The Effect of Land And Labor Mobility on Welfare And Poverty Dynamics of Agriculture Households In Indonesia[*]

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Presentation Outline

- Background and Literature Review
- Research Design
  - Data
  - Empirical Strategy
- Results and Analysis
- Conclusion
  - Concluding remarks
  - Policy Recommendation

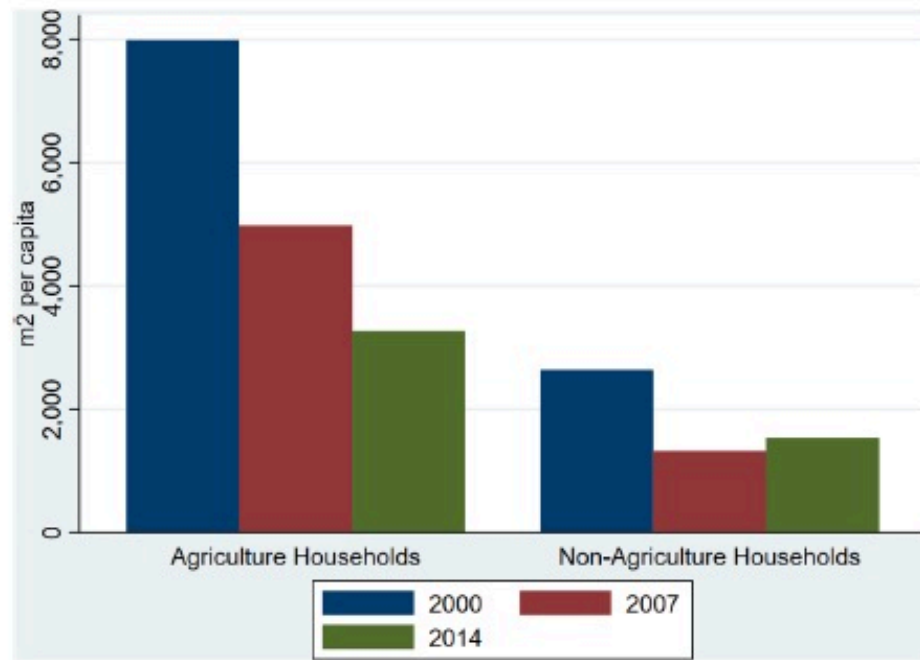# Farmland and Occupations in Indonesia: An Indication of Dual Sector

Fig. 1. Household Occupations. Source: Authors' calculation based on Indonesia Family Life Survey.
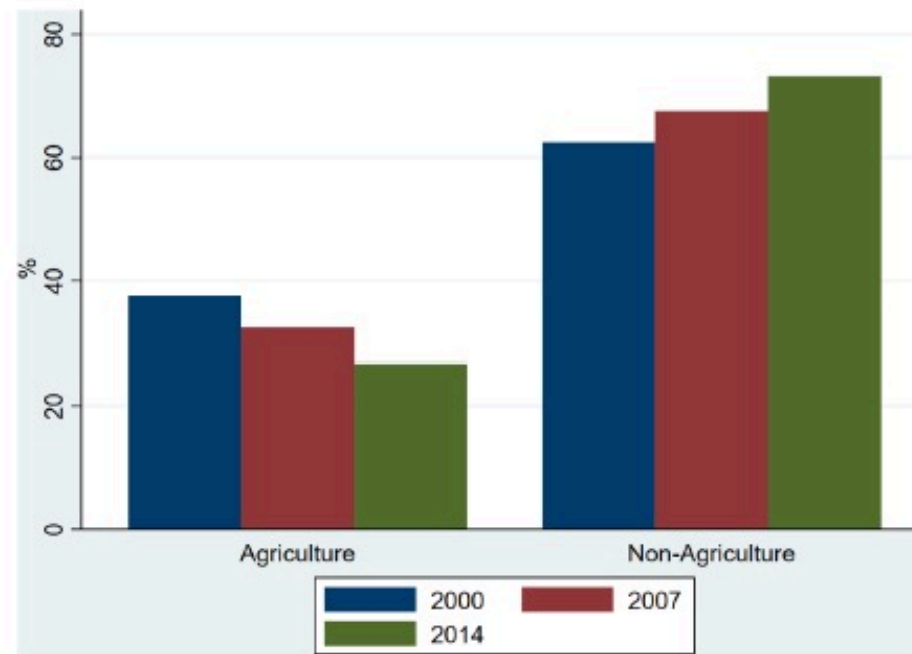

Fig. 2. Average Household Farmland Ownership by Sectoral Occupation (Square Meters/Household). Source: Authors' calculation based on Indonesia Family Life Survey.

Indication of Lewis Dual Sector Theory:
- The number of households working in agriculture is decreasing;
- At the same time, farmland ownership per household is also decreasing
- Indicating Structural Transformation

- Two implication of dual sector theorem:
  - Landless farmers move to other sectors with a higher productivity → should be a welfare improvement
  - Farmers move to other sectors with a higher productivity and convert their land into other assets → should be a welfare improvement

Moving Out of Agriculture: 2000-2014
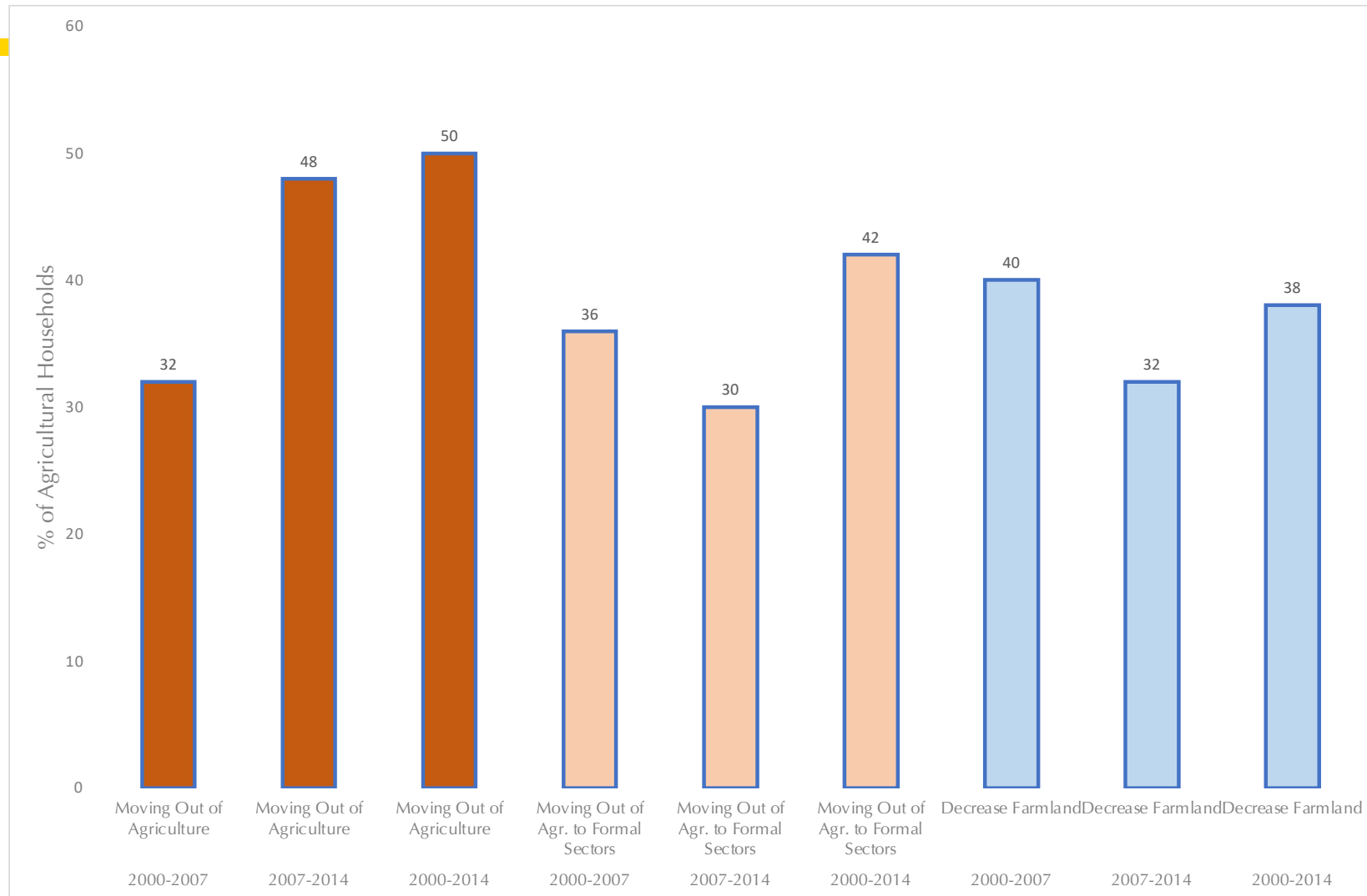
Source: IFLS Dataset

Research Questions

1. What is the effect of labour mobility to agricultural household's welfare and poverty dynamics?

2. What is the effect of farmland ownership to agricultural household's welfare and poverty dynamics?

Literatures: Impacts of Moving Out of Agriculture

Authors	Country	Findings
Johnson (1985)	China	**Moving Out Of Agriculture has a positive effect on income** which also lowers inequality
Cook (1999)	China	Moving out of agriculture has a **high risk**
Nguyen et al. (2005) and Tran et al. (2013)	Viet Nam	**Industrialization in agriculture decreases** possibility farmers of having jobs and mostly move to informal sector.
Alisjahbana and Manning (2006)	Indonesia	**Labour In Agriculture (Even in Full Employment) Tend To have Higher Probability of Being Poor** Compared To Other Sectors
Nguyen et al. (2005)	Viet Nam	**Farmland loss** due to industrialization **decreases income** of farmers and lower possibility of having jobs.
Tuyen and Huong (2013)	Viet Nam	**Farmland loss** due to industrialization **does not affect total household income and decreases probability of poverty**

Evidence have been inconclusive on how labor mobility and farmland ownership affect welfare

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Research Design

- Using impact evaluation methodology of quasi experiment: Difference in Difference as most of previous studies found a **correlation** not **a causal inference;**
- Welfare measures: Poverty($3.2) and per-capita expenditure

Table 1
Sample and Treatment Combination.

Sample	Treatment	Household 2000–2007	Household 2007–2014	Household 2000–2014
Whole Sample	Moving out of Agriculture[2]	2,629	2,592	2,115
Landless Subsamples	Moving out of Agriculture	951	1,043	1,631
Informal Subsamples	Moving to Formal Sector[3]	2,013	2,301	735
Informal Landless Subsamples	Moving to Formal Sector	482	819	269
Landowner Samples	Decrease of per capita Farmland[4]	1,678	1,549	1,380

Note:
1. The whole sample consists of households who are initially (in the beginning period) agricultural households. Informal means the sample used are only households that initially worked in informal agriculture sectors; Landless means the sample used are only agricultural households that initially do not own farmland; Landless Informal means the sample used are only agricultural households that initially work in the informal sector and do not own farmland; while Landowner means the sample used are only agricultural households that initially own any amount of farmland.
2. Move Out of Agriculture is the interaction between the year dummy and the dummy representing the agriculture sectors. Thus, if a household moves to a non-agriculture sector, the value of this variable is 0 in the initial period and 1 in the following period.
3. Move to Formal Sector is the interaction between the year dummy and the dummy representing the formal sector. Thus, if a household moves to the formal sector, the value of this variable is 0 in the initial period and 1 in the following period.
4. Farmland Decrease is the interaction between the year dummy and the dummy representing land decrease. Thus, if a household's farmland per capita decreases, the value of this variable is 0 in the initial period and 1 in the following period.
Source: Author's Illustration

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Empirical Strategy

Based on Khandker, Koolwal, & Samad (2009) and Dartanto et al. (2020):

DiD Poverty Model:

$$Poverty\,3.2_{it} = \theta_1 Year_{it} + \theta_2 Treatment_{it} + \theta_3 Treatment * Year_{it} + \sum_{j=1}^{J} \theta_j SocioDemo_{jit} + \sum_{l=1}^{L} \theta_l Regional_{lit} + \sum_{m=1}^{M} \theta_m Economic_{mit} + \epsilon_{it}$$

DiD Expenditure Model:

$$ExpPerCapita_{it} = \beta_1 Year_{it} + \beta_2 Treatment_{it} + \beta_3 Treatment * Year_{it} + \sum_{j=1}^{J} \beta_j SocioDemo_{jit} + \sum_{l=1}^{L} \beta_l Regional_{lit} + \sum_{m=1}^{M} \beta_m Economic_{mit} + \epsilon_{it}$$
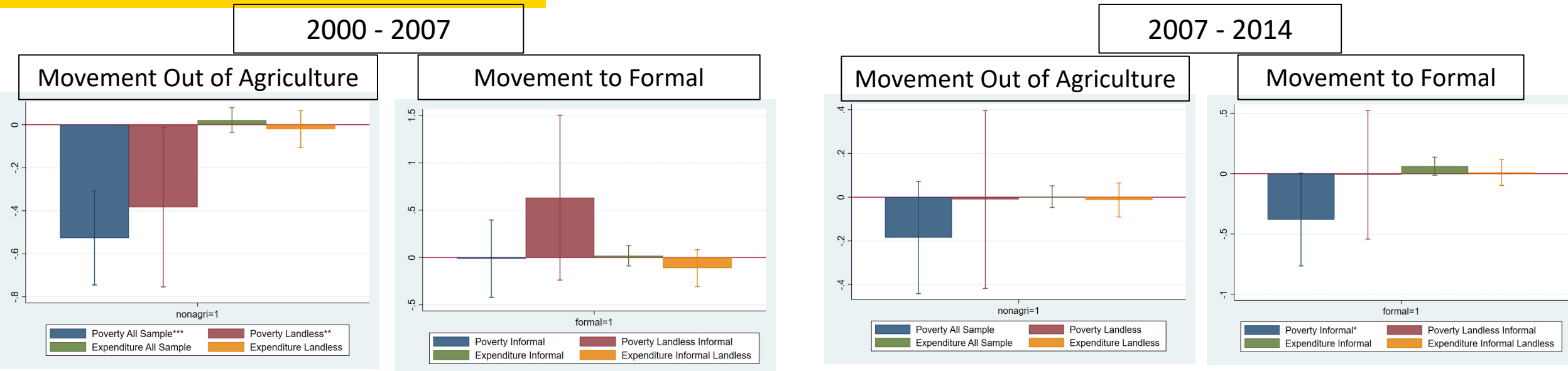
Poverty Dynamics Model (Ordered Logit):

$$PovDynamic_i = \theta_1 LandDec_i + \theta_2 LaborMob_i + \theta_3 FormalLabMob_i + \sum_{j=1}^{J} \theta_j SocioDemo_{ji} + \sum_{l=1}^{L} \theta_l Regional_{li} + \sum_{m=1}^{M} \theta_m Economic_{mi} + \epsilon_i$$

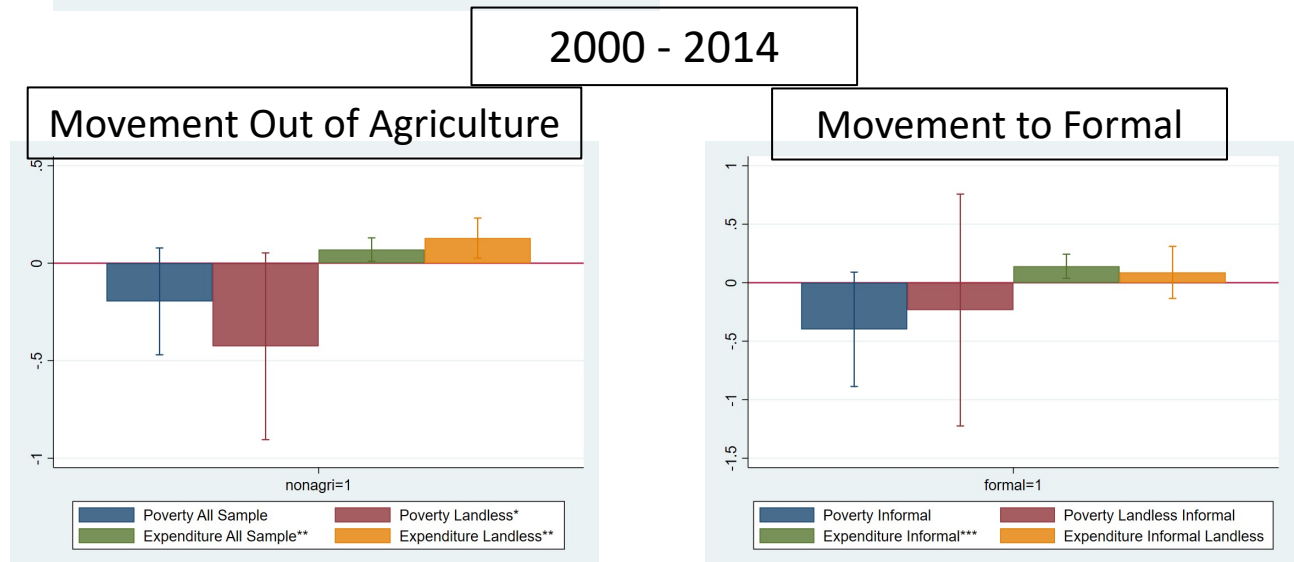Model is regressed in three time frames: 2000-2007, 2007-2014, and 2000-2014

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DiD Main Results: Labor Movement Impact

2000 - 2007

Movement Out of Agriculture — Movement to Formal

2007 - 2014

Movement Out of Agriculture — Movement to Formal

2000 - 2014

Movement Out of Agriculture — Movement to Formal

Note:
Landless informal refers to landless-informal agriculture HH

Findings From DiD Results

- Between 2000 – 2007, **movement out of agriculture significantly decreases the probability of being poor**. However, movement out of agriculture between 2007 – 2014 **does not significantly affect poverty status or expenditures**.

- There is no persistent effect of movement to formal sector on poverty and household welfare.

- Land ownership, education levels, electrical access, and farm business asset ownership significantly affect agriculture household probability of being poor and welfare.
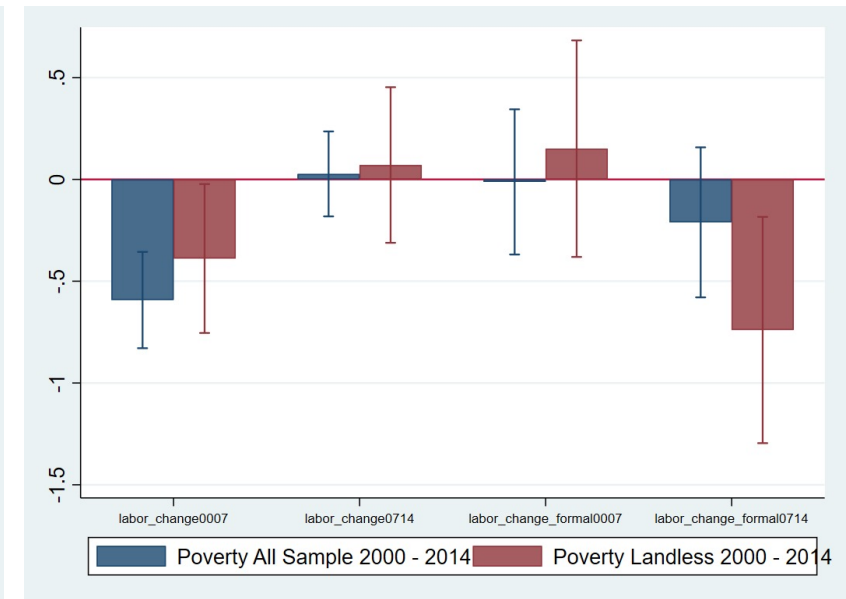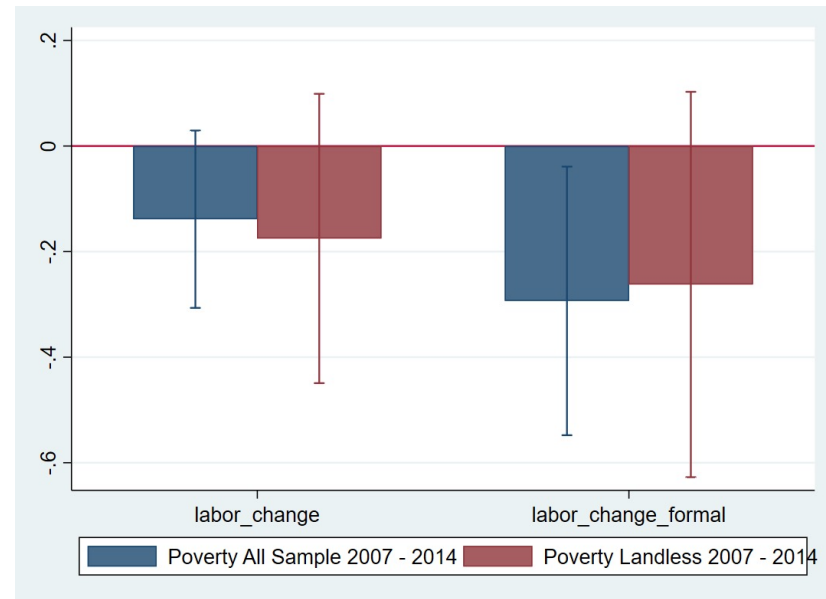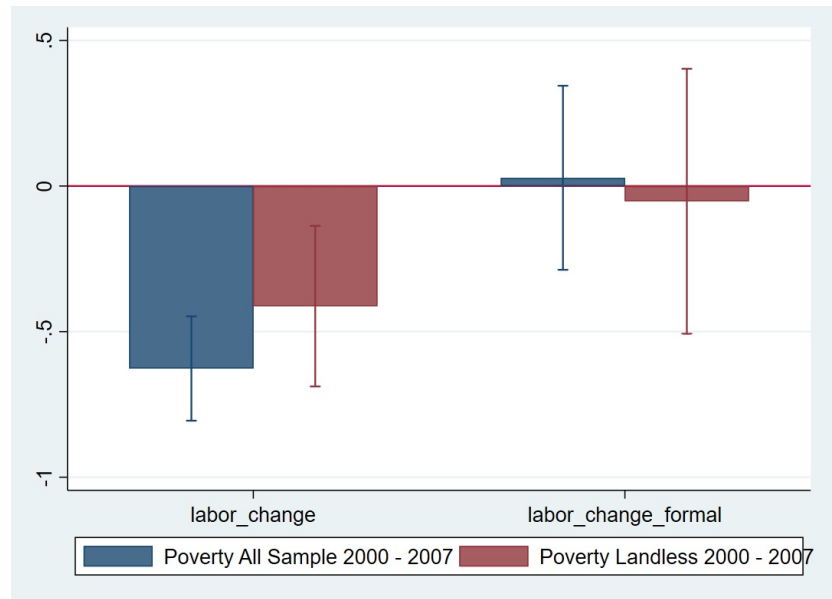
Ologit Main Results: Labor Movement Impact

Findings from Poverty Dynamics Results

- Between 2000 – 2007, **movement out of agriculture significantly decreases the probability of continually being poor**. In contrast, during 2007–2014, labor mobility did not significantly affect the probability of continually being poor.

- Movement out of agriculture in 2007 – 2014, only reduced probability of being continuously poor if moving to formal sector.

- Land ownership, education levels, electrical access, and farm business asset ownership significantly reduce probability of being continuously poor

Concluding Remarks

- DiD and Poverty Dynamics results are relatively consistent.
- Conventional wisdom says that moving out of agriculture creates a better life for farmers (Lewis). YES! **However, THAT IS IN THE PAST.**

- When farmland ownership decreases, agriculture households lose their main livelihood, decreasing welfare.
- Households with higher education, higher agriculture business assets, and have access to electricity tend to be not poor.

Policy Implications

- In the current situation, moving out of agriculture **isn't the guarantee solution** to improve the condition of agriculture households.

- **Keeping land ownership is important** for agriculture households.

- Improving education dan agriculture modernization (assets and technology) improves productivity through human capital and physical capital.

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