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Neighborhood Effects of Ethnic Composition on Fertility among Foreign Wives in South Korea*

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This paper explores the effect of ethnic composition in a neighborhood on fertility among foreign wives in Korea. In order to reveal the different aspects of neighborhood effects, it employs two measures of ethnic composition, a short-term flow and a long-term stock. For the analysis, the individual level of data from the 2009 Korean National Multi-cultural Family Survey and the aggregate level of data, calculated from the proportion of foreign wife population for 251 counties by using vital statistics, are combined. Analyses show that a short-term flow of foreign wives in a county is positively associated with fertility behavior, having more children with shorter birth intervals. In contrast, accumulated proportions of the same ethnic group in a county repress the fertility of foreign wives, having fewer children with longer birth intervals. The results suggest that ethnic congregation in the short term is beneficial for foreign wives to adjust to Korea and have a child, but the effect may become negative in the long term.

Keywords: *ethnic composition, fertility, marriage immigrant wives, Korea*

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Introduction

During the past few decades, South Korea has experienced dramatic demographic challenges including a rapid decline to lowest-low fertility, a rapid pace of population aging, and a massive influx of marriage immigrants from other countries. To offset the effects of low fertility, population aging, and a shrinking labor force, policy makers and scholars have come to be aware of the benefits of having marriage immigrants and the fertility of foreign wives.[1] However, the nature and theoretical basis on fertility of foreign wives has not yet been sufficiently explored (Kim 2008; Kim, Kim and Jun 2012; Kim and Song 2013).

Previous studies on fertility have mostly focused on individual and couple characteristics without due attention to the effects of neighborhood or peer group. However, given that individuals continuously interact with one another and are affected by their environment, neighborhood characteristics, such as ethnic composition, can exert a significant influence on reproductive behavior. This may be particularly true for foreign wives due to their minority status.

The living experience of many foreign wives tends to be one of isolation. It is well documented that a large majority of marriage immigrant wives in South Korea have mostly met their husbands through matchmaking companies and have had only limited information about their spouses and families when they decided to get married (Lee, Seol and Cho 2006). Most foreign wives live in the places where their husbands reside without much choice. The Korean attitude toward foreigners in general is not that friendly, and ranges from indifference to discrimination, which often leads foreign wives to isolated and vulnerable situations (Han and Seol 2006). Thus, foreign wives may seek solutions to help alleviate these circumstances, and they are likely to seek out and be influenced by other marriage immigrant wives or those from the same ethnic group. Neighbors or peer groups can play a crucial role for marriage immigrant wives in providing emotional and psychological support, accelerating adaptation, and making important life decisions including childbearing.

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[1] Foreign wives, referred to in most government registration data, include marriage immigrants, foreign workers and foreign students who are non-native Koreans, and thus are a broader concept compared to marriage immigrant wives. In the Korean context, however, the two concepts overlap with each other almost completely. Therefore, the terminology of marriage immigrant wives and foreign wives is used interchangeably throughout this paper.

The main purpose of this paper is to explore effects of ethnic composition in a neighborhood on the level and tempo of fertility among foreign wives living in South Korea. Attention is focused on examining whether or not neighborhood effects on fertility differ depending on short-term (flow) and long-term (stock) measures of ethnic composition. For this study, the ethnic compositions of 251 residential areas (*Shi, Gun,* or *Gu*) are measured by the proportions of foreign wives and the same ethnic population. This data is then integrated into a micro-data set from the *2009 Korean National Multicultural Family Survey* (MOHW, MOGEF and MOJ 2010).

International Marriage and Fertility of Transnational Couples in Korea

South Korea was once known as an ethnically homogeneous society. International marriage was not common and mostly restricted to Korean women marrying foreign husbands living abroad until the early 1990s. However, it has dramatically increased from the mid-1990s, and marriages between Korean men and foreign wives have become prevalent (Kim 2015; Lee et al. 2006; Lee 2008).

An increasing trend of international marriage in South Korea largely resulted from a marriage squeeze of males with lower socio-economic status living in rural areas. While young women in rural areas tended to migrate to cities for better living standards, better education, and job opportunities, men in the countryside stayed behind to carry on family-owned farming. These men had difficulty in finding marriageable partners and therefore looked for brides overseas (Kim 2009). Concerned with rising proportions of unmarried bachelors in rural areas, local governments in South Korea have encouraged international marriage through matchmaking companies (Belanger, Lee and Wang 2010).

Until the 1990s, the majority of foreign wives in South Korea were ethnic Koreans from China and Japanese. The former mostly arrived in the country for an arranged marriage through matchmaking companies or came for work and later married local men. The latter came for an international marriage arranged by a religious sect called the Unification Church. Since the 2000s, matchmaking companies have carried out a greater portion of international marriages, and the nationality of foreign wives has diversified to include Vietnam, Mongolia, the Philippines, and other developing countries in Asia. The marriage process has been known to be inhumane, with Korean men

paying large sums of money to matchmaking companies, flying to other countries to find potential brides, choosing the bride, and getting married within a week. Limited information on the man and his family is disclosed to prospective foreign brides (Belanger and Wang 2012; Lee et al. 2006).

Although governmental regulations on matchmaking companies have been implemented and international marriage through personal networks has increased in recent years, the minority status of foreign wives has not been considerably improved. Consequently, the proportion of international marriage among total marriages in a given year has decreased from 13% in 2005 to 7% in 2014 (KOSTAT 2015).

Despite a slight downturn of international marriage, scholarly interests in various aspects of international marriage have remained. However, reproductive behavior and fertility of foreign wives are rarely discussed. Foreign wives' childbearing is often taken for granted and a higher fertility level of foreign wives compared to that of native Koreans is expected. Contrary to the expectation, Kim (2008) revealed that foreign wives in both South Korea and Taiwan tend to have fewer children and have longer birth interval compared to native wives. Based on census data, Kim et al. (2012) also confirmed that foreign wives have lower fertility and lower potential completed fertility than native Korean wives.

Low fertility level of transnational couples in Korea is distinct from that of western countries, which shows a higher fertility level than natives. High fertility of immigrants or transnational couples in western countries is explained by the socialization perspective, which assumes that internalized values and attitudes toward large family and high fertility from the country of origin exert strong influence on the immigrant's reproductive behavior. Although history of marriage immigration in Korea is short and fertility of foreign wives is subject to change in the future, socialization perspective is not relevant to explain low fertility levels of foreign wives currently observed in Korea.

This paper attempts to find what influences foreign wives' fertility behavior, with a particular attention to the effects of ethnic composition in the neighborhood. The implicit assumption is that the presence of those who are in a similar circumstance in a neighborhood may alleviate the vulnerable status of foreign wives in the short term, which in turn exerts a positive influence on fertility behavior. However, the congregation of the same ethnic groups in the long term may play a negative role for foreign wives to adjust to the host society and to have a child.

Conceptual Framework and Hypotheses

Neighborhood effects are often referred to as peer effects or contextual effects (Teitler1998; Schultz-Nielsen 2010). The concept was originally employed to explain voting behaviors, delinquent behaviors or poverty/health related outcomes and to include socioeconomic environments as well as interaction with other people and cultures. In the U.S., where residential segregation by race and socioeconomic status is prevalent, neighborhood environment and interactions with peer groups have received wide attention to explain differentials in childhood development (Sampson, Morenoff and Gannon-Rowley 2002).

Recently, there has been growing interest in neighborhood effects in the study of post-immigration settlement. Ethnic enclave studies show that a peer group, defined as a congregation of a minority or the same ethnic group, exerts both positive and negative effects on immigrant adaptation to a new environment (Borjas 2000; Bauer, Epstein and Gang 2007, 2009; Hill and Johnson 2004; Lichter et al. 2012). Positive effects involve ethnic enclaves providing not only emotional support and assistances for the settlement process, but also information about labor market opportunities and job contacts. Such information and contacts help reduce the stress of relocating to a foreign culture. However, this support may cut off immigrants from alternative job opportunities and reduce incentives for immigrants to acquire new types of skills. Tendency to cluster with the same ethnic group may also lower incentives to learn the language of the host country and encourage immigrants to maintain the social norms of their country of origin. These influences may hamper the process of assimilation to the host country and leave immigrants in isolation and poverty.

In economics or development studies, some scholars differentiate neighborhood effects by employing stock and flow indicators into the analysis (Bauer et al. 2007, 2009). A stock indicator is the cumulative measure of residence in a long term, while a flow indicator reflects the amount of moving in and out in a given time period (O'Rourke 1972). Bauer et al. (2007) found that both stock and flow measures of ethnic composition are significantly associated with the direction of migration and settlement, but in a different direction.

The congregation of an ethnic group in the long term shows an inverted U-shaped relationship with a preference for moving in among the same ethnic migrants. In contrast, as the magnitude of migrants moving in and out

of a certain region increases in a short term, migrants are more likely to make a decision to reside in a region. Another study conducted by Bauer et al. (2009) also revealed similar findings that specific ethnic concentration in a certain region provides a positive function in terms of providing information, ethnic goods, and a social network. As immigrant density rises, however, negative effects such as lower wages and reduced assimilation tend to be stronger than positive effects.

Despite substantial literature on fertility, previous studies have rarely focused on neighborhood effects. Only a handful of studies have discussed the effects of social interaction and social networks on fertility behavior (Bongaarts and Watkins 1996; Entwisle et al. 1996; Kohler, Behrman and Watkins 2001). Li and Zhang (2009) argued for the prevalence of a strong neighborhood effect on fertility in China. That is, rises in the average number of children of neighboring households tend to increase the level of fertility in the neighboring household. Shultz-Nielsen (2010) also argued for neighborhood effects on fertility behavior in Denmark, emphasizing that the effect is greater where ethnic composition is homogeneous. Weeks et al. (2010) found that not only objective neighborhood circumstances such as housing and hygiene, but also social interaction with neighbors can influence women's decisions about marriage and childbearing in Ghana. These findings were interpreted as a result of social influence in community norms regarding childbirth.

Childbearing is a challenging issue particularly for foreign wives. It leads to another lifetime change and doubles the burden, despite enhancing the stability in their status in the family. Thus, they prudently make decisions on childbearing by considering the experiences of other marriage immigrant wives or those in the same ethnic group. The precarious status of foreign wives also makes them cautious about childbearing until they feel stable and adapted to the host society.

Assuming that neighborhood effects of ethnic composition, this paper investigates the effects of the magnitudes of foreign wives and the same ethnic population in a residential area on the level and tempo of fertility of foreign wives. It is assumed that favorable ethnic composition with more foreign wives in a residential area is likely to reduce the real or perceived social disadvantages, constraints and insecurities of foreign wives that might otherwise lead to lower fertility (Glazer and Moynihan 1963; Gordon 1964). However, increased accessibility to and interaction with the same ethnic group in the long term are more likely to lead to an isolated type of adaptation rather than assimilation (Kim 2014). These associations, in turn, tend to lower the level of fertility and lengthen the birth intervals of foreign wives.

From the above discussion, a pair of hypotheses is drawn in this paper. First, foreign wives living in a county (*Shi, Gun,* or *Gu*) where many foreign wives are moving in are likely to have more children at a shorter birth interval. Second, foreign wives living in a county with a large population of the same ethnic group tend to have fewer children at a longer birth interval.

Data and Major Variables

Micro-data from the *2009 Korean National Multi-cultural Family Survey* are utilized (MOHW et al. 2010). This survey is nationally representative and provides comprehensive data on foreign spouses living in Korea. The original data set from the survey includes information on 131,702 multi-cultural households and 73,669 foreign spouses (foreign wives and husbands). The analysis of this paper is limited to the five majority groups of foreign wives (Korean Chinese, Han Chinese, Vietnamese, Filipina or Mongolian) who married Korean men in 1985 or thereafter. Total number of samples in the analysis is 47,007 foreign wives.

Based on data from the marriage registration and resident population for 2009, CSMR (2012) calculated the proportions of foreign wives and the same ethnic population for 251 counties (*Shi, Gun,* or *Gu*). They are integrated into the survey data mentioned above. The major independent variables of this paper are two different measures of ethnic composition, a flow and a stock measure.

A flow measure is calculated as a proportion of foreign wives out of total marriages in 2009 in each county, capturing the recent inflow of newlywed foreign wives to a certain county in a short term. The limited number of foreign wives in the same ethnic group who had registered their marriages in 2009 did not allow us to specify the nationality of newly wed foreign wives in all the 251 counties. Thus, the flow measure is calculated regardless of ethnic group. In contrast, an accumulated stock measure is calculated as a proportion of the same ethnic population among the total resident population as of 2009, calculated separately for five ethnic groups (Korean Chinese, Han Chinese, Vietnamese, Filipina or Mongolian) for each county.

These measures are employed as major independent variables based on the assumption that social and psychological support from those in similar circumstances may help to improve the marginal status of foreign wives, which in turn affects their childbearing behaviors. Despite different individual socioeconomic characteristics, minority status as a foreign wife allows for

shared experiences of living in South Korea. In particular, pregnancy and childbirth as foreign wives tend to form a sense of sisterhood within the residing areas.

However, a stock measure, the accumulated proportion of the same ethnic population in an area, may hamper foreign wives' assimilation to South Korea. Congregating with the same ethnic group in the long term may consolidate their ethnic culture, which exacerbates foreign wives' isolated and insecure status and leads them to be more cautious about having a baby. In contrast, a flow measure in the short term, the proportion of newlywed foreign wives from various ethnic groups among the total number of marriages occurring in a certain year, may dilute the plausible negative effect. Rather, it may lead to build social capital and assist adjustment to a new environment, which in turn, increases the level of fertility.

As for dependent variables, the average number of children is used to measure fertility level. In order to examine fertility tempo, two measures of birth interval are also employed as dependent variables. One is calculated as duration (month) between marriage and having the first child. For this measure, the sample is limited to those who have already given birth. The other measure is calculated duration (month) between having the first and the second child among those who have more than one child. Recognizing that the time gap between control/independent variables and dependent variables, which is the major limitations of using cross-sectional data, may raise measurement issues, we use various individuals' and couple characteristics, such as age, age at marriage, educational attainment, working experience, occupation, previous marital experience, place of residence, household composition (i.e., living with in-laws), and marital satisfaction as control variables.

Characteristics of the Sample

It should be noted that foreign wives in South Korea have different backgrounds and paths to cross-border marriage migration according to their nationality. For example, Vietnamese, Filipina and Mongolian women mostly came to South Korea through marriage by matchmaking companies or relatives who had already married Korean men. In contrast, Korean Chinese and Han Chinese women come to South Korea for various reasons. Some entered the country for work and then married Korean men, while others came to South Korea not for marriage itself, but for obtaining

citizenship and getting a job. Others came to South Korea through marriage by matchmaking companies or relatives. In contrast to foreign wives from other countries, most Filipinas are religious. These differences may explain some of the distinctive characteristics of foreign wives by nationality described below.

Table 1 presents the mean values and the proportion of variables of this study by the country of origin of the foreign wife. In terms of the sample sizes, Korean Chinese and Vietnamese make up the majority, followed by Han Chinese, Filipinas and Mongolians. These differences reflect the trends in the number of foreign wives in Korea during the past decades.

Both the current age and age at marriage of foreign wives show a similar pattern, Korean Chinese being the oldest and Vietnamese being the youngest. However, the current age of Korean husbands is fairly similar, generally in the 40s and the average age at marriage is in the late 30s, regardless of the nationality or age of their wives. Thus, the age gap between spouses is about 10 years, with Vietnamese showing the biggest gap of 17 years and Korean Chinese with the smallest gap of 7.4 years. Both Filipinas and Mongolians show the highest level of education, whereas Vietnamese have the lowest. Korean husbands' average years of education is 11.6 and does not show much differences according to the nationality of their spouses.

The average duration of living in South Korea is 62.2 months, with Korean Chinese showing the longest period of time living in Korea (88.5 months), followed by Filipinas (70.6 months) and Mongolians (58.7 months). Vietnamese wives show the shortest duration of living in South Korea. Based on the proportion of current marriage as a remarriage, the overall remarriage rate of foreign wives is 22.4%, and that of Korean husbands is 25.8%. Korean Chinese and Han Chinese show high proportions of remarriage, while only 2% of Vietnamese and Filipinas are remarried to Korean husbands, which may be related to the younger age at marriage of these women. The overall proportion of husbands' job being white-collar is 20.8%, highest for the Filipinas (23.3%) and lowest for Vietnamese (18.4%). Based on the husbands' job, economic circumstances of foreign wives seem to be low and insecure.

About 20% of foreign wives previously worked and 35.5% are currently working. As for work experience, both Korean Chinese and Mongolian show the highest proportion. However, current work status is highest for Korean Chinese followed by Filipinas. It reflects the possibility of using language as an important asset in finding jobs. For example, Korean Chinese' fluency in Korean and Filipinas' fluency in English may enable them to find jobs easily. A marital satisfaction score is calculated by combining the responses to

TABLE 1
Mean Values of the Major Demographic Variables by the Country of Origin of the Foreign Wife

	Country of origin of the foreign wife					
	China		Vietnam	The Philippines	Mongolia	Total
	Korean	Han				
	(18,658)	(7,759)	(15,058)	(4,668)	(864)	(47,007)
Age of wife	37.5	32.9	24.2	31.8	31.0	31.8
Age of husband	44.9	42.0	41.2	42.6	41.1	42.9
Education years of wife	10.8	10.7	8.9	12.3	12.3	10.4
Education years of husband	11.4	12.2	11.5	11.4	11.9	11.6
Age at marriage of wife	31.7	30.0	22.0	26.7	27.7	27.8
Age at marriage of husband	39.2	39.1	39.0	37.4	37.7	38.9
Duration in Korea (months)	88.5	49.5	33.7	70.6	58.7	62.2
Wife's remarriage (%)	40.1	31.7	2.2	2.5	18.5	22.4
Husband's remarriage (%)	33.4	29.4	18.4	13.6	24.4	25.8
Husband's white-collar job (%)	21.7	22.4	18.1	23.3	20.4	20.8
Wife's working experience (%)	27.7	23.5	11.9	16.8	27.9	20.9
Wife's current working (%)	47.3	33.8	20.4	40.8	29.3	35.5
Marital satisfaction score	42.7	41.6	39.3	45.7	43.7	41.7
Seoul resident (%)	20.4	15.1	6.2	8.1	11.3	13.6
Non-metropolitan resident (%)	55.8	58.4	71.8	73.8	71.0	63.4
Live with husband's parents (%)	17.2	24.9	46.8	35.9	28.9	30.0
% of foreign wife population	10.0	10.0	12.2	13.1	11.4	11.0
% of the same ethnic population	1.1	0.4	0.3	0.2	0.1	0.6
Children ever born	0.9	0.7	0.9	1.3	0.9	0.9
Interval b/w marriage & 1st birth (months)	20.3	17.8	16.2	17.8	17.4	18.1
Interval b/w 1st birth & 2nd birth (months)	33.8	32.7	24.1	27.4	30.6	30.3

Source.—MOHW et al. (2010); CSMR (2012).

several questions of to what degree marriage immigrant wives are satisfied with their overall living conditions and their relationship to their Korean husbands. Women from the Philippines show the highest marital satisfaction score, while Vietnamese women reported the lowest satisfaction score.

The majority of foreign wives (63.4%) live in non-metropolitan areas, whereas 13.6% live in Seoul, and the rest live in other metropolitan areas. Those who came to South Korea through an arranged marriage by match-

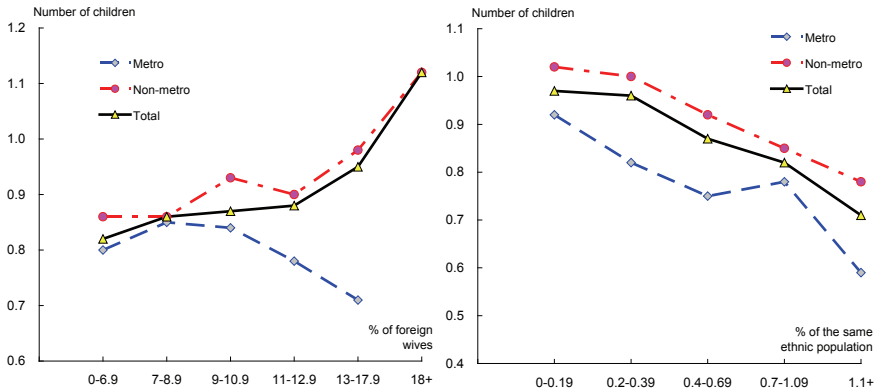
making companies, mostly Vietnamese and Filipinas, tend to live in non-metropolitan areas, while those who entered South Korea to work, mostly Korean Chinese and Han Chinese, tend to live in Seoul or in other metropolitan areas. As for living arrangements, the proportion of wives living with the husband's parents is 30.0%. The proportion differs by nationality and is related to their area of residence. For example, almost half of the Vietnamese and 35.9% of the Filipinas live with their in-laws. However, the proportion is low for Korean Chinese and Han Chinese.

The average proportion of foreign wives within a county among those who registered their marriages during 2009 regardless of nationality, a flow measure, is 11.0%. It is higher in areas where Filipinas and Vietnamese live, but is lower in areas where Korean Chinese and Han Chinese reside. The cumulative average proportion of the foreign population in the same ethnic groups in a certain county, a stock measure, is low (0.6%) overall because it is specified by nationality for 251 counties. It is highest for Korean Chinese (1.1%) and lowest for Mongolians (0.1%), which reflects the different duration of marriage migration and the proportion of marriage immigrants by ethnicity.

The mean number of children is 0.9, highest for Filipinas having 1.3 and lowest for Han Chinese having 0.7. Overall duration between marriage and having first child is 18 months, which is similar to that of native wives. It is shortest for Vietnamese and longest for Korean Chinese. The same pattern is observed for the interval between having first and second child, longest for Korean Chinese and shortest for Vietnamese.

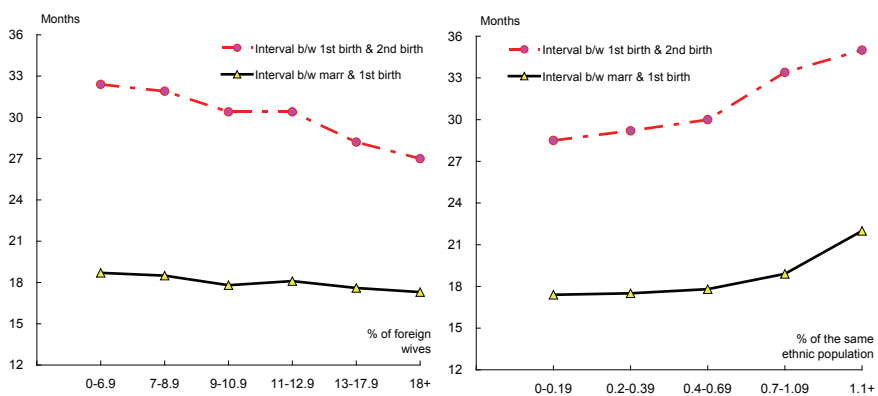
Fertility Differentials by Ethnic Composition in a Neighborhood

Figure 1 provides the overall trend of the average number of children by ethnic composition in a neighborhood. The left graph (a) shows a relationship between the average number of children and the proportion of newly wed foreign wives among total marriages in 2009 for each county, a flow measure. As expected, an overall trend and the average number of children of those who live in non-metropolitan areas show a positive relationship with a flow measure. Although a negative relationship is observed for those who live in metropolitan areas, the number of cases is small and most of them are Korean Chinese. The right graph (b) shows a relationship between the average number of children and the cumulative proportion of same ethnic population in each county, a stock measure. The



(a) By the % of foreign wives (b) By the % of the same ethnic population

Fig. 1.—Average number of children by place of residence and ethnic composition in a county



(a) By the % of foreign wives (b) By the % of the same ethnic population

Fig. 2.—Average duration between marriage, first and second childbirth by ethnic composition in a country

negative relationship is consistently observed as expected regardless of place of residence.

The relationship between birth intervals and ethnic composition in a neighborhood is presented in Figure 2. As shown on the left graph (a), the average duration between marriage and having the first child does not show much difference by the proportion of newly wed foreign wives in 2009 for each county. In contrast, as hypothesized, the birth interval between having

the first and the second child decreases when the proportion of incoming foreign wives in the place of residence, a flow measure, increases. As the proportion of the same ethnic population in an area, a stock measure, increases, the birth intervals between marriage and having the first and the second child increase as shown on the right graph (b).

The fertility level of foreign wives varies depending on ethnic background, as shown in Figure 3. Filipinas have the highest number of children, while Han Chinese have the lowest. The high proportion of incoming foreign wives in a residing area, a flow measure, seems to be correlated with a larger number of children. This pattern is especially noticeable among Korean Chinese and Filipinas. Korean Chinese and Filipina wives have a higher fertility level and show a higher correlation with the proportion of foreign wives in a county. In particular, the fertility level of Korean Chinese shows a rapid increase over a certain proportion of foreign wives.

The fact that Filipinas and Korean Chinese make up the majority of foreign wives in many areas and that their duration of marriage tends to be longer than those from other countries may explain the higher level of fertility and stronger neighborhood effects among them. A religious factor such as being Catholic is also an important factor of high fertility for women from the Philippines.

The association between the ethnic composition and the birth interval is also different by ethnic group. As shown in Figure 4, Korean Chinese and Han Chinese tend to have a longer interval between the first and second birth, while Vietnamese have the shortest one. This difference can be attributed to the different reasons for marriage immigration and individual characteristics such as age and remarriage status. For example, Korean Chinese and Han Chinese are older, and the remarriage rate is substantially higher than the rate for Vietnamese.

Although figures are not presented in the paper, the proportion of the same ethnic population, a stock measure, is negatively related with the level of fertility, particularly for Korean Chinese and Mongolians. Filipinas seem to maintain a high level of fertility regardless of the proportion of marriage immigrants from the Philippines in a residing area. As for the birth interval, the proportion of the same ethnic population tends to increase the birth interval of Korean Chinese, Han Chinese, Vietnamese, and Filipinas. Due to the small percentage, Mongolians do not show a clear relationship.

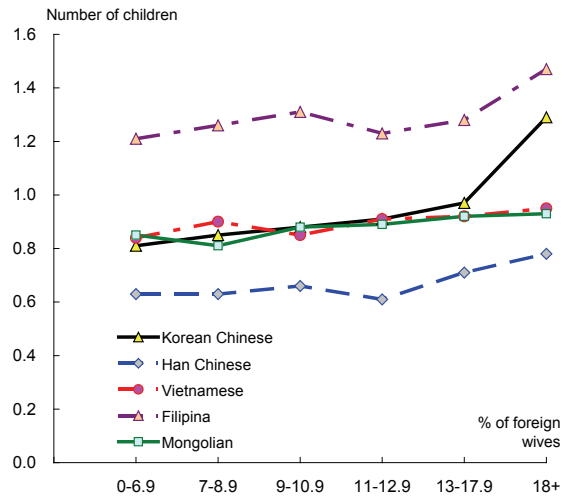


Fig. 3.—Average number of children by the country of origin of the foreign wife and the percentage of foreign wives in a county

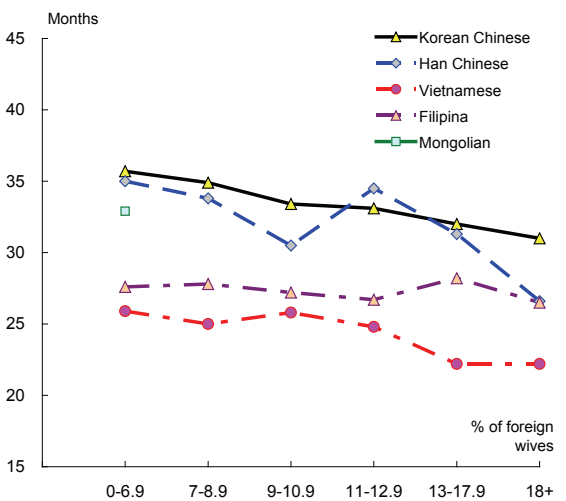


Fig. 4.—Duration between the first and the second childbirth by the country of origin of the foreign wife and the percentage of foreign wives in a county

Regression Analysis

A series of stepwise multivariate regression analyses were conducted to capture the independent effects of ethnic composition in a county (*Shi, Gun,* or *Gu*) when the major socioeconomic and demographic variables are controlled. Table 2 shows the final results of regression analyses.[2]

Compared to Korean Chinese, the fertility level of Han Chinese or Vietnamese is significantly lower, while that of Filipinas is higher. Age of foreign wives and their spouses is positively related with the average number of children, which can be partly attributed to high correlation between age of the couple and duration of marriage. In contrast, age at marriage and the remarriage status of foreign wives and their spouses are negatively associated with fertility level. High age at marriage can be related to a relatively short duration of marriage and low fecundity. Those who remarry may already have children from a previous marriage, which in turn delays or depresses childbirth in the current marriage.

Korean husbands who are white-collar workers or who have a high educational level tend to be associated with a small number of children. Current working status or previous work experience of foreign wives leads to a smaller number of children. These results are consistent with the findings of previous studies showing the negative effects of education and employment status on fertility. The marital satisfaction score is positively related to the number of children. It was also found that those living in Seoul have fewer children, and that those living in non-metropolitan areas have more children than those who live in metropolitan areas. Household composition is also significantly related with the number of children. Living with a parent-in-law increases the average number of children.

The focus of this paper, the proportion of incoming foreign wives in the short term and the cumulative proportion of the same ethnic population in a residing area, is significantly related with the number of children after controlling for other variables. A high proportion of incoming foreign wives in the short term increase the average number of children. However, a high proportion of the same ethnic population in the long term decreases the level of fertility.

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[2] Being aware of differences in the unit of estimation of the independent variables, a series of HLM and multivariate regression analysis were conducted at the same time in this study. However, the results of two analyses were found to be very similar with each other. In this paper, only the result of multivariate regression analysis is reported for simplicity and readers' convenience.

TABLE 2
Regression Analysis of Factors Related to the Number of Children and Birth Intervals between Marriage, First Childbirth and Second Childbirth

	Children ever born		Interval Marr_1st B		Interval 1st B_2nd B	
	(Model 1)		(Model 2)		(Model 3)	
	b	beta	b	beta	b	beta
Han Chinese wife	-0.09 **	-0.04	0.83 **	0.02	0.52	0.01
Vietnamese wife	-0.05 **	-0.03	1.50 **	0.05	-0.33	-0.01
Filipina wife	0.16 **	0.06	0.46	0.01	-3.43 **	-0.06
Mongolian wife	-0.03	-0.00	1.18 †	0.01	-0.34	-0.00
Age of wife	0.05 **	0.48	0.53 **	0.24	0.29	0.08
Age of husband	0.05 **	0.44	0.48 **	0.19	0.91 **	0.22
Education years of wife	0.00	0.01	0.01	0.00	0.19 *	0.03
Education years of husband	-0.01 **	-0.02	0.05	0.01	0.27 **	0.03
Age at marriage of wife	-0.06 **	-0.56	-0.60 **	-0.20	-0.05	-0.01
Age at marriage of husband	-0.06 **	-0.50	-0.61 **	-0.24	-1.05 **	-0.25
Wife's remarriage	-0.30 **	-0.15	4.05 **	0.07	9.90 **	0.10
Husband's remarriage	-0.17 **	-0.09	2.49 **	0.06	3.94 **	0.05
Husband's white-collar job	-0.02 *	-0.01	-0.02	-0.00	1.28 *	0.02
Wife's working experience	-0.08 **	-0.04	3.17 **	0.09	2.78 **	0.06
Wife's current working	-0.26 **	-0.15	-1.59 **	-0.05	-0.68	-0.02
Marital satisfaction	0.02 **	0.03	-0.10 †	-0.01	0.15	0.01
Seoul resident	-0.04 **	-0.02	0.38	0.01	0.65	0.01
Non-metropolitan resident	0.02 *	0.01	0.14	0.01	-0.79	-0.02
Living with husband's parents	0.02 **	0.01	-0.33	-0.01	-1.31 **	-0.03
% of foreign wives	0.01 **	0.05	-0.05 **	-0.02	-0.17 **	-0.05
% of the same ethnic population	-0.03 **	-0.03	0.67 **	0.04	0.53 †	0.02
(Constant)	1.28		17.44 **		16.57 **	
Number of cases	39,204		23,418		8,781	
R^2	0.38		0.09		0.10	
F ratio	1,157.50**		111.89**		48.26**	

Note.—1) †: $p < 0.1$;*: $p < 0.05$; **: $p < 0.01$.

2) Dummy variables included in the regression model are as follows: Han Chinese wife, Vietnamese wife, Filipina wife, Mongolian wife, Wife's remarriage, Husband's remarriage, Husband's white-collar Job, Wife's working experience, Wife's currently working, Seoul resident, Non-metropolitan resident, and Living with husband's parents.

Source.—MOHW et al. (2010); CSMR (2012).

The results of the regression analysis examining the effects of ethnic composition in a neighborhood on birth interval are also presented in Models 2 and 3. In general, a short birth interval tends to increase the fertility level. Compared to Korean Chinese and Han Chinese, Vietnamese and Mongolian wives have significantly longer intervals between marriage and the first childbirth, and Filipinas show a significantly shorter interval between the first and second birth. Age of foreign wives and their spouses increases the birth interval. Education is positively associated only with the interval between the first and second birth. Age at marriage shortens birth intervals, whereas remarriage lengthens birth intervals.

Wife's work experience tends to lengthen birth intervals, but current work status shortens birth intervals. Although a conclusive interpretation cannot be made based on the analysis, it is likely that those who have worked in the past may delay childbirth in order to extend their work status. In contrast, those who are currently working may compress birth intervals in order to minimize career disruption only if they want to have an additional child. Living with parental in-laws shortens the birth intervals, but only significant for the interval between the first and second childbirths. Due to present social norms of giving birth after marriage and the average duration between marriage and having the first child is about 18 months, household composition does not seem to influence the birth interval between marriage and the first childbirth.

After controlling for the effects of all the other variables, the proportion of foreign wives in a county is negatively related to birth intervals. A large influx of foreign wives in a neighborhood in the short term significantly decreases the interval for both the first and second child. However, a high proportion of the same ethnic population in the long term lengthens birth intervals, particularly for the first birth.

The results of multivariate regression analysis support our hypotheses, showing that neighborhood effects hold statistical significance after controlling for other variables. Two measures of ethnic compositional environment reveal contrasting effects on the childbearing behavior of foreign wives. That is, the flow measure of foreign wives is found to be positively associated with the number of children and shorter birth intervals, while the stock measure of the same ethnic population is negatively associated with fertility level and longer birth intervals. Though congregation with other marriage immigrant wives may have temporary benefits, increased accessibility to and interaction with the same ethnic population may hinder adjustment and discourage the childbearing of foreign wives

(Kim 2014; Roy, Hughes and Yoshikawa 2013; Walks and Bourne 2006). It deserves to be noted that the statistically significant effects of the proportion of the same ethnic population, despite its very low level, reinforce our hypotheses.

Concluding Remarks

The concept of neighborhood effect has drawn increasing attention in the scholarly community as practitioners of various theoretical and methodological approaches have come to employ it in their research. This study was conducted in an effort to apply this concept to the reproductive behaviors of foreign wives in South Korea. Foreign wives confront various difficulties in the process of adaptation in the host society. A large majority of foreign wives, in particular those whose marriages were arranged by marriage brokers, suffer from insufficient information about their prospective spouses and Korean society in the process of post-migration settlements. Due to their minority status and vulnerability, peer groups comprised of other foreign wives or neighbors from the same ethnicity are considered to be crucial for marriage immigrant wives to adjust themselves to Korean society.

This paper explores the neighborhood effects of ethnic composition on the level and tempo of fertility of foreign wives. In order to reveal the different aspects of neighborhood effects, it employs two measures of ethnic composition in the neighborhood, that is, the proportion of newly wed foreign wives in a residential area registered in 2009 and the accumulated proportion of the same ethnic population as of 2009 in a county.

The results of multivariate regression analysis confirm that the ethnic compositional environment exerts an independent effect on the fertility of foreign wives, apart from the socioeconomic and demographic variables. The propensity to have children rises substantially among foreign wives who live in areas with a large population of newlywed marriage immigrant wives. Foreign wives are prone to form a bond of sisterhood with other marriage immigrant wives in response to their disadvantageous status and are likely to reduce the real or perceived social constraints and insecurities that might otherwise lead to lower fertility. As the proportion of the same ethnic population increases and ethnic enclave is created in a long term, their adaptation or assimilation process and reproductive behaviors tend to be delayed.

In addressing the issue of neighborhood effects, the empirical results

from our analysis clearly suggest that the ethnic compositional environment and its effects should not be viewed uniformly in terms of measurement and the time span of reference. Not all ethnic components in a neighborhood operate in the same way and not all measures reveal the same time span of effects. Despite the contribution of this study to highlight neighborhood effects on fertility behavior, it has some limitations. As noted in the above, the flow measure was not specified by nationality of foreign wives due to the small number of cases. Information reflecting other neighborhood characteristics that may influence foreign wives' fertility behavior was not introduced into the analysis of this study. We recognize that theoretical concepts of flow and stock may not perfectly coincide with our current measures. Also, increases in the proportion of same ethnic group or foreign wives in the residential area (*Shi, Gun,* or *Gu*) may not necessarily lead to more prevalent interactions and stronger mutual influences, which in turn affect foreign wives fertility behavior. Utilizing cross-sectional data, it should be noted that foreign wives' completed fertility is not examined in this study. Nevertheless, we strongly feel that the results of our analyses address due attention to the plausible importance of neighborhood effect in explaining fertility behavior.

Combining more comprehensive data at the aggregate level with the social survey data of individuals will allow us to explore this empirical topic further by investigating the determining factors of access to and interaction with neighbors or peer groups among foreign wives in South Korea. Future research should be directed to test more nuanced hypotheses about when, why, and how neighborhood characteristics function the way they do in assisting or hindering foreign wives to facilitate reproductive behaviors and to become adapted to their new surroundings.

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