

# Women's Work and Family Income Inequality in South Korea\*

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*This study examines the influence of wives' income on family income inequality between married couples in South Korea. While some scholars have argued that the rise in married women's labor force participation is most frequent among wives whose husbands earn a low income, and thus lessens the inequality of family income, others have proclaimed that due to educational homogamy, the increased participation tends to reinforce family income inequality. Analyzing the Korea Welfare Panel Study data, this paper reports three things. First, wives' income tended to reinforce family income inequality. Second, the relative importance of wives' income in the change in family income inequality has increased due to wives' incomes taking a greater share of family incomes. Third, the combination of small difference in the average income of wives across husbands' income deciles and the rise in wives' labor force participation among the lower deciles of husbands' income tends to reduce family income inequality.*

**Keywords:** *wives' work, family income inequality, inequality decomposition, homogamy, South Korea*

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## Introduction

This paper examines the relationship between married women's labor force participation and family income inequality, focusing on the incomes of families with a husband and a wife. As women's labor force participation has increased, their income has begun to affect the distribution of family income more significantly than before. Although the increase in women's labor force participation is considered an index of gender equality, it is unclear whether such participation actually reduces family income inequality as an important part of social inequality. The answer is complex, as the effects of married women's income on family income inequality vary according to mediating factors such as married women's human capital, the differential rate of wives' labor force participation across husbands' income levels and the level of wives' incomes.

Compared with industrialized countries in the West, the rate of women's labor force participation in South Korea is still very low. However, it has grown slowly and steadily, except for the year after financial crisis in 1997, from 39.3% in 1970 to 47.1% in 1991 and 49.7% in 2011 (Lee and Eun 2005; NSO 2012). As their level of education has increased, more women have chosen to work after graduating from college. In 2009, the rate of women's entrance into college was 82.4% of high-school graduates, surpassing that of their male counterparts. A diminishing gender wage gap has also facilitated women's participation in employment and paid work. The wage gap between men and women decreased from 37.1% in 2000 to 36% in 2010 (KWDI 2010, pp. 285-286). Although this is not a big change, it is significant in the long run. In short, there have been gradual and steady social changes facilitating the transition of women from college into the labor market.

The rise in female labor has largely been the result of an increase in married women's labor force participation. Married women are more likely than unmarried women to participate in the labor force. As the level of married women's education increases and the number of children they have decreases, more married women are going to work. In contrast, young women's labor force participation has decreased because they are entering higher education. Thus, the rise in mostly unmarried young women's enrollment in colleges and universities has resulted in a decrease in their labor force participation.

What effect has the rise in married women's labor force participation had on family income inequality? Does a married woman's income reduce

family income inequality, or reinforce her husband's income inequality? The rise in the proportion of dual-earner families has raised important questions about the role that married women's work plays in family income inequality. Social change toward gender equality has clearly been an irreversible trend since the mid-20<sup>th</sup> century. However, it does not necessarily reduce social inequality due to the complex institutional mediation between an individual's income from work and family income. For example, family income inequality can be affected by trends in partner choice, the rate of the wife's participation in the labor market and the level of the wife's income. The husband's income, in turn, directly affects the influence that the wife's income has on the family income. If the wives of husbands with lower incomes are more likely to participate in paid work than the wives of husbands with higher incomes, then the wives' labor force participation tends to reduce the husbands' income inequality. This is called the "leveling effect" of women's labor force participation (Treas 1983, 1987; Maxwell 1990).

However, the rise in women's labor force participation has been accompanied by a new tendency for more educated women to participate in employment and paid work. Increases in the level of women's education have resulted in more employment than ever before, especially in careers with prevalent meritocracy reflected in remuneration and promotion. This may make family income inequality worse, as highly educated women with higher earnings are more likely to marry highly educated men with higher earnings. This assortative mating pattern might aggravate the distribution of family income, also known as the "reinforcing effect" of women's participation in employment and paid work on family income inequality (Drobnič and Blossfeld 2001; Blossfeld and Timm 2003; Aslaksen et al. 2005; Esping-Andersen 2007).

The debate on the effect of women's labor force participation on family income inequality can be decomposed into several issues embedded in the process of married couples' income inequality. One is the pattern of wives and husbands' participation in employment and paid work. Because wives' labor force participation differs based on the level of husbands' income, the rate of the former to the latter directly affects the families' income inequality. In addition, there are facilitating factors such as increases in women's credentials and obstructing factors such as the sex segregation of jobs.

Another is the level of a wife's income, as it definitely affects the size of the couple's income in tandem with that of the husband. Women have been concentrated in low-paying jobs under the system of sex-segregated work. Women's jobs have typically been feminized jobs, such as clerical, retail/

wholesale or service jobs characterized by low levels of payment and skill. The sex segregation of work is a co-product of both employers (demand-side) and workers (supply-side) sharing gender norms and gendered stereotypes about jobs (Wolf and Fligstein 1979; Reskin 1993). Gender inequality has been maintained in the labor market through the sex segregation of jobs (Hartmann 1976; Reskin 1993; Blackburn and Jarman 2006). Both the horizontal and vertical segregation of jobs by sex in industries and organizations are associated with income inequality by gender (Blau and Ferber 1987; Anker 1998; Hwnag 2003; Heo 2013). The level of the wife's income is also associated with her occupation, types of employment and her level of education.

In this study, we examine competing theories predicting the relationship between women's labor force participation and the family income inequality among families with couples. We discuss the leveling effect, which is derived from theoretical and empirical research mostly performed in the United States in the 1980s. Those studies paid attention to the differences in the level of wives' labor force participation and that of husbands' income. Because the wives of husbands with lower income are more likely to participate in paid work, all other things being equal, wives' work tends to alleviate husbands' income inequality. We discuss the reinforcing effect developed in theoretical and empirical research in the 1990s and 2000s in Europe, which emphasized family formation, assortative mating and the rise of married women's labor force participation in differentiating family incomes.

We use the Korea Welfare Panel Survey (KWPS) data to test whether wives' participation in work is contributing to the rise in families' income inequality, and then attempt to explain how those are connected to each other. The empirical analysis shows that the leveling effect is more valid than the reinforcing effect due to the marked difference in the rate of wives' labor force participation across the levels of husbands' income. Even though married women's labor force participation has increased significantly, those whose husbands make low incomes have worked for incomes with much higher rates than those whose husbands make higher incomes. Given the relatively low level of wives' labor force participation, this suggests that the rise in such participation tends to reduce income inequality based on husbands' income alone. However, it also implies that in the near future the continuous growth of wives' paid work might aggravate families' income inequality at some point when more of the wives whose husbands make higher incomes begin to take paid work.

## Wives' Work and Family Income Inequality

The history of women in the 20<sup>th</sup> century has witnessed a marked rise in women's socio-economic status (Jackson 1998). Although gender inequality is not easily abolished, some forms, such as the gender wage gap, have been appreciably reduced in the last half-century (Jackson 1998; Blau et al. 2006, p. 5). The most remarkable achievements regarding gender equity have been the reduction in educational inequality by gender and the increase in women's participation in employment and paid work. The increase in women's labor force participation has raised women's position within the family due to their income (Sorensen and McLanahan 1987; Van Berkel and De Graaf 2000).

Does reducing gender inequality likewise reduce family income inequality? The answer is not that simple, as family income inequality is multi-dimensional and a reduction in inequality in one dimension does not guarantee it in another. For example, when the system of homogamy, or assortative mating, is strong, highly educated women tend to marry highly educated men, making family income distribution worse. While gender inequality in education might be mitigated by the increase in women participating in higher education, family income inequality might be aggravated by the same dynamic, mainly due to marriages between men and women who share similar levels of education. Thus, the link between family formation and family income inequality might generate unexpected outcomes.

There are two competing views on the effect of women's labor force participation on family income distribution and they focus on different causal dynamics. One is the leveling thesis, which rests on the economic perspective that women's labor force participation varies with the necessity of wives' income to the family. Thus, women in poor families are more likely to participate in employment and paid work (Treas 1987, pp. 261-264). Wives' income tends to reduce family income inequality by mitigating husbands' income inequality through the differential propensity of participation in work by the level of the husbands' income (Treas 1983, 1987; Maxwell 1990). For example, Treas (1987) shows that family income inequality decreases with the rise in poor women's labor force participation in the United States. This is the optimistic view, in that the increase in wives' paid work reduces family income inequality based on husbands' income.

The other view is the reinforcing thesis, which rests on a sociological perspective stressing that assortative marriage and income differentials by education reinforce family inequality. Because the tendency towards marriage

within the same education bracket is still quite strong, the income inequality of dual-earner families tends to be larger than individual income inequality (Drobnič and Blossfeld 2001; Blossfeld and Timm 2003; Aslaksen et al. 2005; Esping-Andersen 2007). As more women achieve higher education and homogamy based on similar social backgrounds is still strong, dual-earner families are more likely to increase their family income inequality (Mare 1991; Cancian and Reed 1999; Blossfeld and Timm 2003; Esping-Andersen 2007). If mating is random, then wives' income has no influence on family income inequality. However, there is a strong educational homogamy that is capable of reinforcing family income inequality. Moreover, educational homogamy is stronger in East Asian societies, including Korea, than in other societies (Smits et al. 1998, p. 280). An education-marriage-earning nexus is the key dynamic reinforcing family income inequality through wives' labor force participation. According to the reinforcing thesis the reduction in income inequality by gender might increase the inequality of dual-earner families because the former and the latter have different trajectories of inequality. In short, there are more complex social dynamics embedded in the income distribution of married couples.

The two competing theses emphasize different aspects of the complex social changes occurring in industrial and post-industrial societies, such as the increase in women's education, persistent educational homogamy, the rise in women's labor force participation and the growth of dual-earner families. Although we can consider the intersection of education, family formation, labor force participation and occupation in predicting the effect of women's work on family income inequality, the ways in which those factors interact cannot be easily inferred from theoretical presumptions. The factors are embedded in social institutions with regard to education, marriage, labor force participation and income determination, all of which have evolved in different temporal and spatial dimensions.

The leveling thesis assumes that the wives of husbands with low incomes tend to work more than those of husbands with high incomes. The incomes earned by wives' in poor families compensate for the husbands' low incomes. However, this does not consider the level of income earned by the working wives of husbands with low incomes. On the one hand, if the rate of wives' labor force participation in relation to husbands with higher incomes is very low, then the effects of wives' incomes on family incomes might be limited. On the other hand, if the level of income earned by those wives is very low, then its effect on family income distribution might also be very limited.

The reinforcing thesis assumes that wives' participation in the labor

force will lead to polarization of family income due to strong educational homogeneity. It also assumes that women who have completed higher education tend to earn more income than those with lower levels of education. However, the reinforcing thesis does not consider that there is a significant difference in the rate of wives' labor force participation with respect to their husbands' income levels.

Thus, there are two critical issues: the rate of labor force participation in relation to husbands' income groups and the income levels of working wives (Kim and Shin 2008, p. 85). The core questions, which are more empirical than theoretical in nature, are the extent to which wives' entrance into the labor force is based on their husbands' income groups and how much income they earn from their work.

## Data and Analytic Strategies

The data for the research is the Korea Welfare Panel Study (KWPS) data collected by both the Korea Institute of Health and Social Affairs (KIASA), funded by the government, and the Institute of Welfare at Seoul National University. The KWPS was designed to monitor changes in the health status and welfare of Koreans living in South Korea. One of advantages of the KWPS is that it reports the details of couples' employment status and incomes. The first wave of the KWPS survey in 2006 consisted of 7,072 households and 14,453 individuals, and the retention rate has been relatively high at 92.1% for the 2<sup>nd</sup> wave, 86.7% for the 3<sup>rd</sup> wave, 83.9% for the 4<sup>th</sup> wave, 80.25% for the 5<sup>th</sup> wave, 75.5% for the 6<sup>th</sup> wave and 74.5% for the 7<sup>th</sup> wave, respectively.<sup>1</sup>

We confine our analysis to non-farming families with members aged from 15 to 64 in which both couples maintain conjugal relations regardless of their employment status. Thus, single households and elderly households whose members are over 65 years of age are excluded from the analysis. The sample size gradually diminished from 2009 to 2012 as households dropped out, but new cases have been added to compensate for those that dropped out. The sample size of couple households was 2,142 in 2009, 2,039 in 2010, 1,924 in 2011 and 1,940 in 2012. Even though drop-outs might not be

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<sup>1</sup> The retention rate of individuals within a household is lower than that of households by 1 or 2% (Nam 2012, pp. 22-23).

random, in this study we assume that they are, along with non-responses.<sup>2</sup> The sample sizes of dual-earner families were 1,129 in 2009, 1105 in 2010, 1116 in 2011 and 1127 in 2012.<sup>3</sup>

To analyze the effects that wives' work has on family income inequality, we compare the Gini coefficients of models based on four counter-factual assumptions with the observed Gini coefficients (Danziger 1980; Cancian and Reed 1999, pp. 173-174; Esping-Andersen 2007; Kim and Shin 2008, pp. 85-89). What would be observed if changes did not occur? The comparison of the observed and counter-factual models provides a way to identify the sources of change in the distribution of family income. The first assumption, for the male breadwinner model, is that only men participate in the labor force and thus the inequality of family income is exactly equivalent to that of the husbands' income. The second assumption, for the female breadwinner model, is that only women participate in the labor force. The third assumption is that the rate of wives' labor force participation in relation to their husbands' income groups does not change over time. Only considering the changes in wives' incomes allows us to identify the effect such changes have on inequality in family income over time. The fourth assumption is that while the rate of wives' labor force participation has changed, the wives' income has not changed over time. By controlling for the effect of the changes in the rate of wives' labor force participation, we can estimate the effects that changes in wives' incomes have on the inequality of family income over time. Rather than considering other sources of effects on family income inequality, we exclusively analyze the influence of wives' incomes on family income inequality.

The Gini coefficient and half the coefficient of variation squared ( $I_2$ ) are used to measure income inequality.<sup>4</sup> The Gini coefficient is used because it provides an intuitive understanding of income distribution related to the Lorenz curve. However, it cannot be decomposed by subgroups or factors. In contrast,  $I_2$  is used for the decomposition of income inequality due to its flexibility as one of the Generalized Entropy Inequality indices (Sharrocks

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<sup>2</sup> Both drop outs and non-responses may not be random, causing biased estimation. Yet we have limited information and knowledge about those cases. For more issues related to drop outs, see Hausman and Wise (1978) and Vandecasteele and Debels (2007).

<sup>3</sup> Adding cases to compensate for drop outs, the number of working couple households was increased from 1,099 in 2010 to 1,107 in 2011.

<sup>4</sup> Half of the coefficient of variation squared can be expressed by  $I_2 = 1/2\{(1/n)\sum_{i=1}^n [(z_i/\mu)-1]\} = \sigma_z^2/2\mu^2$ , where  $z_i$  is  $i$ th family income,  $\mu$  is the mean of family income and  $\sigma_z^2$  is the variance of family income.



1982, 1984; Cowell 1995). The absolute contribution of wives' income  $X$  to the total family income inequality  $S_x$  is the covariance of wives' income  $X$  with family income  $Z$ , divided by twice the squared mean of family income

$$S_x = \sigma_{xz} / 2\mu^2 \quad (1)$$

where  $\sigma_{xz}$  is the covariance of wives' income  $X$  and family income  $Z$ .  $\mu$  denotes the mean of family income. The proportional contribution of wives' income  $X$  to the total family income inequality  $s_x$  can be defined as

$$s_x = S_x / I_2 = \sigma_{xz} / \sigma_z^2 = \rho_{xz} \sigma_x \sigma_z / \sigma_z^2 \quad (2)$$

where  $\sigma_z^2$  is the variance in family income,  $\rho_{xz}$  is the correlation coefficient of wives' income  $X$  and family income  $Z$ , and  $\sigma_x$  and  $\sigma_z$  are the standard deviations of  $X$  and  $Z$ , respectively.

To investigate the temporal changes in the effects of wives' income on family income inequality, we compare the absolute contribution of source  $X$ ,  $S_x(t)$ , in the initial year with the absolute contribution of source  $X$ ,  $S_x(t')$ , in the year of interest. The change in the relative share of source  $k$  in the change in family income inequality from time  $t$  to time  $t'$ ,  $\Delta x$ , can be estimated by

$$\Delta x = (S_x(t') - S_x(t)) / (I_2(t') - I_2(t)) \quad (3)$$

We use a quasi-simulation analysis in which hypothetical conditions are assumed. One such condition is that there is no change over time in the wives' labor force participation across the husbands' income decile, and that there is only a change in the wives' income. This means that the rate of wives' labor force participation across husbands' income deciles in 2009 does not change over time, whereas there is a difference in the average of the wives' income across the husbands' income decile from 2009 to 2012. Another hypothetical condition is that there is no change in the wives' level of income across the husbands' income deciles over time, but there are changes in the rate of wives' labor force participation from 2009 to 2012. In reality, both the wives' labor force participation and the levels of the wives' income across the husbands' income decile changed. Comparing the results of the facts with those of the counter-factual conditions reveals which components are most influential.

## Results

The influence that wives' income has on family income inequality can be identified using simple counter-factual assumptions. <Table> 1 presents the Gini coefficients for the income distribution of husbands, wives and family with couples aged 15 to 64 in urban areas from 2009 to 2012. The wives' income tends to reinforce family income inequality. If we assume that the husband is the only breadwinner in a family, then the inequality of the family income is equivalent to that of the husbands' income. In 2009, the Gini coefficient of husbands' income was .3171 while that of family income was .3357.<sup>5</sup> When the wives' income is added to husbands' income, the Gini coefficient of the family income becomes much larger than that of the husbands' income inequality. When we confine our analysis to dual-earner families, the wives' income still significantly aggravates family income inequality from .3013 to .3232 (Gini coefficient). This implies that wives' income tends to reinforce the inequality of the husbands' income.

The negative influence of wives' income on family income inequality has been persistent over time. Although the Gini coefficients of the family and the husbands' incomes decreased slightly over time, the wives' income tends to aggravate family income distribution more. The absolute difference in Gini coefficients between the family and husbands' incomes expanded from .0186 for all families and .0219 for dual-earner families in 2009 to .0208 for all families and .0267 for dual-earner families in 2012. This implies that wives' income is even more likely to reinforce the inequality of husbands' income than before.

The change in the relative influence of wives' income on family income inequality is presented in the last row of <Table 1>. It shows that the relative influence of wives' income over family income inequality has been increasing for all families and for dual-earner families. The changes in the Gini coefficients of family income for all married couples due to wives' income increased between 2009 and 2012.<sup>6</sup> There was a slight decrease in 2010, followed by an upward trend over time. The same is also true for dual-earner families. There has been a continuous increase in the influence of wives' income on income inequality among families, from 5.87% in 2009 to 7.13%

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<sup>5</sup> To calculate the Gini coefficient, zero incomes were substituted by 1.

<sup>6</sup> The changes were calculated by  $\frac{Gini(family) - Gini(husband)}{Gini(husband)} * 100$ .

TABLE 1  
GINI COEFFICIENTS OF INCOME INEQUALITY, 2009-2012

	2009		2010		2011		2012	
	All	Dual Earners	All	Dual Earners	All	Dual Earners	All	Dual Earners
Husband's Income	.3171	.3013	.3132	.2937	.2981	.2805	.2917	.2785
Wife's Income	.7147	.4997	.7059	.4975	.6745	.4639	.6703	.4678
Family Income	.3357	.3232	.3287	.3162	.3173	.3028	.3125	.3052
$\Delta$ by wife's income	.0186	.0219	.0155	.0225	.0192	.0223	.0208	.0267
% of change	.0587	.0727	.0495	.0766	.0644	.0795	.0713	.0959

NOTE.—The numbers on the left refer to the Gini coefficients for all of the families, and the numbers on the right reflect dual-earner families only.

in 2012 for families with a husband and a wife, and from 7.27% in 2009 to 9.59% in 2012 for dual-earner families. While income inequality did decline between 2009 and 2012, the influence of wives' income on family income inequality grew. Because wives' income tends to reinforce husbands' income inequality, the increasing influence of wives' income should be analyzed in detail.

To look at the effect of wives' income on family income inequality, we decompose the latter into two sources: inequality derived from the husbands' income and inequality derived from the wives' income. <Table 2> presents the relative influence of the wives' income and the husbands' income on family income inequality. The influence of the wives' income on family income inequality,  $s_x$ , increased from .1527 in 2009 to .1789 in 2012. Although the influence of the husbands' income on family income inequality is still overwhelming, its influence,  $1 - s_x$ , has decreased from .8473 in 2009 to .8211 in 2012.

One of the reasons for the rising influence of wives' income on family income inequality is the growing correlation between wives' income and family income  $\rho_{xz}$  in equation 2, which is much lower than the correlation of family income and husbands' income  $\rho_{yz}$ . Nevertheless, as <Table 2> shows, the correlation between wives' income and family income has been increasing for four years, which implies that the former plays a more important role in the latter than it previously did. Given the extremely low

**TABLE 2**  
**DECOMPOSITION OF FAMILY INCOME INEQUALITY BY WIVES' AND HUSBANDS'**  
**INCOMES**

	$I_2$	$\sigma_x$	$\sigma_y$	$\rho_{xz}$	$\rho_{yz}$	$s_x$	$\Delta s_x$
2009	.3151	1479.5360	3513.7520	.3946	.9921	.1527	0
2010	.3095	1560.0760	3629.7140	.4063	.9197	.1596	-1.2282
2011	.2029	1525.0430	3028.7950	.4390	.8918	.1986	-.3697
2012	.2154	1508.3680	3246.6700	.4255	.9073	.1789	-1.5782

NOTE.— $I_2$  refers to half the coefficient of the variation squared.  $\sigma_x$  and  $\sigma_y$  are the standard deviations of wives' and husbands' incomes, respectively.  $\rho_{xz}$  and  $\rho_{yz}$  are the correlation coefficients of the family's, wife's and husband's incomes, respectively.  $s_x$  influences the effect of wives' income on that of the family, and  $\Delta s_x$  the relative share of wives' income in the change in family income inequality, with reference to the previous year.

correlation between wives' incomes and husbands' incomes, the independent effects of wives' incomes are expected to continue growing.<sup>7</sup>

The last column of <Table 2> shows the temporal change in the relative share of wives' income and the change in family income inequality with respect to the previous year. The sign of  $\Delta s_x$  is negative, which implies that the relative share of wives' income had a different direction from that of the change in family income inequality, with the former increasing and the latter decreasing. The absolute value of  $\Delta s_x$  presents the magnitude of the relative influence that wives' income has over changes in family income inequality. It does not seem to show any direction yet, presumably because of the short time span in this analysis.

The influence that married women's income has on family income inequality depends on the rate of wives' labor force participation and the size of wives' income across the husbands' income levels. <Table 3> shows the rate of the wives' labor force participation and the means of income by decile of the husbands' income from 2009 to 2012. Above all, there was a big difference in the rate of the wives' labor force participation, according to the decile of the husbands' income. The wives whose husbands made low incomes were more likely to work than those whose husbands made high incomes. For example, in 2009, 64.39% of the wives with husbands whose incomes were in the lowest decile participated in the labor force, whereas only 37.07% of those

<sup>7</sup> The correlation between husbands' income and wives' income was .0083 in 2009, 0.0148 in 2010, -.0229 in 2011 and .0059 in 2012.

TABLE 3  
TREND OF WIVES' LABOR FORCE PARTICIPATION AND WIVES' INCOME BY DECILE OF HUSBANDS' INCOME

	2009					2010					2011					2012									
	RLFP	AIWW	WAI	RLFP	AIWW	WAI	RLFP	AIWW	WAI	RLFP	AIWW	WAI	RLFP	AIWW	WAI	RLFP	AIWW	WAI							
1 <sup>st</sup>	64.39%	1441.93	964.65	67.36%	1473.59	1033.71	70.99%	1626.60	1186.5	73.29%	1794.75	1338.41	62.85%	1345.72	882.98	63.96%	1242.17	854.23	69.80%	1431.21	1019.1	69.74%	1309.37	997.67	
2 <sup>nd</sup>	62.85%	1345.72	882.98	63.96%	1242.17	854.23	69.80%	1431.21	1019.1	69.74%	1309.37	997.67	56.32%	1390.99	865.96	63.25%	1368.34	914.45	65.77%	1570.98	1092.93	64.49%	1358.84	919.14	
3 <sup>rd</sup>	56.32%	1390.99	865.96	63.25%	1368.34	914.45	65.77%	1570.98	1092.93	64.49%	1358.84	919.14	68.72%	1329.12	873.04	57.96%	1381.06	866.27	66.25%	1528.91	980.18	57.78%	1600.6	1034.83	
4 <sup>th</sup>	68.72%	1329.12	873.04	57.96%	1381.06	866.27	66.25%	1528.91	980.18	57.78%	1600.6	1034.83	55.69%	1135.5	649.55	55.66%	1400.62	864.2	50.66%	1411.21	901.82	61.18%	1636.9	1089.44	
5 <sup>th</sup>	55.69%	1135.5	649.55	55.66%	1400.62	864.2	50.66%	1411.21	901.82	61.18%	1636.9	1089.44	50.13%	1515.17	858.09	49.98%	1523.15	761.99	60.58%	1524.94	852.65	52.04%	1745.26	1053.86	
6 <sup>th</sup>	50.13%	1515.17	858.09	49.98%	1523.15	761.99	60.58%	1524.94	852.65	52.04%	1745.26	1053.86	51.15%	1842.28	915.99	53.42%	1708.44	1003.22	59.38%	1920.61	1235.67	59.33%	1928.04	1045.89	
7 <sup>th</sup>	51.15%	1842.28	915.99	53.42%	1708.44	1003.22	59.38%	1920.61	1235.67	59.33%	1928.04	1045.89	45.65%	1858.42	995.87	47.94%	1990.08	1073	49.43%	1893.38	999.85	48.58%	1650.94	877.87	
8 <sup>th</sup>	45.65%	1858.42	995.87	47.94%	1990.08	1073	49.43%	1893.38	999.85	48.58%	1650.94	877.87	41.15%	2177.79	904.87	41.35%	2144.09	913.49	45.99%	2432.06	1260.23	45.59%	2412.02	1164.33	
9 <sup>th</sup>	41.15%	2177.79	904.87	41.35%	2144.09	913.49	45.99%	2432.06	1260.23	45.59%	2412.02	1164.33	37.06%	2178.61	886.66	37.19%	2718.78	1098.54	36.41%	2136.35	791.38	40.33%	2311.03	1064.96	
10 <sup>th</sup>	37.06%	2178.61	886.66	37.19%	2718.78	1098.54	36.41%	2136.35	791.38	40.33%	2311.03	1064.96	Total	52.33%	1616.82	883.44	53.90%	1682.3	946.89	57.56%	1738.85	1029.15	57.24%	1763.78	1058.35

NOTE.—the rate of labor force participation is RLFP; AIWW is the average income of working wives and WAI is the wives' average income.

with husbands whose incomes were in the highest decile did so. The second lowest decile of income also showed the second highest rate of labor force participation at 62.85%, whereas the second highest decile of income showed the second lowest rate of participation. The clear negative correlation between the level of husbands' income and the rate of wives' economic participation persisted throughout the period of study.

The differential rate of the wives' labor force participation (RLFP) based on husbands' income level accelerated over the four years. By 2012, the rate of participation among wives whose husbands' incomes were in the lowest decile increased by 8.9 percent, from 64.39% in 2009 to 73.29% in 2012. The labor force participation of wives whose husbands' incomes were in the second lowest decile also increased by almost 7% for the same period. The wives whose husbands' incomes were in the highest decile exhibited the lowest increase in labor force participation by 3.27%, from 37.06% in 2009 to 40.33% in 2012. Although the wives' labor force participation increased across all of the husbands' income groups, the poor husbands' income group exhibited a much larger increase in wives' labor force participation than the wealthy husbands' income group. In summary, the differential labor force participation of wives contributed to a reduction in their income inequality and in family income inequality over time.

The magnitude of working wives' income is another source of its influence over family income inequality. If all wives' incomes were equal, then family income inequality would be independent of them. In reality, the magnitude of wives' income (AIWW) is strongly associated with the level of husbands' income. <Figure 1> shows the ratio of the average income of wives to that of all working wives by the deciles of husbands' income. Income difference did not grow linearly among the husbands' income deciles, and while the average income of wives in the lowest decile of husbands' income increased, the low-middle income groups reported incomes below the average income of working wives. For example, the average incomes of the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> deciles were lower than the average income of all working wives. They were also lower than that of the lowest decile of income over the period.

<Table 4> displays the results of a quasi-simulation analysis of the share of wives' income by husbands' income deciles. The first and last columns show the real proportion of wives' income share across husbands' income deciles. The second column indicates the hypothetical share of wives' income if the level of wives' labor force participation in 2012 was the same as that in 2009, but only the average of wives' income changed from the level of 2009 to

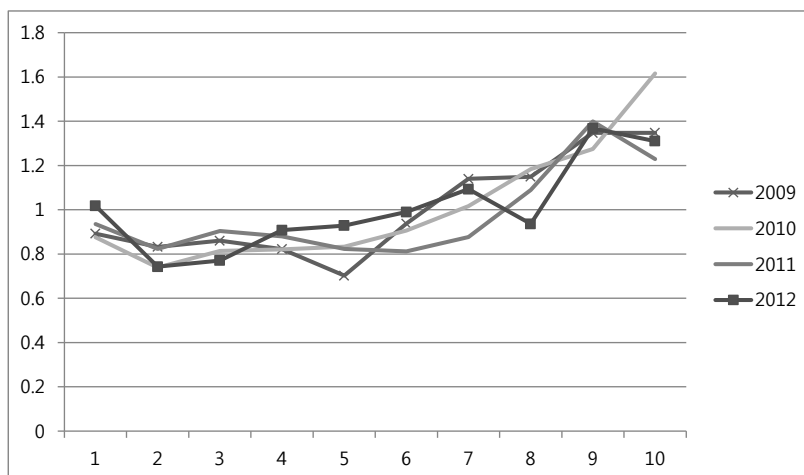


FIG. 1.—Ratio of average income to the average income of all working wives by husbands' income deciles

TABLE 4  
SHIFT-SHARE ANALYSIS OF WIVES' INCOME SHARED BY HUSBANDS' INCOME DECILES

	RLFP'09*WAI'09	RLFP'09*WAI'12	RLFP'12*WAI'09	RLFP'12*WAI'12
1 <sup>st</sup>	13.53%	15.50%	14.06%	16.11%
2 <sup>nd</sup>	12.08%	11.28%	12.25%	11.43%
3 <sup>rd</sup>	10.62%	9.31%	11.11%	9.73%
4 <sup>th</sup>	11.16%	10.93%	10.03%	9.82%
5 <sup>th</sup>	7.88%	10.91%	7.91%	10.95%
6 <sup>th</sup>	9.37%	9.50%	8.88%	9.01%
7 <sup>th</sup>	10.20%	9.62%	10.81%	10.19%
8 <sup>th</sup>	9.90%	7.21%	9.62%	7.00%
9 <sup>th</sup>	8.11%	8.62%	8.21%	8.72%
10 <sup>th</sup>	7.16%	7.10%	7.11%	7.05%
Total	100.00%	100.00%	100.00%	100.00%

NOTE.—RLFP refers to the labor force participation rate and WAI is the average income of wives. 09 and 12 are the years 2009 and 2012, respectively.

that of 2012. If the share of wives' income is equal, then we can expect 10 percent for each decile of the husbands' income. In 2009 and 2012, respectively, the lowest husbands' income decile shows the largest share of

wives' income while the highest husbands' income decile shows the lowest share of wives' income. In general, we can safely say that the share of wives' income by husbands' income decile increased among the lower deciles of husbands' income between 2009 and 2012.

The third column presents the results for income share by wives' income in the hypothetical situation in which the proportion of wives' labor force participation (RLFP'12) changed, but the average of the wives' income across the husband's income decile remained the same as in 2009 (WAI'09). The distribution of the share of wives' income of total wives' income between the fourth and third columns reveals a large discrepancy, suggesting that the hypothetical assumptions might not be appropriate.

The quasi-simulation analysis of wives' share of income by husbands' income deciles indicates that the change in wives' income share was much more affected by the change in wives' labor force participation than the change in wives' income level. The sharp increase in the wives' labor force participation among the lower deciles of husbands' income significantly contributed to reducing family income inequality. The share of wives' income for the highest husbands' income decile decreased from 7.16% in 2009 to 7.05% in 2012, whereas the share of wives' income for the lowest husbands' income decile increased from 13.53% in 2009 to 16.11% in 2012. The discrepancy between the column 4 and other hypothetical conditions can be simply measured by the absolute discrepancy between column 4 and other columns,  $D = \sum_1^{10} (|P_{i4} - P_{ij}|)$  where  $j$  refers to  $j$ th column. The absolute discrepancy between column 4 and column 2 is 3.75, whereas it is 11.44 between column 4 and column 3. Therefore, the change in wives' income share was largely the result of the change in wives' labor force participation rather than the change in the average income of working wives.

Given the increase in wives' labor force participation in the lower deciles of husbands' income and the decreasing average wives' income across the deciles of husbands' income, why did wives' income still contribute to family income inequality? The answer might be the pattern of assortative mating. There has been strong homogamy in which couples are more alike in terms of their level of education, socio-economic backgrounds and cultural environment (Mare 1991; Kalmijn 1998; Smits et al. 1998; Blossfeld and Timm 2003; Park and Smits 2005). Assortative mating patterns increasingly play an important role in generating family income inequality and guiding the selection of spouses (Blossfeld and Timm 2003; Esping-Andersen 2007; Schwartz 2010).



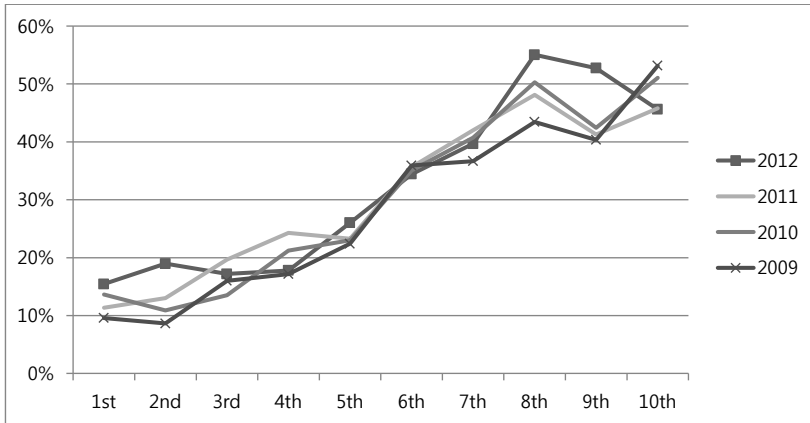


FIG. 2.—Trend in educational homogeneity measured using college graduates by the husbands' income deciles, 2009-2012.

Like other Confucian countries, South Korea has shown strong educational homogeneity compared with other countries (Smits et al. 1998, p. 280; Park and Smits 2005). Educational homogeneity is measured by the proportion of cases involving couples who both have post-high school educations. <Figure 2> presents the extent of educational homogeneity between husbands and wives. The proportion of couples with post-high school educations varies systematically. The proportion of couples with college degrees in the lowest income decile was 10-15% between 2009 and 2012. In contrast, the proportion in the highest decile was 47-54% for the same period. <Figure 2> shows a clear linear relationship between the level of husbands' income and the proportion of couples with college degrees.

Both the Gini coefficients of wives' income for dual-earner families in <Table 2> and the income differentials in <Table 3> show that there is a large income inequality among wives. However, their influence on family income inequality is limited due to the small proportion of working wives in the labor force, and the increased participation of wives with poor husbands. Nevertheless, we observe that the relative importance of wives' income on family income inequality seems to increase, whereas the relative importance of husbands' income on family income inequality seems to decrease.

## Conclusion

Analyzing Korea Welfare Panel data, this paper attempts to analyze the effect of wives' labor income on family income inequality and its change over time for families with couples in South Korea. As the rate of wives' labor force participation increases, the importance of wives' income to family income inequality strengthens in industrialized countries. However, there have been competing opinions on the influences of wives' income on family income inequality: the leveling thesis predicts a reduction in family income inequality through wives' income while the reinforcing thesis predicts an increase in family income inequality through wives' income. The core issues for both sides are linked to the rate of wives' labor force participation across husbands' income deciles, and the magnitude of working wives' incomes.

In this study, we report that an empirical analysis of the effect of wives' labor income on family income inequality in South Korea shows mixed results. While the inequalities of husbands' incomes, wives' and family income have been declining, wives' income tends to reinforce family income inequality that stems from husbands' income in South Korea. Comparisons of Gini coefficients based on counter-factual conditions and empirical reality reveal that wives' income is more likely to aggravate family income distribution. The decomposition of family income inequality by husbands' income and wives' income also shows that while the influence of the latter on family income inequality is not so big, it tends to reinforce family income inequality and its influence as such becomes stronger.

When we analyze the rate of wives' labor force participation and the magnitude of their income, we find two things. First, there is a considerable difference in the rate of wives' labor force participation across husbands' income deciles. The higher the husbands' income, the lower the rate of wives' labor force participation. The differential labor force participation rate tends to lower family income inequality in South Korea. Second, however, wives' income differentials tend to be significant according to their husband's income deciles, aggravating family income inequality. Given the larger Gini coefficients of wives' income than husbands' income, we notice a remarkable income inequality among working women. Although this inequality is slowly decreasing, the income differentials of wives have stronger independent influences on family income inequality.

Wives' income is more likely to reinforce family income inequality due to strong educational homogamy in which mating between men and women

is strongly influenced by similar levels of education and family backgrounds. This assortative mating by education tends to influence family income inequality negatively. There is a positive linear association between the level of husbands' income and the proportion of couples with college degrees. If strong educational homogamy persists, the rise in wives' labor force participation might further aggravate family income inequality because the increase in the level of women's education would accompany an increase in married women's labor force participation.

We confine our analysis of the influence of wives' labor income on family income inequality to working-age couples in urban areas. The exclusion of single families, families with retired husbands and farming families obviously results in a general decrease in family income inequality. To comprehensively investigate the influence of wives' income on family income inequality, all types of families and members of non-working age populations should be included. In addition, all of the other sources of income, such as capital income, public transfer, and income from other family members, should be included in the analysis to identify the influence of wives' income on social inequality. In this paper, however, we limited our analysis to working age couples to reveal that family income inequality has been generated through complexities in the social mechanism where education, the labor market and marriage intersect.

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