How the rural-urban linkages determine the nonfarm activities and incomes of rural household, evidences from five provinces in China

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Background
- 34%, 51% and 47% of income of rural household is from nonfarm earnings in Africa, Asia and Latin America, respectively (Haggblade, Haze1, and Reardon 2007).
- The importance of rural-urban linkage (the production and consumption linkage in rural & urban areas) in nonfarm activity (NFA) is rarely explored.
- Local nonfarm economy in China is largely neglected in existing literature.
- Heterogeneity of Chinese regions provides a unique opportunity to study the great variation of NFA and its impact on rural households (HH).

Objectives
1. Find out the level of rural HH’s engagement in various NFA.
2. Identify the factors affecting rural HH’s participation in NFA and shares of nonfarm income (NFI) from different types of NFA over total NFI.
3. Explore the joint impacts of rural agricultural potential and urban demand potential.

Rural-Urban Linkage
- The 5 provinces are representative to the different parts of the country:
  1. Heilongjiang represents the areas with abundant land, good agriculture potential but relatively less NFA;
  2. Shandong represents the areas with good agriculture potential, especially specialized in commercial crops, and active NFA, especially local NFA;
  3. Jiangxi, Hunan and Sichuan together represent the areas with more intensive agriculture and active migration (as main migration sending provinces).

- Urban demand potential:
  - Shortest distance of each household to seven main cities of China (representing Pearl River Delta, Yangtze River Delta and Jing-Jin-Ji Area)

Local agricultural potential:
- Village level average yield of total crops
- Interaction of both variables above:
  - Rural-Urban linkage

Concerns
1. Potential endogenous problem of agriculture potential
   - Use previous village level average crop value instead of current value.
2. Potential selection bias as household’s participation in NFA is not random
   - Heckman two-stage model is adopted.

Reduced Form
(1) \[ Y_{ij} = \alpha + \beta A_{j,2004} + \gamma D_{j} + (\delta A_{j,2004} \times D_{j}) + \theta Z_{ij} + u_{ij} \]
   - Yj equals to 1 if household i in village j has participating in any type of NFA;
   - \(A_{j,2004}\) is the village level unit value of total crops in 2004, which is the proxy for agriculture potential;
   - \(D_{j}\) is a vector of distance variables;
   - \(Z_{ij}\) is a vector of HH characteristics.
   - From participation regression of household in any kind of NFA, inverse mills ratio \(\lambda\) is obtained for the second-stage analyses. (see (2))

(2) \[ S_{ij} = \alpha + \beta A_{j,2004} + \gamma D_{j} + (\delta A_{j,2004} \times D_{j}) + \theta Z_{2ij} + \xi \lambda + \epsilon_{ij} \]
   - \(S_{ij}\) for person i in village j:
   - For participation choice model: equals to 1 if participating in any kind of NFA.
   - For NFI fractional regression: equals to 0~1 from a specific NFA over total HH income.

Results
- Share of HH participated in any kind of NFA, 2005-2008

Determinants of HH participation in any kind of NFA, 2005-2008

Share of NFI over total HH income, by NFA location and return rate

Conclusions
- NFI is an important source to households in rural China, ranging from 20% to 63% over total household income from Heilongjiang to Jiangxi.
- NFI from local NFA (within county) plays crucial role, ranging from 49% to 79% over total NFI from Jiangxi, Hunan to Shandong.
- Income from low-return NFI far exceeds that from high-return NFI, for all regions, more than 80% of the NFI are from low-paid NFA.
- Household in local areas with better agriculture potential is more likely to engage in local NFA, but less likely to migrate. And local agriculture potential has positive effect participation in higher-return NFA in all areas.

Better agriculture potential will help households to increase the share of NFI if they live close to big cities for households in Hunan, Jiangxi or Sichuan, while will increase that share for households in Shandong if they live close to district capital city. migration is dominant in the earlier and local nonfarm economy is flourishing in the latter regions.