

Supplementary

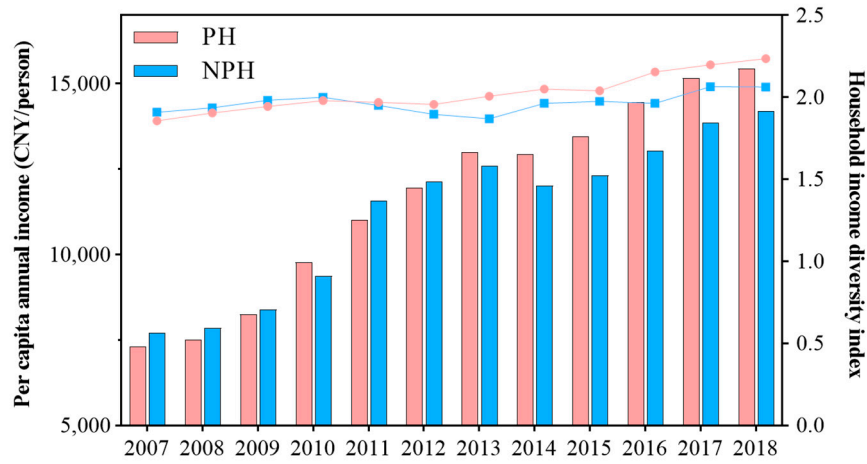


Figure S1. Per capita annual income and income diversity index for PH and NPH.

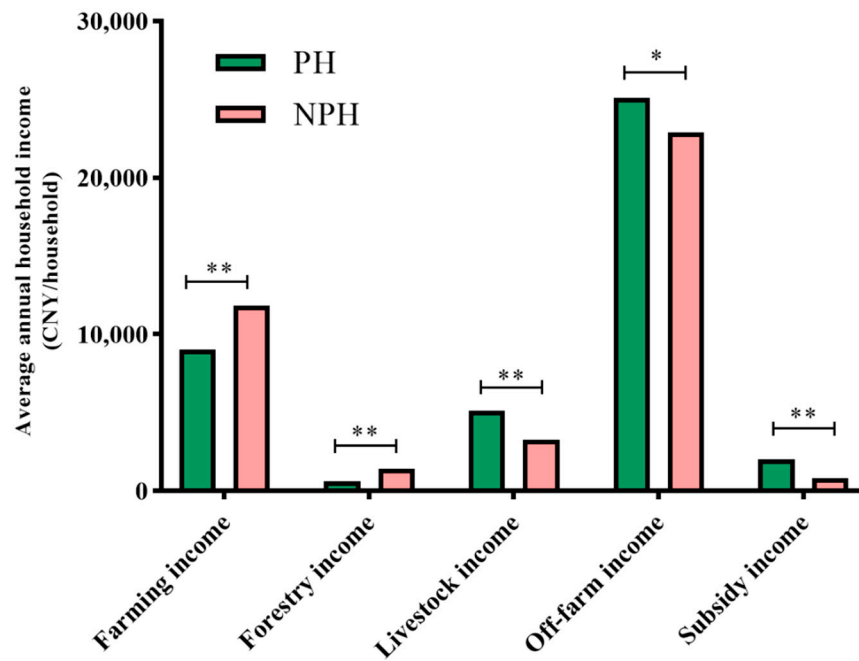


Figure S2. Sources of household income for PH and NPH (Notes: data are averages from 2007–2018, * $p < 0.05$, ** $p < 0.01$).

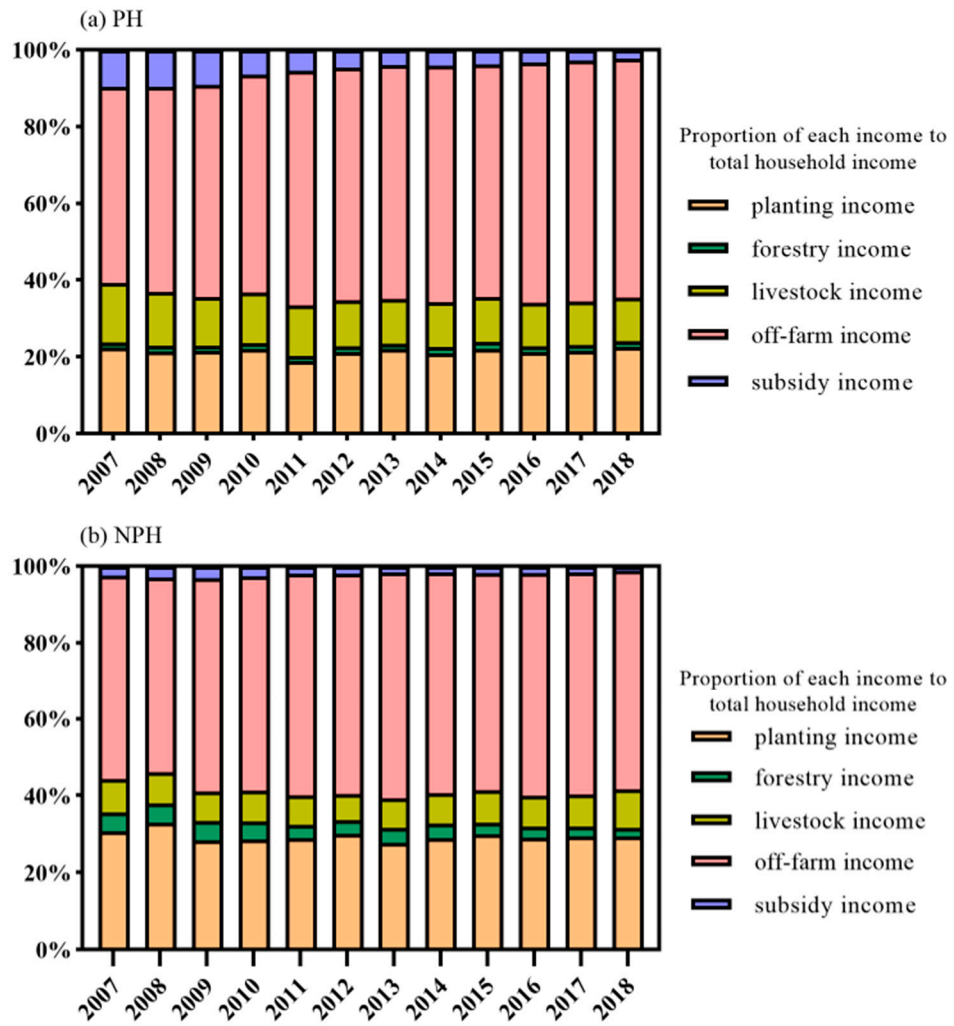


Figure S3. Proportion of each income to total household income for PH and NPH.

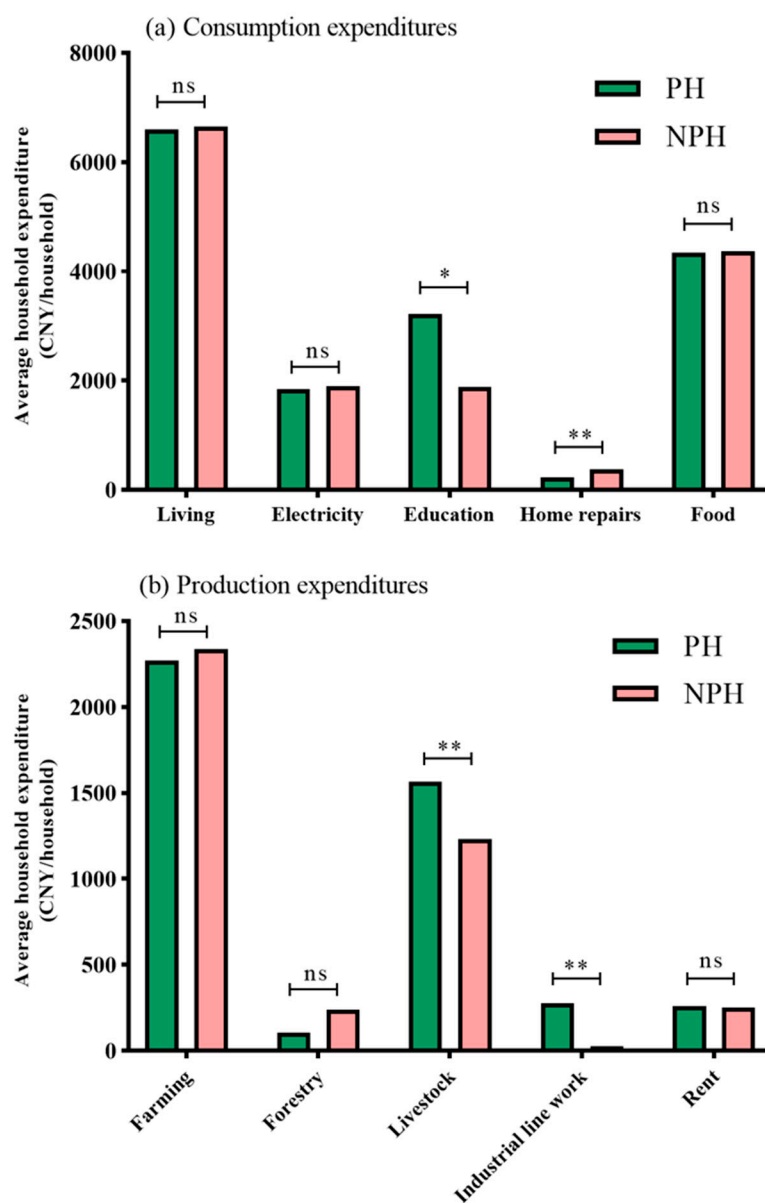


Figure S4. Consumption, production expenditures of PH and NPH (Notes: data are averages for 2007–2018, * $p < 0.05$, ** $p < 0.01$, ns indicates no significance).

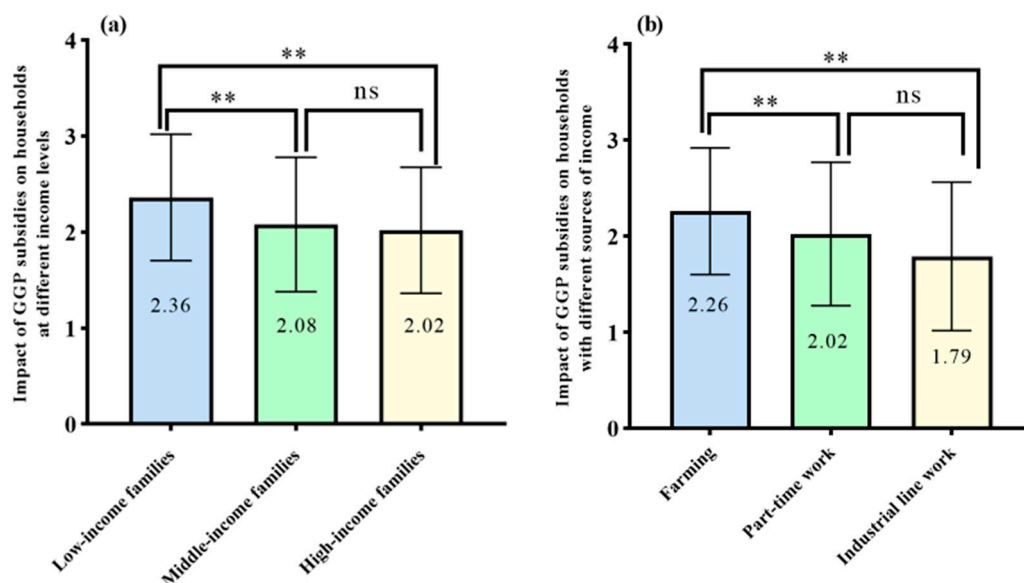


Figure S5. Effects of the GGP subsidies on households with different incomes levels (a) and different sources of income (b) (Notes: The data are the means from 2007 to 2018, where * $p < 0.05$, ** $p < 0.01$, ns indicates no significance).

Table S1. Study area range number and place name correspondence table.

Number	Place name
1	Zhangbei County
2	Guyuan County
3	Huailai County
4	Luanping County
5	Weichang County
6	Pingquan County
7	Xinrong County
8	Hunyuan County
9	Fanshi County
10	Ar Horqin Banner
11	Bairin Left Banner
12	Keshiketeng Banner
13	Harqin Banner
14	Chahar Right Banner
15	Fengzhen City
16	White Banner
17	Duolun County
18	Yunzhou District
19	Darhan-Muminggan Joint County
20	Aohan Banner
21	Huade County

Table S2. Indicators.

Level 1 indicators		Level 2 indicators	
Land management	1	Area of farmland operated per capita (acre/person)	
	2	Crop output per unit area (pounds/acre)	
Labor force transfer	3	Percentage of migrant workers in the household labor force (%)	
	4	Per capita annual income (CNY/person)	
Sources of income	5	Household income diversity index (dimensionless)	
	6	Proportion of subsidies from the GGP to total household income (%)	
	7	How would you rate the effect of money and food subsidies from the GGP on your family's income? a) Small b) Moderate c) Large	
	8	Income from retired farmland before it is retired (CNY)	
	9	Income from retired farmland after it is retired (CNY)	
	10	Subsidy for the return of farmland (CNY)	
Expenditures	11	Household consumption (living, electricity, education, home repairs, food) expenditures (CNY)	
	12	Household production (farming, forestry, livestock, industrial line work, rent) expenditures (CNY)	

Table S3. Comparison of sources of income of PH and NPH (CNY/household).

	Farming		Forestry		Livestock		Off-farm		Subsidy	
	PH	NPH	PH	NPH	PH	NPH	PH	NPH	PH	NPH
2007	5860.51	8469.31	348.32	1354.17	4095.83	2387.49	13383.06	14681.31	2514.65	681.65
2008	5762.63	9238.90	376.43	1413.72	3765.71	2307.04	14350.53	14325.63	2608.84	835.86
2009	6369.24	8555.47	404.53	1473.27	3750.02	2314.13	16291.40	16754.37	2721.70	939.63
2010	7743.18	9568.42	487.34	1573.01	4642.01	2728.26	19888.74	18821.11	2249.66	879.67
2011	7442.77	11970.11	554.74	1497.11	5177.53	3158.27	24102.16	24001.08	2195.67	856.30
2012	9108.25	13058.52	617.62	1525.39	5135.03	3008.20	25968.57	24998.35	1981.95	883.73
2013	10298.97	12483.77	622.47	1732.54	5407.61	3480.24	28355.62	26625.36	1848.03	764.09
2014	9658.17	12451.35	771.76	1642.06	5403.58	3358.88	28587.49	24798.01	1928.12	751.84
2015	10668.01	13213.10	829.36	1264.68	5675.13	3769.56	29153.96	25038.21	1830.40	806.11
2016	10987.73	13603.61	784.87	1307.54	5879.59	3762.38	32376.54	27169.57	1711.35	867.32
2017	11671.90	14626.14	854.58	1244.68	6128.40	4145.90	34119.87	28780.14	1525.52	834.88
2018	12442.66	14917.52	847.63	1139.59	6264.18	5086.76	34393.77	29048.53	1333.80	634.67

Table S4. Comparison of PH and NPH household expenditures (CNY/household).

	Farming		Forestry		Livestock		Industrial line work		Rent	
	PH	NPH	PH	NPH	PH	NPH	PH	NPH	PH	NPH
2007	1556.49	1861.19	114.14	124.72	1074.79	956.68	142.58	22.21	105.02	117.66
2008	1837.07	1807.79	98.45	100.02	1400.34	1176.49	125.28	23.29	160.47	194.68
2009	2021.11	1905.43	100.13	153.62	1335.06	1288.66	111.45	12.58	272.06	229.36
2010	1958.84	2097.74	76.33	174.68	1434.19	1288.19	197.04	34.21	271.08	224.47
2011	2032.86	2098.33	95.02	224.68	1424.94	1341.70	205.19	30.78	243.12	284.21
2012	2272.23	2577.15	118.62	213.19	1520.58	1113.72	283.02	29.30	246.71	297.19
2013	2486.40	2400.83	115.42	253.33	1660.98	1219.86	292.52	22.22	302.10	306.11
2014	2524.08	2636.00	98.36	285.71	1699.15	1372.57	307.67	22.80	293.54	286.29
2015	2551.83	2664.24	103.93	272.00	1610.14	1272.90	357.31	31.07	248.94	294.06
2016	2584.84	2630.88	112.48	339.41	1737.67	1304.12	387.11	29.05	309.96	264.03
2017	2674.03	2716.76	125.10	340.59	1914.78	1202.65	429.63	37.69	327.41	292.50
2018	2769.97	2665.36	128.41	381.43	1987.88	1250.36	457.06	40.80	320.94	242.86

Table S5. Main outputs of retired farmland.

Fruits and vegetables	Grass	Bamboo	Herbs	Other
35.05%	51.03%	0.52%	0.17%	13.23%