Increased fiscal decentralization, basic services and nutrition: Evidence from Bolivia

Pablo Evia Salas

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Outline

1. Motivation

2. Framework
   - Background
   - Research questions

3. Review of literature

4. Data and Empirical strategy

5. Results

6. Summary and conclusions
Motivation

Figure: The promise of decentralization?
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Things can go wrong...

- There’s a point beyond which further participation could even harm welfare (Mansuri and Rao, 2012)
- Corruption could be “easier” at the local level
- Inefficient local authorities and nonexistent checks and balances (Birner and von Braun, 2015)
- Empirical question: the impact is not necessarily (+) [could be (-)]
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- What is the effect (if any) of fiscal federalism on under-five child nutrition?
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This paper aims to:

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2. Using a **comprehensive** dataset for a **developing** country
3. Dataset composed of **administrative**, **census** and **health survey** data.
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Water and sanitation

- **Weak impact** of decentralization in access to water and sanitation (UNICEF, 2006).
- **Mixed** evidence regarding impact on public service delivery (sanitation) (Ghuman and Singh, 2013).

Health

- It doesn’t affect or even affect **negatively** healthcare (Montero-Granados, Dios Jimenez, and Martin, 2007).
- Decrease infant mortality rates, but for non-poor **only** (Soto, Farfan, and Lorant, 2012).
- **Positive** effect on infant mortality [Jiménez-Rubio, 2011 and Robalino, Picazo, and Voetberg, 2001].
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Background

Comprehensive decentralization reform
- 314 municipalities were legally recognized.
- Key responsibilities were transferred to municipal governments.
- Transfer of resources (based on population).
- Holding of local elections.

Many municipalities did not even legally exist

Study period
Comprehensive decentralization reform

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Study period
Oil price and government revenues

- Revenues
- Average WTI (right axis)
Oil price and government revenues

- Revenues
- Average WTI (right axis)
Data

- Panel data, years 2001 and 2012 (T=2 and j=314)
- Sample: 314 municipalities
- Administrative data: fiscal transfers, expenditure; participation in elections, voter’s support, political alignment
- Census data: Population, share of public workers per municipality
- Census+health surveys: Nutrition data for the 314 municipalities
The model

\[ y_{mt} = \alpha_m + \delta_0 \cdot d2012_t + \phi \cdot X_{mt} + \beta \cdot Z_{mt} \] (1)

- \( y_{mt} \) is the outcome of interest in municipality \( m \) and year \( t \): proportion of under-five stunting and underweight; and proportion of households that have access to water and sanitation

- \( \alpha_m \) and \( d2012_t \) are municipality and year fixed effects

- \( Z_{mt} \) is a matrix of covariates

- \( X_{mt} \) is a proxy for fiscal decentralization

\[ y_{mt} = \alpha_m + \delta_0 \cdot d2012_t + \phi \cdot X_{mt} + \gamma \cdot X_{mt} \cdot g_{mt} + \zeta \cdot g_{mt} + \beta \cdot Z_{mt} \] (2)

- \( g_{mt} \) is an administrative decentralization proxy. Alternatively, we consider the following variables: participation in elections, voter’s support, and political alignment (following the notion of “Second Generation Fiscal Federalism” (Weingast, 2014)

- Robust errors clustered at the province level
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### Description of variables

**Dependent variables**
- **Water**: Proportion of households with access to safe water
- **Sanitation**: Proportion of households with access to a toilet
- **Stunting**: Proportion of stunted children (< 5yo)
- **Underweight**: Proportion of children with low weight (< 5yo)

**Fiscal decentralization indicators**
- **Transfer share**: \( \frac{\text{transfer}_{mt}}{\sum \text{Cgov revenue}} \)
- **Expenditure share**: \( \frac{\text{expenditure}_{mt}}{\sum \text{Cgov expenditure}} \)
- **Focused expenditure share**: \( \frac{\text{sanitationexp}_{mt}}{\sum \text{Cgov expenditure}} \)

**Additional political and administrative indicators**
- **Participation in elections**: \( \frac{\text{persons voting}_{mt}}{\text{allowed to vote}_{mt}} \)
- **Administrative decentralization proxy**: \( \frac{\text{public administration workers}_{mt}}{\text{total workers}_{mt}} \)
- **Voter’s support**: Winning share of elected authorities
- **Political alignment**: = 1 if same ruling party in municipality as central government

**Controls**
- **Rural**: Proportion of households living in rural area
- **Indigenous proxy**: Average proportion of persons that learned to speak in indigenous language
- **Illiteracy**: Average illiteracy rate
- **Household size**: Average household size
- **Population**: Number of habitants [log]
- **Regional GDP**: Departament GDP (9 departments)
Proxy for fiscal decentralization (transfer share)
### Table: FE OLS Results for model (1)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>twater</td>
<td>toilet</td>
<td>stunt_prop</td>
<td>uw_prop</td>
</tr>
<tr>
<td>Expenditure share in sanitation</td>
<td>0.005 (0.003)</td>
<td>0.003 (0.004)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfers share(log)</td>
<td></td>
<td></td>
<td>−0.057*** (0.015)</td>
<td>−0.030*** (0.008)</td>
</tr>
<tr>
<td>Observations</td>
<td>480</td>
<td>480</td>
<td>628</td>
<td>628</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.64</td>
<td>0.46</td>
<td>0.56</td>
<td>0.21</td>
</tr>
<tr>
<td>Municipality FE</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Year FE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Controls</td>
<td>✓</td>
<td>✓</td>
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* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.
## Table: FE OLS Results for stunting

<table>
<thead>
<tr>
<th></th>
<th>(1) stunt_prop</th>
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</thead>
<tbody>
<tr>
<td>Transfers share((\text{log}))</td>
<td>−0.051</td>
<td>−0.102***</td>
<td>−0.031*</td>
<td>−0.059***</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.032)</td>
<td>(0.017)</td>
<td>(0.018)</td>
</tr>
<tr>
<td>Participation in elections</td>
<td>−0.029</td>
<td></td>
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<tr>
<td></td>
<td>(0.383)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfers share((\text{log})) × Participation in elections</td>
<td>−0.007</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of public workers((\text{log}))</td>
<td></td>
<td>−0.118</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(0.076)</td>
<td></td>
<td></td>
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<tr>
<td>Transfers share((\text{log})) × Share of public workers((\text{log}))</td>
<td>−0.012*</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(0.007)</td>
<td></td>
<td></td>
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<tr>
<td>Voter’s support</td>
<td></td>
<td></td>
<td>−0.489***</td>
<td></td>
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<td></td>
<td></td>
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<td>(0.171)</td>
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<td>Transfers share((\text{log})) × Voter’s support</td>
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<td>(0.017)</td>
<td></td>
</tr>
<tr>
<td>Political alignment=1</td>
<td></td>
<td></td>
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<td>0.011</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.067)</td>
</tr>
<tr>
<td>Political alignment=1 × Transfers share((\text{log}))</td>
<td></td>
<td></td>
<td></td>
<td>0.002</td>
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Marginal effects - heterogeneous effects

Transfer share

Expenditure share

Proportion of stunted children

Transfers share (log)

Expenditures share (log)

Non-poor
Poor

Pablo Evia Salas (ZEF)
Decentralization in Bolivia
WIDER Conference 2017
Marginal effects - heterogeneous effects

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Expenditure share

Proportion of stunted children

Transfers share (log)

Expenditures share (log)

-15 -10 -5 0

Non-poor Poor

-15 -10 -5 0

Non-poor Poor

Programa AlimentarioUniversal en Bolivia

Pablo Evia Salas (ZEF)

Decentralization in Bolivia

WIDER Conference 2017
Robustness checks

- Poverty: tested using different thresholds and indicators (UBN) but getting basically same results
- Model excluding capitals of department, no significant change

Endogeneity

- Instrument the share of transfers by using: $Z_{mt} = \text{Size}_m \cdot \text{Oil price}_t$
- Hausman-Wu test fail to reject the null hypothesis of FE and IV similar results to the 10% confidence level. *(still work in progress)*

Fiscal decentralization proxy

- It could be argued that ↑ transfer share ≠ ↑ fiscal decentralization
- Municipal governments have very limited capacity to raise own revenues
- Local governments have great leeway to spend/invest with the transferred resources
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- Interaction between decentralization dimensions (fiscal, political, and administrative) seems to be relevant
- Increased fiscal decentralization benefited more to the non-poor (stunting)
- Remarkable change of responsibilities and resources towards municipalities, but....
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Thanks for your attention