

# Can land transfer through land cooperatives foster off-farm employment in China?

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# Outline

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- Introduction
- Background and context
- Data and identification strategy
- Results
- Conclusion

# Introduction

# Introduction

- The importance of off-farm employment
  - Income diversification
  - Higher added value
  - Cash for agricultural inputs
- Land transfer and off-farm employment
  - Land – labor: complementary relationship
  - Endogeneity issue in empirical work
- Objective
  - To investigate the causal impact of land transfer on off-farm employment

# Background and context

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- Land market and labor market in China
  - From non-existence to emergence
  - underdeveloped land market with informal contracts between relatives in the early 2000s
  - Land fragmentation: 0.6 ha in the 1990s
  - Agricultural labor: 45% in 2005

# Background and context

- Land cooperative program: 2002 in Jiangsu
  - One village, one land cooperative
  - Land for stock
  - land consolidation, off-farm employment
  - Quasi-Voluntary participation and local authority
  - Co-management and local elites

# Data and identification strategy



# Data and identification strategy

- **Data collection**

- Suzhou and Yangzhou City, Jiangsu Province, 2014
- 545 households from 60 villages
- Structured questionnaire and face-to-face interview

- **Identification: recursive bivariate probit model**

$$M^* = \alpha X + \mu_1, \quad M = \begin{cases} 1, & \text{if } M^* \geq 0 \\ 0, & \text{otherwise} \end{cases}; \quad (1)$$

$$L^* = \beta Z + \gamma M + \mu_2, \quad L = \begin{cases} 1, & \text{if } L^* \geq 0 \\ 0, & \text{otherwise} \end{cases}; \quad (2)$$

Assumption to test:  $\rho = \text{cov}(\mu_1, \mu_2) \neq 0$

# Data and identification strategy

- Variables and statistics summary

Variable	Description	Mean	S.D.
<b>Dependent Variables</b>			
Labor	= 1 if household head has off-farm employment; otherwise = 0	0.626	0.484
Member	= 1 if household is a cooperative member; otherwise = 0	0.703	0.457
<b>Independent variables</b>			
Age	Age of household head (years)	61.01	10.19
Male	= 1 if household head is male; otherwise = 0	0.96	0.197
Education	Years of schooling of household head (years)	7.024	3.355
Area per adult	Area of land per adult (over 15 years old) in mu	1.298	0.821
Plot number	Number of land plots household own	2.081	1.333
Family size	Number of family members	3.936	1.575
Dependency ratio	The number aged over 65 or below 15 divided by family size	0.349	0.314
Asset	The number of houses or cars that a household owns	1.741	0.904
Network	= 1 if the household has communist party member(s); otherwise = 0	0.314	0.464
Distance town	Distance to town (km)	6.542	4.522
Suzhou	= 1 if household located in Suzhou; otherwise = 0	0.639	0.481

# Results

# Results

- Interdependence of cooperative membership and off-farm employment

Off-farm employment of household head	Household membership in land cooperatives		
	No	Yes	Total
No	86	118	204
Yes	76 (47%)	265 (69%)	341
Total	162	383	545

Source: Authors' computation

Households that own cooperative membership are with higher probability of off-farm employment

# Results: membership(land transfer) equation

Variables	Probit: Membership		Biprobit: Membership	
	Coeff.	Clustered S.E.	Coeff.	Clustered S.E.
Age	-0.009	(0.010)	-0.007	(0.010)
Male	0.017	(0.415)	0.131	(0.379)
Education	0.005	(0.021)	0.005	(0.021)
Area per adult	0.643	(0.469)	0.667	(0.466)
Area per adult(squared)	-0.097	(0.125)	-0.096	(0.124)
Plot number	0.132	(0.116)	0.120	(0.107)
Family size	0.005	(0.042)	-0.005	(0.042)
Dependency ratio	-0.080	(0.270)	-0.049	(0.264)
Asset	-0.010	(0.090)	0.005	(0.090)
Network	0.268*	(0.140)	0.333**	(0.141)
Distance to town	0.022	(0.022)	0.014	(0.021)
Suzhou	1.862***	(0.293)	1.854***	(0.288)
Constant	-1.020	(0.914)	-1.224	(0.915)
Pseudo R <sup>2</sup>	0.314			
$\rho$			-0.759***	(0.146)
Log likelihood	-227.378		-498.101	

Source: Authors' computation; Note: \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01;

# Results: off-farm employment equation 1/2

Variables	Probit: Off-farm employment		Biprobit: Off-farm employment	
	Coeff.	Clustered S.E.	Coeff.	Clustered S.E.
Membership	0.299*	(0.171)	1.542***	(0.286)
Age	-0.066***	(0.012)	-0.055***	(0.012)
Male	0.907***	(0.330)	0.807***	(0.306)
Education	0.013	(0.016)	0.012	(0.014)
Area per adult	0.788**	(0.349)	0.532	(0.344)
Area per adult(squared)	-0.209**	(0.095)	-0.162*	(0.093)
Plot number	0.022	(0.063)	-0.003	(0.058)
Family size	-0.037	(0.047)	-0.032	(0.039)
Dependency ratio	-0.247	(0.232)	-0.219	(0.202)
Asset	0.124*	(0.070)	0.106	(0.071)
Network	0.432***	(0.136)	0.307***	(0.116)
Distance to town	0.013	(0.015)	0.007	(0.015)
Suzhou	0.632***	(0.200)	-0.151	(0.288)
Constant	2.138**	(0.927)	1.488	(0.945)
Pseudo R <sup>2</sup>	0.242			
$\rho$			-0.759***	(0.146)
Log likelihood	-273.098		-498.101	

Source: Authors' computation; Note: \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01;

# Results: off-farm employment equation 2/2

- Average marginal effect

Variables	Probit		Biprobit	
	Coeff.	S.E.	Coeff.	S.E.
Membership	0.085*	(0.047)	0.413***	(0.072)
Age	-0.019***	(0.003)	-0.015***	(0.003)
Male	0.257***	(0.093)	0.216***	(0.082)
Education	0.004	(0.004)	0.003	(0.004)
Area per adult	0.224**	(0.099)	0.142	(0.093)
Area per adult(squared)	-0.059**	(0.027)	-0.043*	(0.025)
Plot number	0.006	(0.018)	-0.001	(0.016)
Family size	-0.011	(0.013)	-0.009	(0.010)
Dependency ratio	-0.070	(0.066)	-0.058	(0.054)
Asset	0.035*	(0.020)	0.028	(0.019)
Network	0.122***	(0.038)	0.082***	(0.031)
Distance to town	0.004	(0.004)	0.002	(0.004)
Suzhou	0.179***	(0.055)	-0.040	(0.077)

# Conclusion



# Conclusion

- **Main findings:**
  - Significant causal impact of land transfer on off-farm employment
  - Off-farm employment also hinges upon farmers' age, gender, land endowment and social network
  - Social network is the only observed determinant of land transfer decision
- **Policy implication:**
  - The importance of voluntary participation
  - Attention should be paid to new employment of released agricultural labor when implementing the program.

**Thank you!**