

## ***Ambio***

Electronic Supplementary Material

This supplementary material has not been peer reviewed

**Title: The impact on rural livelihoods and ecosystem services of a major relocation and settlement program: A case in Shaanxi, China**

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## **Appendix S1**

According to the Chinese principle of ‘household production responsibility’, rural households must sign land-use contracts with the collective. The contracts cannot be altered within 30 years without the consent of the two parties. Redistributing farmland for resettlers is the most difficult thing to do in the resettling communities because the local residents have already signed contracts with the government protecting their rights to use the farmland. Thus simple political mobilization is not enough to convince local villagers to comply with the government’s requests and it is hard for resettlers to acquire equivalent farmland to what they have left behind.

## **Appendix S2**

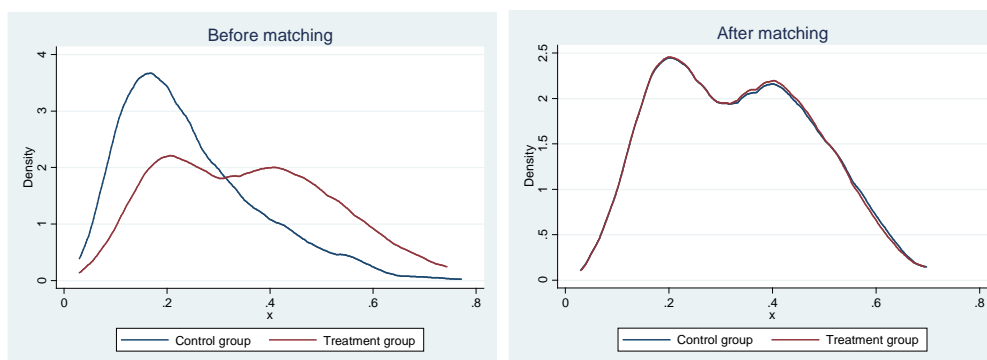
Based on its destination and distance of migration, we divided the migration into two modes; local-migration and out-migration. Local-migration refers to short-distance migration, where the migrants find non-farm work inside their province and often close to their hometown. Out-migration refers to a long-distance move, where the migrants seek non-farm jobs outside their province, mostly in big cities.

Table S1. Probit regression (Participation in RSP)

VARIABLES	Participation in RSP	Standard errors
HH size (person)	0.134***	0.035
Join in peasants' cooperative association (0,1)	0.271	0.181
Credit access (0,1)	0.585***	0.089
Village cadres(0,1)	-0.190*	0.099
Skills (0,1)	0.194**	0.092
Highest education (year)	-0.027*	0.015
Special experience(0,1)	0.296**	0.120
SLCP(0,1)	0.254**	0.117
Elders(0,1)	0.301***	0.088
Children(0,1)	0.050	0.095
Constant	-1.426***	0.164
<b>Observations</b>	<b>1230</b>	
<b>Pseudo R<sup>2</sup></b>	<b>0.094</b>	
<b>LR chi<sup>2</sup>(10)</b>	<b>135.90***</b>	

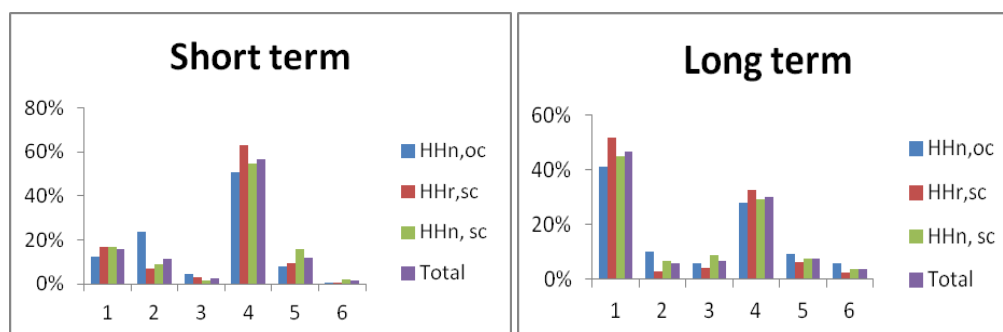
Note: \*, \*\* and \*\*\* denote differences that are significant at  $p < 0.1$ ,  $p < 0.05$  and  $p < 0.01$  levels, respectively.

Fig. S1 Matching result of sample



Before matching, there is a significant difference between the control and treatment groups. If we directly compare the difference in livelihoods between these two, estimation is biased. However, after matching, the distributions of control and treatment groups are extremely close to each other, which indicates a good matching result. Thus use of PSM is quite appropriate.

Fig. S2. Coping strategies of financial risk



Note:

1. Out-migration
2. Sale of grain or livestock
3. Decrease of expenditure on education and others
4. Loans from relatives or friends
5. Use of family savings
6. Others

When facing short-term financial problems, most HHs' first choice is to turn to relatives or friends for cash assistance. For the long term, most choose to migrate out for non-farm work in urban areas.

Table S2. Livelihood assets of the three household types: HHn,oc, HHr,sc and HHn,sc

	<i>Natural assets</i>	<i>Human assets</i>			<i>Financial assets</i>		<i>Social assets</i>		<i>Physical assets</i>	
	Land Areas (Hectares)	Labor Numbers (persons)	Highest Education (year)	Skill (0,1)	Saving (0,1)	Credit Access	Telephone Bill (yuan /month)	Special Experience	Productive Tools (number)	House Value (ten thousand yuan)
HHn,oc N=202	2.73 (3.1)	2.31 (1.23)	5.65 (2.60)	0.15 (0.36)	0.19 (0.39)	0.15 (0.36)	60.75 (65.57)	0.08 (0.27)	2.29 (1.59)	11.24 (2.48)
HHr,sc N=361	1.82 (3.52)	3.02 (1.36)	6.58 (2.25)	0.31 (0.46)	0.22 (0.61)	0.43 (0.49)	143.97 (136.46)	0.17 (0.38)	3.19 (1.81)	14.97 (5.62)
HHn,sc N=493	3.56 (6.47)	2.63 (1.39)	6.46 (2.57)	0.29 (0.45)	0.33 (0.71)	0.22 (0.41)	107.62 (112.88)	0.11 (0.32)	2.80 (1.68)	12.29 (4.74)
<b>Total</b> N=1056	2.81 (5.12)	2.70 (1.38)	6.35 (2.49)	0.27 (0.44)	0.27 (0.63)	0.28 (0.45)	111.08 (118.22)	0.13 (0.33)	2.83 (1.73)	13.01 (4.96)
Sig.	***	***	***	***	***	***	***	***	***	***

Note:

1. Standard errors in parentheses; Methods: One-way analysis of variance;
2. Skill, savings, and special experience were measured in binary yes-no form. Skill refers to bee-keeping, craftsmanship or other skilled activities that bring income. Special experience refers to such activities as military service or government jobs that also enhance the social network and give an advantage in rural regions.
3. \*\*\* denote difference that is significant at  $p < 0.01$  level.