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Performance Pay, the Marriage Market and Rising Income Inequality in Taiwan

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Taiwan expanded its college access significantly over the past two decades by converting 2-year junior colleges to 4-year colleges and relaxing entrance standards. The share of college graduates in the 22-24 years old population rose from 12% to 71% between 1990 and 2014. This should have suppressed returns to schooling and lowered inequality, but Taiwan's Gini coefficient rose steadily over that period. We show that rising use of performance pay and positive assortative mating in the marriage market combine to explain the rising inequality. The presence of performance pay and positive assortative mating jointly increase the household income inequality by 70% between 1980 and 2014. Our results suggest that the uneven quality of the most recent cohorts of college graduates led to two sources of rising household income inequality: the increased use of bonus pay which increases residual inequality among college graduates; and matching on unobserved skills in the marriage market which increases inequality among married couples.

Keywords
Marriage Market, Bonus, Wage, Positive Assortative Mating, Inequality, Gini, Taiwan

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Income Distribution | Labor Economics

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Abstract

Taiwan expanded its college access significantly over the past two decades by converting 2-year junior colleges to 4-year colleges and relaxing entrance standards. The share of college graduates in the 22-24 years old population rose from 12% to 71% between 1990 and 2014. This should have suppressed returns to schooling and lowered inequality, but Taiwan's Gini coefficient rose steadily over that period. We show that rising use of performance pay and positive assortative mating in the marriage market combine to explain the rising inequality. The presence of performance pay and positive assortative mating jointly increase the household income inequality by 70% between 1980 and 2014. Our results suggest that the uneven quality of the most recent cohorts of college graduates led to two sources of rising household income inequality: the increased use of bonus pay which increases residual inequality among college graduates; and matching on unobserved skills in the marriage market which increases inequality among married couples.

In Taiwan, the household Gini coefficient climbed from 0.25 to 0.34 between 1980 and 2014 as shown in Figure 1. While rising inequality is common across most developed economies (OECD, 2012), the Taiwan case has some unique features. First, while household inequality is rising, several studies have found that wage inequality for individual workers is declining or stable (Cheng, 2004; Chen and Hsu, 2001; Chan *et al*., 1999). These studies were based on wages without including the annual bonus.[2] As shown in Figure 1, Gini coefficients based solely on individual wages without incorporating the bonus fell from 0.30 to 0.26 between 1980 and 2014. Second, slow growth of the college-educated labor relative to the pace of technical change is viewed as a major cause of rising inequality in other developed economies (OECD, 2015; Goldin and Katz, 2009). That was not the case in Taiwan where a government policy that converted junior colleges to 4-year colleges and a relaxation of college entrance requirements increased college enrollments dramatically.[3] As a result, the college share of the workforce rose from 5% to 34% since 1980. The college share among the youngest workers was 74% by 2014! Such a rapid increase in the supply of college graduates should have outpaced technology growth and moderated income inequality.

Using data from the Taiwan Survey of Family Income and Expenditure (SFIE),

[2] These studies used the Taiwan Manpower Survey which does not include information on bonus.
[3] The pass rate on the college entrance exam rose from 29% in 1980 to 96% in 2014.

we demonstrate how Taiwan household income inequality rose despite declining wage inequality and dramatically rising college share of the labor force. We find three main reasons for the rising household income inequality. The first is that employers increasingly relied on bonus over the period with the share of wage earners receiving bonus pay increasing from 48% in 1980 to 71% in and 2014. Second, the expansion of access to college education increased women's educational attainment and led to higher women's labor force participation rate from 39% in 1980 to 50% in 2014. The greatest increases in female labor force participation were among the most educated. Third, positive assortative mating and rising female labor force participation led to additional upward pressure on household income inequality. These forces outweighed the equalizing effects of rapidly rising college graduation which lowered the college wage premium for the youngest cohorts.

The increasing use of performance pay and positive assortative mating in the marriage market combine to explain 70% of the increase in household income inequality from 1980 to 2014, with increased use of bonuses accounting for 52% and the marriage market accounting for 48%. Absent these two factors, household income inequality would be 42% lower for the time period of 2004-2014. While it seems that expanding access to college should be a means of reducing income inequality in the presence of skill-biased technical change, Taiwan presents an

example that income inequality can rise, even in a country experiencing one of the fastest expanding college labor forces among developed countries.

The remainder of the paper is organized as follows. In the next section, we present a review of the relevant literature. In section II, we use a simple empirical model to estimate the contribution of performance pay and marriage market on the income inequality, followed by Section III that examines the effect of assortative mating and married female labor force participation on inequality. Section IV employs a decomposition approach to explore the contribution of household composition to the rising income inequality. We conclude the paper in section V.

I. Literature Review

Economic growth in the world's advanced economies has been accompanied by widening income gaps between the rich and poor. Of the 22 countries for which long-term data are available, inequality rose in 17 between the mid-1980s and 2013 (OECD, 2015). Many studies have pointed to skill-biased technical change that outpaced the growth of college trained labor as a common factor contributing to the rising inequality in the developed world (Katz and Murphy, 1992; Card and Lemieux, 2001; Goldin and Katz, 2008; Autor, Katz and Kearney, 2008).

In addition to the shifts in the demand and supply for skilled workers, positive assortative mating and rising married female labor force participation have also

contributed to rising income inequality. Schwartz (2010) and Greenwood et al. (2014) concluded that positive assortative matching between husbands and wives was responsible for a 25%-30% increase in the Gini coefficient in the United States. This significant increase in inequality due to nonrandom matching is a result of rising married female labor force participation at a time of rising homogamy in spousal education mating (Siow, 2013).[4] The rising household inequality due to the marriage market is in contrast to mixed conclusions from earlier periods. Karoly and Burtless (1995) and Fernandez and Rogerson (2001) argued that sorting would increase inequality, while Kremer (1997) concluded that there was no effect on inequality and Cancian and Reed (1999), Pencavel (2006) and Daly, *et al.* (2006) found that women's labor participation equalized income. Smith (1979) found that wife's earnings equalized household income for white families while increasing inequality among Black families. Evidence from other developed countries generally finds negligible effects of wives' earnings on household income inequality (OECD, 2011).

While most of the earlier studies have focused on rising income inequality in Europe and North America, Milanovic and Yitzhaki's (2002) review of world income inequality suggested that the greatest share of world inequality is found in Asia. Fields and Yoo (2000) showed that wage inequality fell in Korea due to rapidly rising

[4] Gihleb and Lang (2016) contend that the finding of rising incidence of positive assortative mating disappears when finer education categories are used.

access to schooling and a concave return to experience that lowers the income advantage for the most experienced workers. Rising female labor force participation rates also lowered inequality through the marriage market where two earner households helped to equalize household earnings. On the other hand, inequality rose in China (Chotikapanich *et al*, 2007; Wan, Lu and Chen, 2007). There, inequality was attributed to rising income disparities between urban and rural labor markets and to differences in Foreign Direct Investment which created an unequal pace of labor demand growth across regions. Taiwan data showed that the increased correlation between spouses' income through assortative mating is the main source of the rising Gini coefficient between 1978 and the mid 1990s (Fields and Leary, 1999; Fournier, 2001; Bourguignon, Fournier, and Gurgand, 2001).

A growing literature examines the effect of performance pay on income inequality. Performance pay has become an increasing component of worker compensation (Lazear, 2000; Lemieux *et al.*, 2009; Heywood and Parent, 2009; Pannenberg and Spiess, 2009; Bell and Van Reenen, 2013). If technical change is raising output particularly for the most educated or experienced workers relative to less skilled workers, , performance-based pay may increase income inequality. Lemieux *et al.* (2009) showed that performance pay increased income inequality among male workers by 21% between the late 1970s and the mid 1990s. Heywood

and Parent (2009) found that performance pay led to rising pay gaps between Black and white males at the upper tail of the wage distribution. Bell and Van Reenen (2013) showed corroborating evidence in the United Kingdom where performance pay increased inequality between 1979 and 2007. However, Sommerfeld (2013) found no effect of performance pay on income inequality in Germany.

II. The Effect of Performance Pay and Marriage on Income Inequality

Over the period of 1980 through 2014, the bonus share of total compensation in Taiwan increased from 8% to 19%. Performance pay is most common among college-educated workers as opposed to high school workers: 92% vs. 70% received bonuses in 2014. Bonuses represent 22% of the compensation for college graduates and 18% of the compensation for high school graduates in 2014. Because of its rising importance in magnitude and frequency as well as its atypical importance to the most educated groups, bonus pay could play a key role in raising household inequality.

We start by comparing the time paths of three alternate Gini coefficients based on individual annual wage income without the bonus, individual annual wage income with the bonus, and annual household wage income including bonuses. The resulting series illustrate the impacts of the bonus and the marriage market on income inequality. The Gini coefficients are calculated using the method proposed by

Milanovic (1997):

$$G = \left(\frac{1}{\sqrt{3}}\right) \cdot \left(\frac{\sigma_y}{\bar{y}}\right) \cdot (\rho(y, r_y)) \quad (1)$$

where $(\frac{\sigma_y}{\bar{y}})$ is the coefficient of variation in household income; σ_y and $\bar{y}$ are the standard deviation and mean of household income, respectively; and $\rho(y, r_y)$, is the correlation between household income (y) and the rank of the household based on their income (r_y). We use the Milanovic method rather than Lorenz's (1905) polygon Gini because of its ease of computation with individual data. Milanovic's Gini coefficient has been widely used in practice and studies also show that it generates values that are close to Lorenz's polygon Gini.[5]

Figure 1 displays the three series of Gini coefficients for the 1980-2014 time period. The Gini coefficients based on individual annual wage income excluding the bonus (base wage) lies everywhere below the other two measures, demonstrating that there is greater equality in the base wage. Moreover, the time path suggests that income inequality has declined from 0.3 to 0.27 between 1980 and 2014 as the share of college graduates I he labor market surges.

When performance pay is added to individual base wage compensation, the Gini coefficient rises in all years. The gap between the series with and without the bonus widened after late 1990s, the period when the college graduate share of the labor force

[5] See Deltas (2003), Abounoori and Mccloughan (2003), Meng (2004), Mussard et al. (2011) and Sadefo Kamdem (2012).

began to rise rapidly. Comparing the two Gini coefficient series including and excluding the bonus, we conclude that ignoring performance pay understates income inequality by 11% in 2014.[6]

Gini coefficients using household income were smaller than the ones using individual income throughout the 1980s, meaning that the marriage market made the income distribution more equal. After 1992, the series based on household wage income with bonus rose steadily, even as the progressively larger cohorts of college graduates entered the labor market. The gap between the two series including bonus pay rose to 13% by 2014, illustrating that the marriage market increased inequality substantially. More importantly, even as inequality fell based on individual wage income after 2008, the household-income Gini coefficients remained stable. The marriage market reversed any equalizing effect of the labor market after the recession.

Taken together, the household income inequality in 2014 would have been 22% lower had the effects of both performance pay (9%) and the marriage market (13%) not been considered. In other words, any equalizing effect of the expansion of higher education on income inequality is more than offset by the increased reliance on performance pay and sorting through the marriage market.

III. The Effect of Positive Assortative Mating and Married Female Labor Force Participation on Income Inequality

[6] Using U.S. data, Lemieux (2009) also found that performance pay widens income inequality with its effect growing stronger as performance pay became more prevalent.

We have seen a significant increase in income inequality when moving from individual income to household income. This section demonstrates that the increased inequality is driven by the rising importance of positive assortative mating. We first show that there has been a significance increase in positive assortative mating in the marriage market. We divide household income into 10 deciles and group households by marital status (married and single), education level (less than high school, high school, junior college, and college plus), employment status (work and unemployed), and the number of children (0, 1, 2, and greater than 2). More aggregate classifications can be obtained by combining finer classifications.

In Table 1, we illustrate the changing incidence of positive assortative mating by education level for 1980 and 2014. For each education combination, we report the actual share of matching in all married households and the share that would have occurred if marital matching were random. The diagonal percentages are the matches in which both husband and wife have identical education levels. In 1980, the overwhelming share of the adult population had not completed high school and 71.6% of marriages involved matches within education groups. However, if marriage matches were due to purely random sorting, only 54.9% of marriages would have been within education groups, meaning that the disproportionate share of within-schooling group marriages due to positive assortative mating is 16.7%. By

2014, there was substantially more heterogeneity in completed schooling, and so purely random sorting would have resulted in only 18% of marriages within education groups. The actual incidence of within-schooling group matches was 61.9%, meaning that positive assortative mating by education level accounts for 43.8% of marriages. Meanwhile, two college graduate marriages rose from 2.1% to 14.7% of all marriages.[7]

As shown in Figure 2, the ratio of the sum of the diagonal percentages of actual matches to that of random matches is always greater than 1 which indicates positive assortative mating. The ratio has risen steadily since 1980, implying that the incidence of positive assortative mating has almost doubled over 30 years.

Following the methods proposed by Greenwood, *et. al* (2014), we construct counterfactual Gini coefficients assuming random matching to assess the extent to which positive assortative mating affects household income inequality. Figure 3 shows that moving from the observed matching pattern to random matching had a relatively small effect on the Gini coefficients in the 1980s. By 1990, the observed Gini coefficient was 0.29 compared to 0.28 with random marital matching. By 2014, the observed Gini coefficient is 0.34 compared to only 0.29 with random marital

[7] We used Gihleb and Lang's (GL) (2016) educational classification, which separates graduate degrees from Bachelor's degrees, and use rank-order correlation to examine the evolution of positive assortative mating. The results are consistent with those of our current classification. Kendall's τ_b correlation coefficient based on GL classification was 0.59 in 1978 and 0.74 in 2014.

matching. The Gini coefficient would have only increased from 0.28 to 0.29 since 1990 if the matching process were random, meaning that positive assortative mating explains almost all the difference between household- and individual-income Gini coefficients. The household Gini coefficient rises by 17% because of positive assortative mating.[8]

Another factor reinforcing the effect of positive assortative mating is married female labor force participation (MFLP). MFLP can increase or decrease income inequality depending on whether the more or less educated married women are likely to work. We construct the counterfactual Gini for 2000 and 2014 holding marital mating as random and the MFLP rates at their 1980 levels. The counterfactual Gini coefficient is only slightly smaller than the observed Gini in 2000, but it falls from 0.29 to 0.27 by 2014. That means that rising MFLP for the most educated women is also increasing household income inequality in Taiwan.

The role of MFLP is illustrated in Figure 4 which shows how MFLP changed by household income deciles between 1980 and 2014. Compared to 1980, the MFLP rate was 20 percentage points higher in the upper half of the household income distribution. At the same time, the MFLP fell dramatically in the bottom 40% of the

[8] The conclusion also holds when we adjusted the household income to a per adult basis by the OECD equivalent scale.

distribution. The households at the upper tail of the distribution atypically have two earners and the households at the bottom of the distribution atypically have one earner.[9]

IV. Variance Decomposition Approach

While the Gini coefficient and marriage market analysis provides an overall summary measure of the evolution of household income inequality in Taiwan, we are also interested in monitoring how more finely defined changing shares of household composition contribute to rising income inequality. To do this, we decompose the changing variance of household income into three components: changing group population share, changing within-group income variance, and changing between-group income variance. We focus on three time periods: (1) 1980-1989: before the rapid expansion of college access; (2) 1992-2001: during the increase in college enrollments and the initial surge in college share of the labor market; and (3) 2005-2014: after the policy changes in college access and the fastest increase in college share of the labor force.

The decomposition for the total variance in income σ_Y^2 is given as:

$$\sigma_Y^2 = \sum_{i=1}^{k} \alpha_i \sigma_{Y_i}^2 + \sum_{i=1}^{k} \alpha_i (\bar{Y}_i - \bar{\bar{Y}})^2 \qquad (4)$$

where $\sigma_{Y_i}^2$ is the within group i variance of household income; α_i is the group i population share of all households; $\bar{Y}_{i.}$ is the mean household income for group i; and

[9] This trend has an age component. 65% of the households in the bottom 20% of the income bracket are headed by a spouse older than 65 in 2014, compared to only 5% in 1980.

$\bar{\bar{Y}}$ is the overall mean household income. The first term shows how much of the variance is due to inequality within groups while the second term denotes how much of the income variance is due to inequality between groups. Table 2 reports the average values for the decomposition in the three periods. Over thirty years, the overall household income variance increased 3 times. The within-group and between group components are almost equally responsible for the increase in household income variance. However, because the between-group variance was relatively unimportant in 1980, it makes the greatest jump in its share of the total variance which increases from 26% to 43%.

To illustrate the role of performance pay, we construct household income variance with the base pay only and then with the base pay plus bonus. Similarly, to demonstrate the role of the marriage market on the income variance, we construct the counterfactual income variance by altering the population share α_i to be the share that would have occurred with random marital sorting rather than the observed shares. The results reported in Table 3 corroborate our previous findings: there is growing influence of performance pay and assortative mating on household income inequality. The household income variance is 17.4% higher because of performance pay in 1980, but it is 41.1% higher in 2005-2014. Positive assortative mating accounted for an additional 13.7% higher variance in 1980-1989, and 20.5% higher household income

variance in 2005-2014. The household income variance is 42% ((5665-3330)/5665) higher in 2005-2014 because of the marriage market and performance-based pay.

The relative contribution of performance pay and positive assortative mating on the evolution of income inequality can be estimated accordingly. We start from the actual household income variance in 1980-1990 and then construct two counterfactual series of income inequality: (1) random mating and bonus, and (2) random mating and no bonus. From Table 3, the actual household income variance has grown by 3.03 times from 1,405 to 5,665 between 1980 and 2014. On the other hand, the first counterfactual series suggests that the household income variance would have increased to 4,458 in 2014 when mating in the marriage market is held random. The second counterfactual series further removes performance pay and the result shows that the household income variance would have grown only to 3,330 by 2014.

Similar to most decomposition analyses, the marginal contribution of the performance pay and positive assortative mating will be different if we construct the counterfactuals by excluding bonus first before holding marriage mating random. By taking the average of both sequences, 70% of the growth in the household income inequality between 1980 and 2014 can be attributed to the presence of performance pay and positive assortative mating, of which performance pay and positive assortative mating account for 48% and 52% of the increase, respectively.

For further insights, we demonstrate which education-marriage groups contributed most to the rising household income inequality. Table 4 shows the contribution of each component to the overall variance in percentages for each more aggregated demographic group. The effect of college expansion is apparent as the contribution of changing shares to the overall change in income variance mainly come from college-educated households. The contribution of changing shares among married households is largely driven by two-earner households, particularly the two college-earner households (9.7% out of 15.8% in the summary). This demographic shift is also reflected by the significant decline in the shares of single high school earner married households (contribution to the overall change is -3.4%). More importantly, single households only account for 22% of the changes in the overall variance over the past 30 years despite their rising share of households. Married households play the most prominent role in rising household income inequality. Of those, two college-earner households contribute 30% to the change in the overall variance despite representing only 6% of all households.

Married households have greater within-group variance than the single ones. Changes in the within group variance among married households is responsible for 42% of the total change in the overall variance. Furthermore, married households also contribute more to the overall change in variance through between-group

variance than do single households. Households with at least one college-educated earner, particularly the two college earner households, have the largest contribution. The marriage market consistently shows a significant amplifying effect on income inequality.

The final two rows in the summary show that the contribution of households with at least one high school earner is mainly through increasing inequality within the group of high school educated married couples. On the other hand, the contribution of college earner households to rising inequality comes from all three channels: their rising share of households, their rising average incomes, and rising inequality among the college educated couples. Of the 3-fold increase in household income variance between 1980 and 2014, changing shares in the household composition is responsible for 20% of the growth and the remaining 80% can be attributed to rising inequality across wage earners within and across groups.

V. Conclusion and Discussion

This study shows that the marriage market combined with changing patterns of female labor force participation and the use of performance -based pay increase household income inequality in Taiwan, despite a dramatic increase in the share of college graduates in the labor force. The large increase in college enrollments in Taiwan led to greater variance in the quality of college-educated workers with the

creation of weaker 4 year colleges and the admission of less prepared college entrants. As uncertainty regarding the quality of college graduates increased, employers had an incentive to increase the use of performance-based pay and decrease the weight on base pay (Keng et al., 2017; Carneiro and Lee, 2011). The Taiwan case shows that increasing access to college by itself will not insure that income inequality will be held in check by increasing access to college unless the quality of college graduates can be maintained.

The composition of final demand for goods has also changed in favor of the more educated workers. Growing economic ties with China over the past 15 years led many firms to relocate their manufacturing base to China while design, marketing, finance and other management positions remain in Taiwan. The job loss is disproportionally in the low-skill, labor intensive positions that were in the lower tail of income distribution. That loss of low-skill manufacturing work contributed to the substantial decrease in the married female labor force at the lower tail of the household income distribution.

Performance-based pay and the marriage market both allow sorting on unobservable productivity. Unobservable productivity raises unequal observed earnings from unobserved match quality. In Taiwan, as observed educational heterogeneity decreased with massive gains in college entry and the rapidly rising

share of college graduates in the labor force, inequality rose as marriage and employment contracts were increasingly predicated on the unobservables. The Taiwan case offers a useful cautionary case for simplistic solutions to income inequality based solely on increasing college access.

In sum, performance pay and household structure are each responsible for about half the growth in income inequality in Taiwan over the past 30 years. The Taiwan case shows that expanding access to college alone will not reverse the trend toward inequality related to skill-biased technical change.

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Figure 1: Gini Coefficients in Taiwan based on Individual and household income: 1978 to 2014

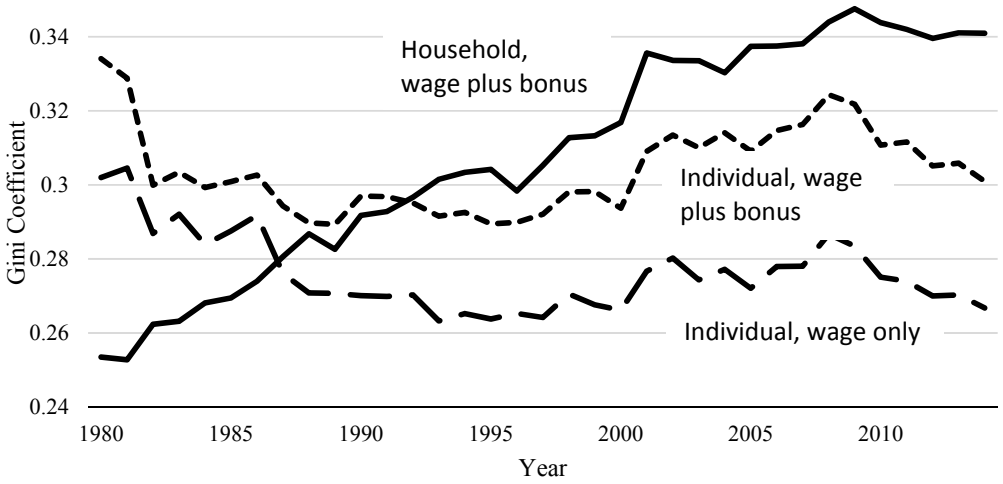

Figure 2: Positive Assortative Index: 1980-2014

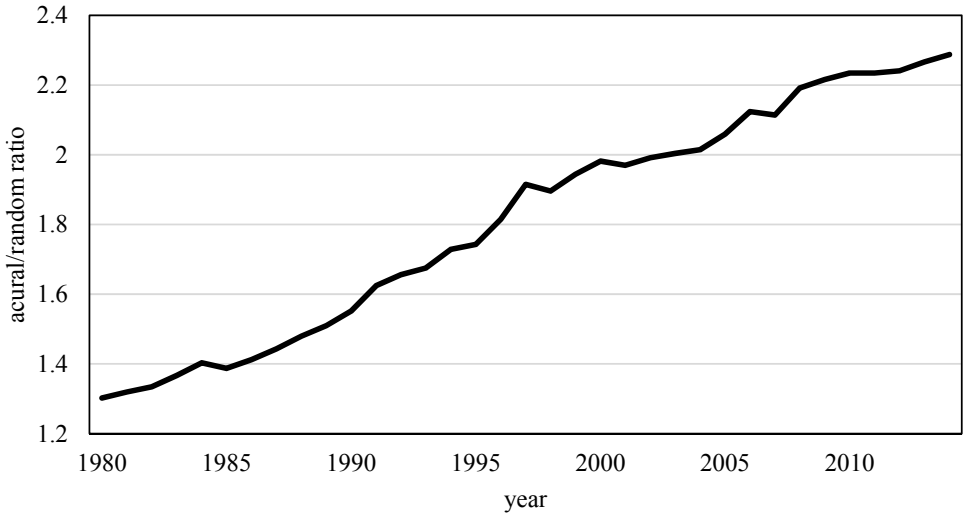

Figure 3: Gini Coefficients in Taiwan based on household income by Actual and Random mating: 1978 to 2014

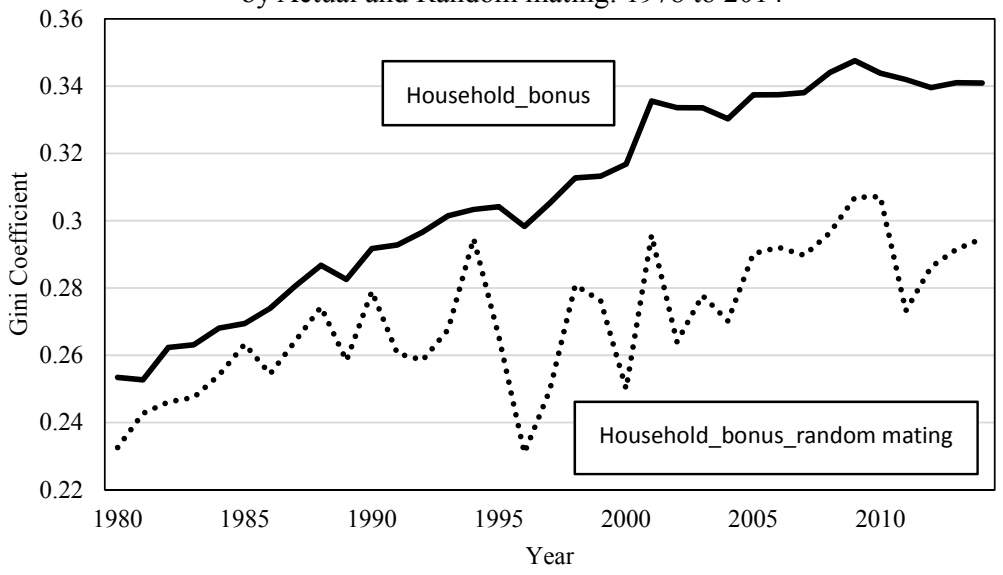

Figure 4: Married Female Labor Force Participation Rates by Household Income Deciles

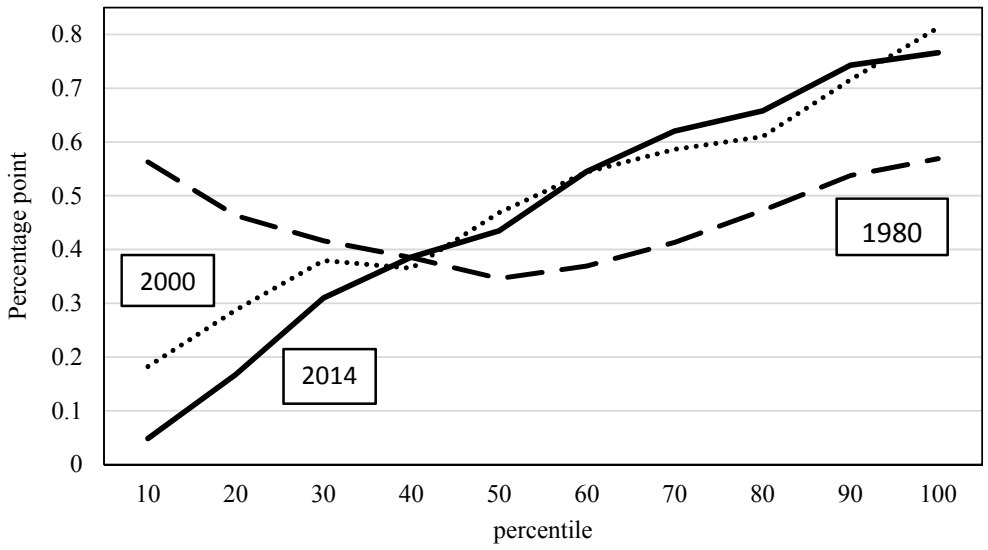

Table 1: Actual Mating and Random Mating in 1980 and 2014

Husband	Wife								
	Less than High School		High School		Junior College		College Plus		Row Total
	Actual	Random	Actual	Random	Actual	Random	Actual	Random	
Panel A: 1980									
Less than High School	**0.626**	***0.519***	0.016	*0.084*	0.001	*0.024*	0.0002	*0.016*	**0.642**
High School	0.132	*0.158*	**0.056**	***0.025***	0.006	*0.007*	0.002	*0.005*	**0.196**
Junior College	0.028	*0.056*	0.026	*0.009*	**0.013**	***0.003***	0.002	*0.002*	**0.069**
College Plus	0.022	*0.075*	0.032	*0.012*	0.018	*0.003*	**0.021**	***0.002***	**0.093**
Column Total	**0.808**		**0.13**		**0.038**		**0.025**		**1**
Panel B: 2014									
Less than High School	**0.236**	**0.010**	0.053	*0.100*	0.003	*0.039*	0.003	*0.057*	**0.295**
High School	0.079	0.103	**0.18**	***0.104***	0.031	*0.041*	0.017	*0.059*	**0.307**
Junior College	0.014	0.053	0.064	*0.054*	**0.056**	***0.021***	0.025	*0.030*	**0.159**
College Plus	0.007	0.08	0.042	*0.08*	0.043	*0.031*	**0.147**	***0.046***	**0.239**
Column Total	**0.336**		**0.339**		**0.133**		**0.192**		**1**

Panel C: Comparison of Actual Incidence of Positive Assortative Mating versus Random Mating, 1980 and 2014

	Actual	Random	Difference	
1980 Diagonal Total	**0.716**	**0.549**	**0.167**	
2014 Diagonal Total	**0.619**	**0.18**	**0.438**	

Table 2: Decomposition of the Taiwan Income Variance: 1978-1989 and 1999-2011

	Within	Between	Total
	$\sum_{i=1}^{k} \alpha_i \sigma_{Y_i}^2$	$\sum_{i=1}^{k} \alpha_i (\bar{Y}_i - \bar{\bar{Y}})^2$	σ_Y^2
1980-1990	1033 (74%)	372 (26%)	1,405 (100%)
1992-2002	3,130 (60%)	2,069 (40%)	5,199 (100%)
2004-2014	3,214 (57%)	2,451 (43%)	5,665 (100%)
Change (%)	2,181 (211%)	2,079 (559%)	4,260 (303%)

Table 3: Counterfactual Household Income Variance by Periods

Period	σ_Y^2 excluding bonus (A)	σ_Y^2 including bonus (B)	Increase due to bonus (B/A)-1
Actual Sorting (C)			
1980-1990	1196	**1,405**	17.4%
1992-2002	4004	5,199	29.9%
2004-2014	**4014**	5,665	41.1%
Random Sorting (D)			
1980-1990	1052	1215	15.5%
1992-2002	3408	4276	25.5%
2004-2014	**3330**	**4458**	33.9%
Increase due to marriage market (C/D)-1			
1980-1990	13.7%	15.6%	
1992-2002	17.5%	21.6%	
2004-2014	20.5%	27.1%	

Table 4: Decomposition of the Changes in Household Income Variance: 1980-2014

	Share in $\Delta\alpha_i$	Share in $\Delta\sigma^2_{Y_i}$	Share in $\Delta(\bar{Y}_{i.} - \bar{\bar{Y}})^2$	Share in $\Delta\sigma^2_Y$
Married Households:				
F worked, H	0.61%	1.42%	1.23%	3.27%
F worked, C	0.04%	0.11%	0.01%	0.16%
F worked, both C	0.20%	0.72%	0.33%	1.25%
M worked, H	-3.35%	6.77%	2.85%	6.27%
M worked, C	0.18%	2.77%	0.74%	3.68%
M worked, both C	2.01%	6.44%	2.23%	10.68%
both worked, both H	2.89%	9.76%	-0.21%	12.44%
both worked, one C	3.26%	4.84%	1.67%	9.76%
both worked, both C	9.67%	9.0%	11.39%	30.06%
Single Households:				
F worked, H	1.12%	1.48%	4.98%	7.58%
F worked, C	0.75%	3.04%	-0.01%	3.78%
M worked, H	0.76%	1.89%	5.05%	7.70%
M worked, C	1.41%	2.04%	-0.07%	3.38%
Total:	19.52%	50.28%	30.19%	100%
Summary:				
Single households	4.023%	8.46%	9.95%	22.44%
Married households	15.50%	41.82%	20.234%	77.56%

Table 4 continued

Single earner	-0.32	18.23%	7.39%	25.30%
Two earners	15.81%	23.59%	12.85%	52.25%
Two cplus earners	9.67%	9.0%	11.39%	30.06%
Two high school earners	2.89%	9.76%	-0.21%	12.44%
At least one college earner	15.35%	23.88%	16.36%	55.59%
At least one high school earner	3.41%	22.78%	5.534%	31.723%