Online Appendix

Section A: More information on data and sample

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Note: for replication code, see my personal website https://yifanshen.weebly.com/.

Section A: More information on data and sample

CHIP 1988 collected retrospective income information in 1989 through interviews. CHIP 2013 collected income information twice. First, staff from the China Bureau of Statistics asked each household to keep a diary of their incomes throughout the whole year of 2013. Second, households were interviewed again in 2014 to provide retrospective income information. My 2013 sample mainly relies on the retrospective income information but uses the diary-based income information when retrospective income information is missing (number of couples affected by this kind of imputation: 48). Results are very similar if I mainly rely on the latter and use the former when data from the latter is missing (results available upon request).

Earnings can be missing for two reasons: 1) they are missing in the original dataset; 2) they are originally non-missing but treated by me as missing if:

a) The respondent claimed to be a private business owner but did not report valid value for their business income. This adjustment applies only to the 1988 sample because in 2013 wages and self-employment income were asked using a single question ("what is your total annual income from wages/salaries and/or net self-employment income").

b) The respondent reported to be working as an employee but only reported valid values for subsidy income and was missing on major wage/salary items.

c) The respondent reported zero annual earnings but also claimed to have worked last year.

d) The retrospective earnings are less than one tenth of the earnings reported in the income diary data. This rule affects only a small number of cases (18 couples), whose inconsistency in earnings data across the two sources is likely due to report errors (they

reported their monthly earnings as their annual earnings). If one further checks their total family earnings in variable F01_1 one would observe the same kind of inconsistency (between their self-reported earnings and their total family income).

Couples in which at least one partner's earnings are missing (due to any of the reasons above) and cannot find corresponding valid values in the income diary data are dropped from my sample. As mentioned in the main text, the total number of missing cases is very small.

CHIP 1988 did not collect information on marital status, but most married couples can be identified from the relationship-code variable that describes the relationship between the household head and each of the remaining household members. The spouse of the household head can be easily identified as the person whose relationship with the household head is coded as "spouse". The categories of the relationship-code variable are not detailed enough to determine the marital status of all household members (see below for examples), so single persons are not included in this study.

Currently-cohabiting couples cannot be identified in the 1988 data because the relationship-code variable does not distinguish between married couple from cohabiting couple. Cohabiting status was collected in the 2013 survey, but there are only three couples in my 2013 sample who reported to be currently cohabiting. They constitute only 0.1% of the sample, a percentage that is identical to the one reported in Hu and Qian (2015, p. 5). The three couples are now included in all analyses and results do not differ if they are excluded. The CHIP data did not collect information on cohabiting histories, so I do not further distinguish couples who had never cohabited from couples who had ever cohabited.

In what follows, I explain how I identify married couples that do not involve the household head. Results are very similar if only the household head and their spouse are included in the analytic sample (see Table S3 "alternative sample 2").

In the 1988 data, the variable "relationship to the household head" contains the following categories:

1. Self
2. Spouse
3. Child or child-in-law
4. Grandchild or grandchild-in-law
5. Parent or parent-in-law
6. Grandparent or grandparent-in-law
7. Other relative
8. Non-relative

I made the following assumptions:

1. If a household contains a man and a woman who are both in category 5 in the above list, and they are the only two persons in this category in that household, and they also meet the other criteria of sample definition (aged 30-49, not in school/retired/disabled), then these two persons are treated as a couple; 0 couple is identified in this way.
2. If a household contains a man and a woman who are both in category 3 in the above list, and they are the only two persons in this category in that household, and they also meet the other criteria of sample definition (aged 30-49, not in school/retired/disabled), then

these two persons are treated as a couple; 55 couples (1.2% of the final 1988 sample) are identified in this way.

Regarding the 2013 sample, the variable "relationship to the household head" contains the following categories:

1. Self
2. Spouse
3. Child
4. Parent
5. Parent-in-law
6. Grandparent
7. Child-in-law
8. Grandchild/grandchild's spouse /great grandchild/great child's spouse
9. Sibling
10. Others

I made the following assumptions:

1. If a household contains a man and a woman who are both in category 4 in the above list, and they are the only two persons in this category in that household, and they also meet the other criteria of sample definition (aged 30-49, not in school/retired/disabled), then these two persons are treated as a couple; 10 couples (0.3% of the final 2013 sample) are identified in this way.
2. If a household contains a man and a woman who are both in category 5 in the above list, and they are the only two persons in this category in that household, and they also meet

the other criteria of sample definition (aged 30-49, not in school/retired/disabled), then these two persons are treated as a couple; 2 couples (0.07%) are identified in this way.

3. If a household contains a member who are in category 3 in the above list and another member with a different sex in category 7, and they also meet the other criteria of sample definition (aged 30-49, not in school/retired/disabled), and they are the only pair of such persons in that household, then these two persons are treated as a couple; 300 couples (9.8%) are identified in this way.

Section B: Further evidence on substantive mechanisms

The aim of this section is to assess the massive growth of internal migration from rural to urban areas as one possible mechanism behind the impact of the nonlinear change in earnings homogamy in urban China on between-couple inequality. Specifically, I compare the decomposition results before and after dropping couples where at least one partner is of rural origin from my sample.

Definition: A rural-born urban resident can either hold a rural *hukou* (type A) or hold an urban *hukou* (through *hukou* conversion) at the time of interview (type B). Excluding rural-origin couples does not involve any operation on the 1988 CHIP data because the 1988 data does not include couples of type A and provide no information for me to identify couples of type B. Fortunately, the share of such couples at that time was relatively small. Both type A and type B couples in the 2013 sample can be identified, so when I say I exclude them from the sample, I mean I exclude them from the 2013 sample only.

Results: Table S1 shows the decomposition results that can be interpreted in a similar vein to those in Table 4 in the main text. Only results based on the Gini index are presented as results based on CV^2 are similar. The results at both tails of the distribution change after sequentially excluding type A and type B couples from the sample. The change in the results regarding the upper end of the distribution is noticeable but does not alter the interpretation substantively. It means part of the disequalizing impact of the growing earnings homogamy among high earners may be related to the increasing availability of high-earning migrants in the urban marriage market, as mentioned in the main text. The change in the results regarding the lower end of the distribution suggests that the equalizing impact of the weakened earnings homogamy between low-earning husbands and their wives is *mainly* driven by the influx of rural migrants. For

example, the inflows of less-educated rural migrants into the urban marriage market may result in more status-exchange marriages in which the rural-origin spouse exchanges their higher economic status for their partner's local urban *hukou* (Tian et al. 2018), which would increase the share of couples who differ in their economic status. This mechanism should work mainly in the lower as opposed to the upper end of the earnings distribution because existing evidence suggests that female rural migrants who marry down educationally to gain an urban hukou are mainly high school graduates (who marry a local urban man with less than high school education) rather than those with higher degrees (Zeng and Liao forthcoming).

Table S1 Proportional contribution to trends in between-couple inequality in urban China by husband's earnings decile

		Husband's earnings decile									
	Overall	1	2	3	4	5	6	7	8	9	10	Total
Main sample	6.20	-10.98	-0.03	-3.94	4.21	3.50	6.18	11.27	22.07	17.26	50.44	100%
Type A couple excluded	7.71	-0.39	4.89	2.04	3.77	3.09	7.73	7.27	18.85	15.81	36.94	100%
Type A & B couple excluded	8.03	11.78	6.07	-1.45	3.47	3.50	1.73	13.36	10.72	18.94	31.87	100%

Note : Main sample is the sample used in the paper. Inequality is measured by the Gini index;
Type A: couples who live in rural-migrant households (hold rural *hukou* at the time of interview);
Type B: couples where at least one partner is rural-born but currently hold urban *hukou.*

Section C: Does it matter to construct the 10×11 instead of 11×11 table?

One of my descriptive findings is that earnings homogamy declined among low earners in urban China. The main supportive evidence for this finding is that the sorting parameter in the upper left corner (i.e. the cell that represents couples in which the wife has zero earnings and the husband's earnings are in the bottom decile, W0H1 thereafter) declined in 1988-2013.

Constructing a 10×11 instead of an 11×11 table might introduce bias if over time couples with zero-earning husbands have declined in the W0H1 cell but increased significantly in the W0H0 cell (i.e. the cell that only exists in the 11×11 table). The small number of couples with zero-earning husbands, particularly in the 1988 sample (only 2 such couples), introduces huge potential risks of sampling errors and thus prevents us from empirically testing this possibility. For example, if we have to construct the 11×11 table, we will get 9 sorting parameters having zero values and the other two having values as high as 4.8 and 5.3 in the 1988 table (on the W7H0 cell and the W9H0 cell), which are much higher than the current highest value of sorting parameters in the 10×11 table (3.5, W10H10).

One way of testing the sensitivity of the results on this issue is to include zero-earning husbands in the sample and still divide husbands into 10 deciles. In doing this, these zero-earning husbands will be classified into the bottom decile. If the number of couples in which both spouses have zero earnings (W0H0) had indeed increased a lot, we would expect that on this new 10×11 table we no longer observe any significant decline in the sorting parameter in the cell W0H1. Table S2 suggests the opposite: after including zero-earning husbands in the sample, the pattern of changes in earnings homogamy differs little. The decomposition results also stay the same (see Table S3 in Section D, alternative sample 3).

Table S2 Changes in the pattern of earnings homogamy before and after dropping zero-earning husbands from sample

Changes from 1988 to 2013: zero-earning husbands included

		HE									
		1	2	3	4	5	6	7	8	9	10
WE	0	-1.0	0.2	0.2	0.3	0.3	0.7	0.1	-0.1	0.5	-1.2
	1	0.4	-0.1	0.1	-0.1	0.1	0.0	0.0	-0.2	-0.1	-0.1
	2	0.1	-0.1	-0.1	0.3	0.0	-0.1	-0.1	0.1	0.1	-0.2
	3	-0.1	0.2	0.3	-0.1	0.5	-0.2	-0.3	0.0	-0.1	-0.3
	4	-0.2	0.7	-0.1	0.2	-0.1	-0.2	-0.2	-0.2	0.1	0.0
	5	-0.1	0.7	0.6	0.1	-0.7	-0.3	0.0	-0.1	-0.2	-0.1
	6	0.2	-0.1	-0.1	0.6	0.3	-0.6	-0.2	0.0	0.0	-0.1
	7	0.0	-0.1	-0.3	0.2	0.6	0.1	0.1	-0.3	-0.2	0.0
	8	0.0	-0.4	0.0	-0.3	0.3	1.3	0.0	-0.2	-0.8	0.1
	9	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5	1.0	0.9	-0.4	0.3
	10	0.2	-0.3	-0.3	-0.4	-0.4	-0.3	-0.1	0.3	1.3	0.0

Changes from 1988 to 2013: zero-earning husbands excluded

		HE									
		1	2	3	4	5	6	7	8	9	10
WE	0	-1.0	0.4	0.0	0.3	0.4	0.7	0.1	-0.1	0.4	-1.2
	1	0.7	-0.5	-0.1	0.1	0.2	-0.1	0.1	-0.2	-0.1	-0.1
	2	0.0	-0.4	0.1	0.2	0.4	-0.1	0.0	0.0	-0.1	-0.1
	3	0.1	0.3	-0.1	0.1	0.2	-0.5	0.0	0.0	0.1	-0.2
	4	-0.5	1.3	-0.1	-0.3	-0.4	0.1	-0.1	0.0	0.0	0.0
	5	0.1	0.2	0.4	0.4	0.1	-0.7	-0.2	-0.2	-0.1	-0.1
	6	0.1	-0.3	0.1	0.6	-0.1	-0.4	-0.1	0.2	0.2	-0.1
	7	-0.2	0.1	0.1	0.2	0.7	0.2	0.2	-1.0	-0.3	0.0
	8	0.0	-0.3	-0.1	-0.4	-0.1	1.5	-0.3	-0.1	-0.4	0.3
	9	-0.3	-0.1	0.0	-0.2	-0.3	-0.5	1.0	1.0	-0.5	-0.1
	10	0.1	-0.3	-0.2	-0.4	-0.5	-0.2	-0.1	0.4	1.1	0.1

Section D: Robustness checks

Before looking at the results, it is helpful to know more about the CHIP data. The CHIP data do not cover all the 34 provinces of China but instead select several provinces from each of the four geographic regions (west, middle, east, and metropolitan cities) of China. CHIP 1988 covers 10 provinces (or provincial-level administrative units); CHIP 2013 covers 14 provinces. My main sample is limited to the 10 provinces that have been consistently covered by the 1988 and 2013 data so as to remove any potential impact of changes in sample coverage, although the results do not change if the 4 additional provinces in 2013 are included (see Table S3 "Alternative sample 4"). Finally, one may argue that even if all the 14 provinces are included in my 2013 sample, the potential sampling bias can still be a problem because 14 seems not enough if compared to the total number of provinces in China which is 34. Therefore, I constructed an alternative sample from CLDS 2014 (China Labor-force Dynamics Survey) which covers 28 provinces of China (see Table S3 "Alternative sample 5"). Unfortunately, no comparable nationwide household income surveys were available to double-check the sampling bias of the 1988 data.

Table S3 reports the decomposition results based on the main sample (used in the main text), six alternative samples, and the results when earnings homogamy is measured in absolute terms. All the analyses in Table S3 are based on the decomposition of the Gini index. Results based on CV^2 are similar (available upon request) except that, as mentioned in the main text, the equalizing impact at the lower end of the distribution is much smaller.

Table S3 Proportional contribution to trends in between-couple inequality in urban China by husband's earnings decile

		Husband's earnings decile										
	Overall	1	2	3	4	5	6	7	8	9	10	Total
Main sample	6.20	-10.98	-0.03	-3.94	4.21	3.50	6.18	11.27	22.07	17.26	50.44	100%
Alternative sample 1	5.27	-15.61	-2.20	1.06	2.80	4.18	7.49	13.02	22.76	22.94	43.57	100%
Alternative sample 2	5.55	-9.45	-1.62	-0.19	-3.62	5.97	7.86	4.78	17.32	31.31	47.64	100%
Alternative sample 3	5.92	-13.20	-2.05	-1.88	2.51	3.73	5.34	11.30	22.03	17.95	54.28	100%
Alternative sample 4	6.97	-5.24	0.83	-0.85	4.32	3.77	6.94	8.91	21.99	14.79	44.55	100%
Alternative sample 5	4.11	-23.74	10.98	0.09	-3.16	0.05	4.57	-5.41	2.48	10.83	103.30	100%
Alternative sample 6	3.31	-17.99	5.24	3.12	-8.81	-3.04	9.21	-0.66	31.66	33.29	47.99	100%
Main sample, absolute measure	7.86	-3.85	-8.19	4.75	10.99	-3.53	6.02	-15.58	11.19	24.19	74.01	100%

Note : Main sample is the sample used in the paper. Inequality is measured by the Gini index.
Alternative sample 1: the top 1% of each gender are dropped from the sample;
Alternative sample 2: only household head and their spouse are included in the sample;
Alternative sample 3: zero-earning husbands are included in the sample;
Alternative sample 4: all the fourteen provinces in the 2013 CHIP sample are included;
Alternative sample 5: urban sample from CLDS 2014;
Alternative sample 6: same as main sample but age range extended to 20-55;
Main sample, absolute measure: decomposition based on main sample but association is measured in absolute terms.

Section E: Nonmarriage and divorce

Recent changes in selection into/out of marriage in urban China could affect the trends in earnings homogamy observed among the married population. The increased age at first marriage (Yu and Xie 2015), for example, may increase sorting on earnings (Oppenheimer 1988). The emerging educational gradient in selection into/out of marriage may also play a role. It is, however, hard to speculate about the magnitude of its potential impact because the marginal distribution and economic meaning of education changed dramatically in the past three decades (Zhang et al. 2005). Changes in the composition of educational groups can produce a rising educational gradient in nonmarriage/divorce without any real change in the relationship between earnings and the likelihood of marriage (Isen and Stevenson 2010; Xie et al. 2003).

In general, marriage is still somehow universal in urban China. Even among the youngest cohort who were born in 1976-1985 and all reached 30 by 2015, 97% women and 90% men got married by age 30 (Gu 2018). The risk of divorce also remains relatively low (Yu and Xie 2020). Nevertheless, suppose that the rising educational gradient in nonmarriage and divorce mirrored a similarly rising earnings gradient in nonmarriage and divorce, the rising rates of nonmarriage and divorce among the least educated men should have excluded more low-earning men from the marriage market, which might weaken earnings homogamy at the lower tail of the distribution. The rising nonmarriage among college-educated women is related to the persistent norm of female hypergamy in China. This norm, however, does not discourage high-earning men from marrying low-earning women. Rising nonmarriage among highly educated women (and the hypergamy norm behind it) may result in stronger earnings homogamy among high-earning married women and yet weaker earnings homogamy among high-earning men. Its impact on the

degree of earnings homogamy among high earners is an empirical question and depends on to what extent the two forces offset each other.

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