.241***	-0.415***
	(0.128)	(0.195)	(0.034)	(0.075)
Age^2	0.003	0.006	0.003***	0.005***
	(0.002)	(0.003)	(0.000)	(0.001)
Having elderly >65	0.154*	0.417*	-0.062	-0.070
	(0.078)	(0.184)	(0.097)	(0.144)
Having children <15	0.086	0.594	0.707***	-0.070
	(0.067)	(0.305)	(0.084)	(0.273)
Working members Number	-0.519***	-0.677***	-1.248***	-1.129***
	(0.029)	(0.098)	(0.038)	(0.068)
Constant	15.97***	18.43***	18.48***	24.31***
	(2.075)	(3.171)	(0.641)	(2.053)
N	2510	2508	3138	3138
R^2	0.166		0.326	
First stage				
Marriageability of Male		-1.497**		
		(0.581)		
Marriageability of Female				-1.577***
				(0.365)
F-statistics		6.640**		18.710***

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: OLS Estimation (2011 HPSSD)

	(1) ISEI of 1st Job in HK	(2) ISEI while Getting Married	(3) ISEI of Current Job
Intermarriage		3.674+	4.023**
		(2.035)	(1.487)
gender	-2.061*	-1.382	3.169*
	(1.013)	(2.108)	(1.530)
Period Arrive HK	-1.055	-2.775	0.872
(1982-1997)	(1.390)	(2.559)	(1.936)
Period Arrive HK	2.795	-6.055	-8.132*
(1998-2011)	(2.400)	(4.689)	(3.410)
Education Attainment	1.528***	0.640+	
at Marriage	(0.163)	(0.357)	
Cantonese at Arrival	-0.011		
	(0.304)		
Year of 1st Job	0.002***		
	(0.001)		
ISEI of 1st Job		0.468***	
		(0.108)	
Marriage Year		-0.240	
		(0.180)	
ISEI at Marriage			0.134**
			(0.047)
Highest Education			0.981***
Attainment			(0.217)
Current ISEI of			0.119*
Spouse			(0.057)
Work Hour per Week			-0.053
			(0.045)
Age	-1.250**	-0.120	-1.998**
	(0.471)	(0.914)	(0.676)
Age^2	0.013 **	0.005	0.020**
	(0.005)	(0.009)	(0.007)
Constant	48.839***	505.959	67.221***
	(12.193)	(364.574)	(17.426)
N	314	269	239
R^2	0.327	0.220	0.364

Standard errors in parentheses + p<.10, * p<.05, ** p<.01, *** p<.001

Table 5: Probit Regression for Pre-marriage VS At marriage
(Propensity Score is estimated at Baseline)

Treated	Female	Male
Year Arrive HK	-0.001	-0.075***
	(0.026)	(0.019)
Highest Education Attainment	-0.021	0.012
	(0.073)	(0.041)
Age	-0.249	0.022
	(0.260)	(0.138)
Age2	0.003	-0.008
	(0.003)	(0.001)
Work year before marriage	0.088*	0.010
	(0.048)	(0.022)
Current ISEI of Spouse	0.053**	0.025**
	(0.019)	(0.011)
Constant	6.149	146.636***
	(49.832)	(37.891)

* p<.05, ** p<.01, *** p<.001

Table 6: Difference in Differences with Propensity Score Matching for
Pre-marriage VS At marriage

	Intra-marriage (1)	Inter-marriage (2)	Difference (2)-(1)
	Panel A: Female		
Pre-marriage	42.183	38.298	-3.886
At marriage	37.644	40.096	2.452
Difference in differences			6.338*
	Panel B: Male		
Pre-marriage	35.961	36.584	0.623
At marriage	39.545	38.676	-0.870
Difference in differences			-1.492

* p<.05, ** p<.01, *** p<.001

Table 7: Probit Regression for At marriage VS Post-marriage
(Propensity Score is estimated at Baseline)

Treated	Female	Male
Year Arrive HK	-0.039*	-0.079***
	(0.018)	(0.017)
Highest Education Attainment	-0.043	0.035
	(0.060)	(0.036)
Age	0.023	-0.026
	(0.153)	(0.126)
Age2	0.000	-0.000
	(0.002)	(0.001)
Work year since marriage	-0.076*	0.004
	(0.039)	(0.021)
Current ISEI of Spouse	0.039**	0.021*
	(0.015)	(0.009)
Constant	75.921*	155.337
	(36.155)	(34.121)

* p<.05, ** p<.01, *** p<.001

Table 8: Difference in Differences with Propensity Score Matching for
At marriage VS Post-marriage

	Intra-marriage (1)	Inter-marriage (2)	Difference (2)-(1)
	Panel A: Female		
At marriage	41.960	38.257	-3.703
Post-marriage	44.187	39.902	-4.285
Difference in differences			-0.582
	Panel B: Male		
At marriage	34.442	32.988	-1.454
Post-marriage	38.619	40.994	2.375
Difference in differences			3.829

* p<.05, ** p<.01, *** p<.001

Table 9: Difference in Differences with Propensity Score Matching for Female Immigrants Married in Mainland China Pre-marriage VS At marriage[3]

	Intra-marriage (1)	Inter-marriage (2)	Difference (2)-(1)
Pre-marriage	24.884	31.870	6.985***
At marriage	33.802	36.198	2.396
Difference in differences			-4.589

* p<.05, ** p<.01, *** p<.001

Table 10: Difference in Differences with Propensity Score Matching for Female Immigrants Married in Mainland China At marriage VS Post-marriage[4]

	Intra-marriage (1)	Inter-marriage (2)	Difference (2)-(1)
At marriage	36.776	36.646	-0.129
Post-marriage	32.806	37.697	4.892
Difference in differences			5.021

* p<.05, ** p<.01, *** p<.001

Table 11: Difference in Differences with Propensity Score Matching with Social Network Proxies for At marriage VS Post-marriage[5]

	Intra-marriage (1)	Inter-marriage (2)	Difference (2)-(1)
	Panel A:Female		
At marriage	44.008	38.257	-5.751**
Post-marriage	42.072	39.902	-2.170
Difference in differences			3.582
	Panel B: Male		
At marriage	35.264	32.988	-2.276
Post-marriage	39.348	40.994	1.646
Difference in differences			3.921

* p<.05, ** p<.01, *** p<.001

Figure 1: Sex Ratios of Hong Kong Natives and Chinese Immigrants (20-45y) in Hong Kong, 1956-2010, from 1991-2011 HK Census datasets

[3] No cases in the intra-marriage group for males.
[4] In the control group for males, there are only 7 intra-married males at marriage, and 2 males for post-marriage.
[5] Due to limited information, respondents' and spouses' sibling size and parents' education when the individuals were 14 years old were added to the estimation in the baseline model as the proxies to measure social network of the respondents.

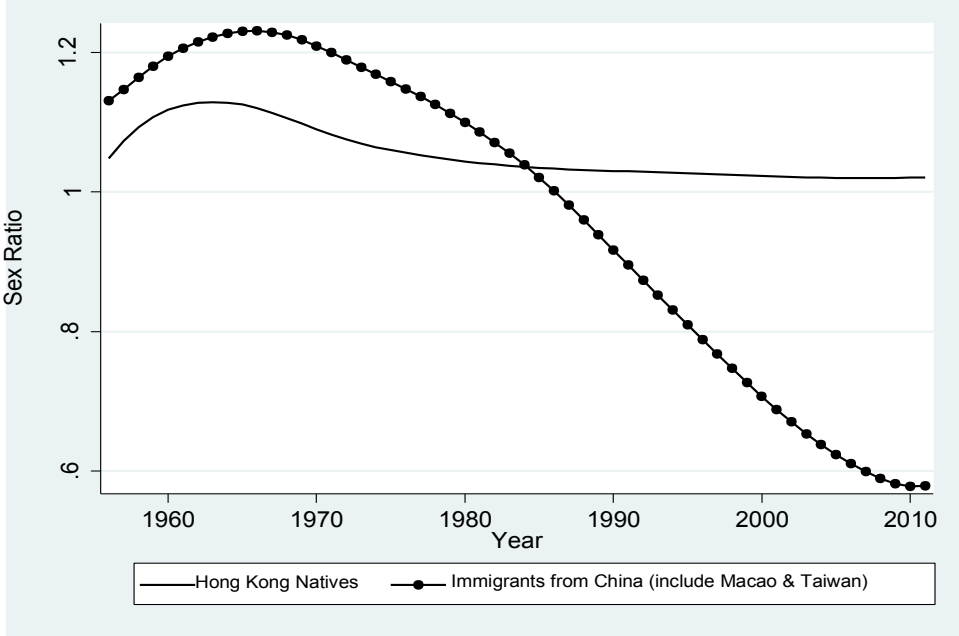

Figure2: Scores of Difference in Differences for Female Pre-marriage VS At marriage