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

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Center for Development Research (ZEF)

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Outline

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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RQ's

- What is the impact of fiscal decentralization on development outcomes?

- Specifically, has decentralization improved access to water and sanitation?

- What is the effect (if any) of fiscal federalism on under-five child nutrition?

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Contribution

This paper aims to:

1. Add evidence to the **impact** of decentralization, in specific regarding water, sanitation, and child nutrition

2. Using a **comprehensive** dataset for a **developing** country

3. Dataset composed of **administrative**, **census** and **health survey** data.

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Literature review

Water and sanitation

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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).

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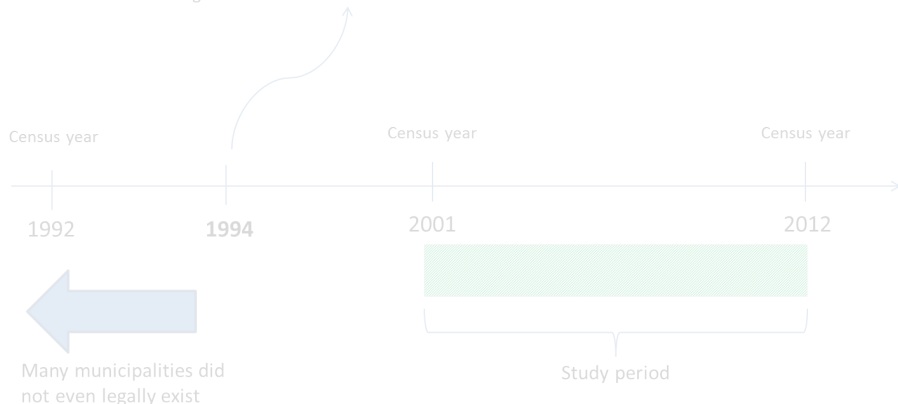
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Background

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.

Census year

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1992

1994

2001

2012

Many municipalities did not even legally exist

Study period

Background

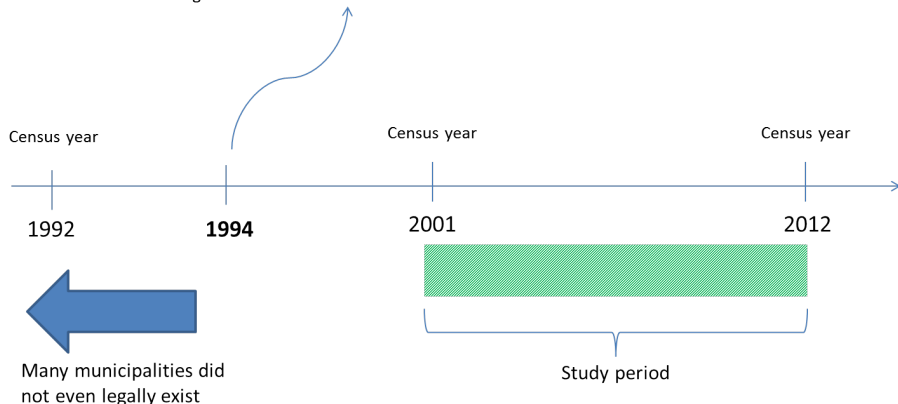**Comprehensive decentralization reform**
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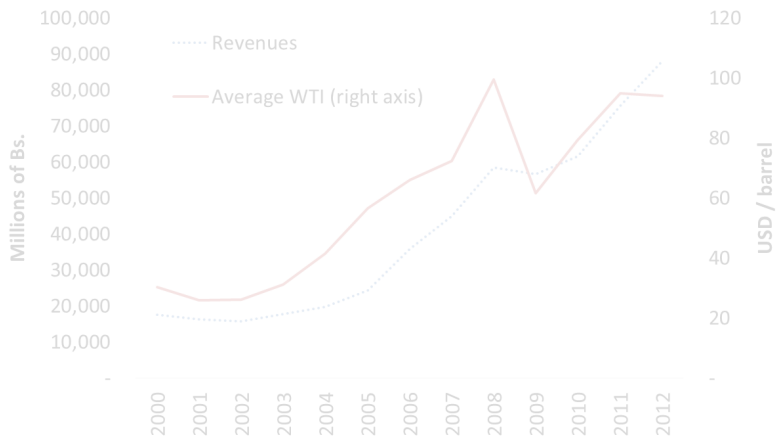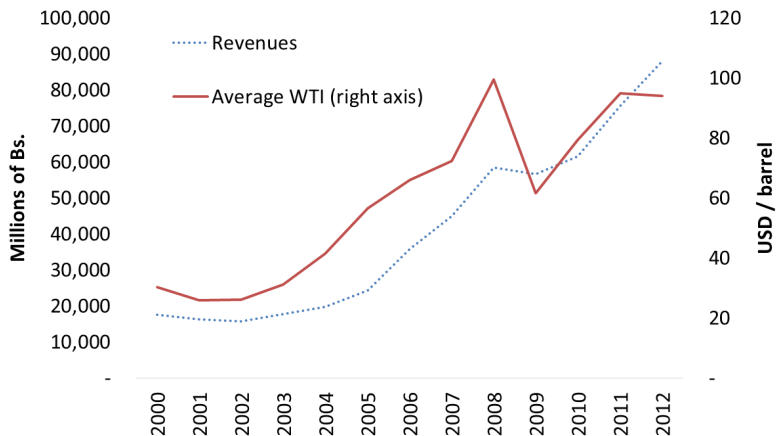- Holding of local elections.

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Oil price and government revenues

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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

$$y_{mt} = \alpha_m + \delta_0 \cdot \mathrm{d}2012_t + \phi \cdot X_{mt} + \beta \cdot Z_{mt} \tag{1}$$

- 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

- α_m and $\mathrm{d}2012_t$ are municipality and year fixed effects

- Z_{mt} is a matrix of covariates

- X_{mt} is a proxy for fiscal decentralization

$$y_{mt} = \alpha_m + \delta_0 \cdot \mathrm{d}2012_t + \phi \cdot X_{mt} + \gamma \cdot X_{mt} \cdot g_{mt} + \zeta \cdot g_{mt} + \beta \cdot Z_{mt} \tag{2}$$

- 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	$\frac{transfer_{mt}}{\sum Cgov\ revenue}$
Expenditure share	$\frac{expenditure_{mt}}{\sum Cgov\ expenditure}$
Focused expenditure share	$\frac{sanitationexp_{mt}}{\sum Cgov\ expenditure}$

Additional political and administrative indicators

Participation in elections	$\frac{persons\ voting_{mt}}{allowed\ to\ vote_{mt}}$
Administrative decentralization proxy	$\frac{public\ administration\ workers_{mt}}{total\ workers_{mt}}$
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	Deparament GDP (9 departments)

Proxy for fiscal decentralization (transfer share)

2001

2012

FE OLS Basic model
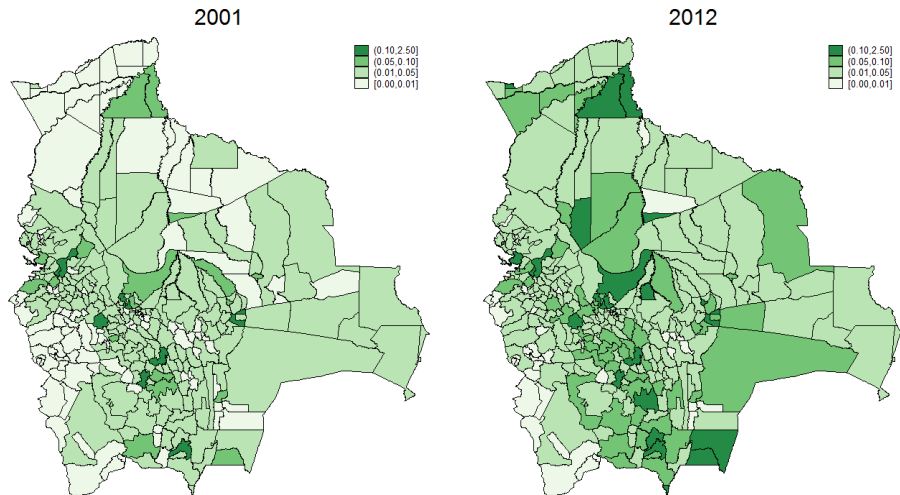
Table: FE OLS Results for model (1)

	(1) twater	(2) toilet	(3) stunt_prop	(4) uw_prop
Expenditure share in sanitation	0.005	0.003		
	(0.003)	(0.004)		
Transfers share(log)			-0.057***	-0.030***
			(0.015)	(0.008)
Observations	480	480	628	628
R^2	0.64	0.46	0.56	0.21
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Controls	✓	✓	✓	✓

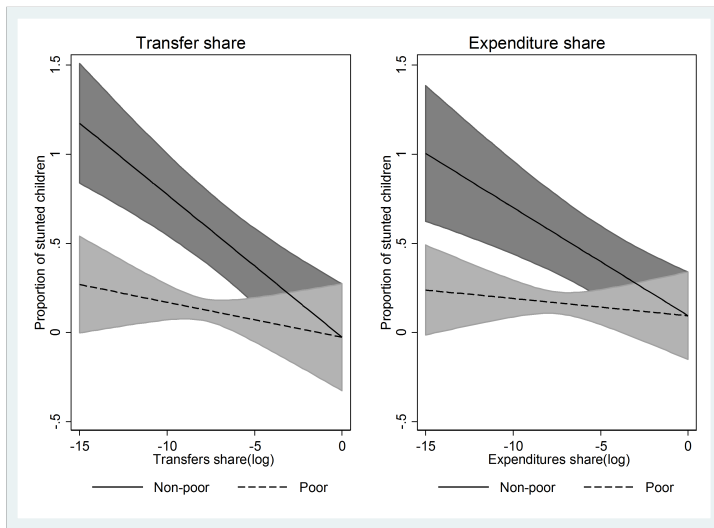* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

FE OLS Interactions model

Table: FE OLS Results for stunting

	(1) stunt_prop	(2) stunt_prop	(3) stunt_prop	(4) stunt_prop
Transfers share(log)	−0.051	−0.102***	−0.031*	−0.059***
	(0.032)	(0.032)	(0.017)	(0.018)
Participation in elections	−0.029			
	(0.383)			
Transfers share(log) x Participation in elections	−0.007			
	(0.040)			
Share of public workers(log)		−0.118		
		(0.076)		
Transfers share(log) x Share of public workers(log)		−0.012*		
		(0.007)		
Voter's support			−0.489***	
			(0.171)	
Transfers share(log) x Voter's support			−0.055***	
			(0.017)	
Political alignment=1				0.011
				(0.067)
Political alignment=1 x Transfers share(log)				0.002
				(0.008)
Observations	628	623	628	628
R^2	0.56	0.57	0.58	0.56
Municipality FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Controls	✓	✓	✓	✓

Marginal effects - heterogeneous effects

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Issues

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 $\uparrow$ transfer share $\neq \uparrow$ 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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- It could be argued that ↑ transfer share $\neq$ ↑ fiscal decentralization
- Municipal governments have very limited capacity to raise own revenues
- Local governments have great leeway to spend/invest with the transferred resources

Issues

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: $Z_{mt} = \text{Size}_m \cdot \text{Oil price}_t$
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- Limited impact of increased fiscal decentralization
- 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