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Does Road Improvement Reduce Poverty? A
general equilibrium analysis for Lao PRD

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Does Road Improvement Reduce Poverty? A CGE Analysis for Lao PDR

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OUTLINE

- Road Improvement and Transport Costs
- The Model
- The Simulations
- The Results
- Conclusions

Road Improvement and Transport Costs

- Road quality is very poor in Lao PDR
- Less than 20 percent of the total network is paved
- Almost the whole network may not be passable during the wet season

Road Improvement and Transport Costs

- Three types of road quality are distinguished:
 - (i) no vehicular access;
 - (ii) dry season only access; and
 - (iii) all weather access.

Road Improvement and Transport Costs

Most of recent road improvement, esp. between LECS 2 (1997-98) and LECS3 (2002-03) has involved conversion from dry season to all weather access roads

While the percentage of household with no road access remained about the same at around 31%, the ones with all weather access increased from 40.7% to 50.2%

Road Improvement and Transport Costs

Based on data from a large ADB project in Champassak, we estimate that conversion from dry season to all weather access reduces transport costs by 50.25% (S1)

Based on work done by Starkey (2001), we estimate that transport costs fall by 65.5% going from no road to dry season access roads (S2)

The Model

- LaoGEM is a CGE model of the Johansen class, and based on the ORANI model of the Australian economy
- The detailed structure is similar to prototypes for Thailand (PARA) and Indonesia (Wayang)

The Model

20 single output industries:

3 agri, 1 mining, 7 manufacturing and 9 services and utilities industries, of which one is transport

- 4 categories of households:

1 urban and 3 rural, with each rural distinguished by the 3 types of road access

Each category further sub-divided into 100 (centile) groups, with a total of 400 household groups

Model

- Labor is fully mobile across sectors
- Three types of capital:
 - (i) Mobile within but not between industries – call it fixed capital;
 - (ii) Mobile between agricultural industries but not between agri and non-agri industries – call it agricultural mobile capital; and
 - (iii) Mobile between non-agri industries but not between these and agri industries – call it non-agri mobile capital.
- So, short to intermediate run period of adjustment; say, 2 to 5 year time horizon

Data

- We use a 20-sector I-O table produced by the ADB for Savannaket province, and RAS it using National Accounts data for 2002 to get a national I-O table
- So structure reflect industry structure of Lao PDR, but within each industry I-O technology reflects that of Savannaket
- SAM is thus based on this I-O table, 2002 National Accounts, LECS3 survey data, and various trade data

The Simulations

- Two main sims (S1 and S2), and 2 more sensitivity tests (S3 and S4):
- S1 – dry to all weather – 50.25%
- S2 – no road to dry – 65.04%
- S3 – half of S2 – 32.57%
- S4 – quarter of S2 – 16.26%

Results

Simulation	S1	S2	S3	S4
GDP (% change)	0.22	1.41	0.70	0.35
Consumption (% change)	0.20	1.38	0.68	0.35

Results

Absolute Change in Poverty Incidence

Simulation	S1	S2	S3	S4
Rural no road	-0.10	-6.42	-4.08	-1.85
Rural dry	-0.68	0.02	0.02	0.01
Rural all	0.03	0.10	0.06	0.03
Total rural	-0.13	-1.52	-0.97	-0.44
Total urban	0.12	0.41	0.31	0.16
Total	-0.06	-1.01	-0.63	-0.28

Conclusions

- Reducing transport costs through rural road improvement generates significant reductions in poverty incidence
- It does this through improving the income earning opportunities of rural people and through reducing the costs of the goods they consume.

Conclusions

- It is important to consider the type of road improvement – whether dry to all weather, or no road to dry – in assessing the impact on poverty
- Although both forms of road improvement are important and contribute to overall poverty reduction, reducing transport costs for households without road access is highly pro-poor

Conclusions

- But this type of road improvement is likely to be much more costly
- Future work could look more closely at the cost side
- Unless it is, on average, 17 times more expensive, then future investment should shift to providing road access where there is currently none, if the focus is on poverty reduction

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