

A Bayesian Index of Decentralization

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Introduction

- Countries all over the world have moved towards more decentralized forms of government during the last 30 years.
- However, the academic debate on what are the effects of decentralization is still very much open.

Introduction

- Decentralization & corruption:
 - Subnational share of expenditure is negatively associated with their own index of corruption (Fisman and Gatti , 1998);
 - Subnational share of government employment is negatively associated with the International Country Risk guide's corruption index (Gurgur and Shah, 2011);
 - Tiers of government are positively associated with the International Transparency Index of perceived corruption (Treisman, 2002);
 - The World Bank's Control of Corruption Index is higher in federalist than in Unitarian countries (Freille et al, 2007).
- Similar results are found for other outcomes.
- Partly due to the lack of consistency in how decentralization is measured.

Outline

- The concept:
 - The measures of decentralization available.
 - The different dimensions of decentralization.
- The model:
 - A factor analysis for mixed ordinal and continuous data.
 - The advantages of Bayesian statistics.
- The index:
 - An assessment of its validity and reliability.
- Conclusions.

The Concept

- How decentralization has been measured so far:
 - Dummies and other discrete measures: not very informative.
 - Fiscal indicators: reliable, standardized, but incomplete.
 - Qualitative indexes: encompassing but arbitrary.

The Concept

- Schneider's conceptualization:
 - Decentralization is a unique entity, but where three interrelated dimensions can be identified, economic, administrative, and political.
- I use six indicators of 28 OECD countries in 2006:
 - Share of subnational expenditures;
 - Share of subnational taxation;
 - Institutional depth;
 - Law making;
 - Representation;
 - Federation.

The Model

- A mixed model for latent variable estimation:

$$y_{ij} = \alpha_j + \beta_j x_i + \delta_{i,(1,2)} + \varepsilon_{ij}$$

$$\begin{cases} P(y_{i6} = 0 \mid \beta_6, x_i) = F(\tau - \mu_i) \\ P(y_{i6} = 1 \mid \beta_6, x_i) = 1 - F(\tau - \mu_i) \end{cases}$$

$$y_{ij} = \begin{cases} y_{ij}^* & \text{if variable } j \text{ is continuous;} \\ 1 & \text{if } y_{ij}^* > \tau \text{ and variable } j \text{ is dichotomous} \end{cases}$$

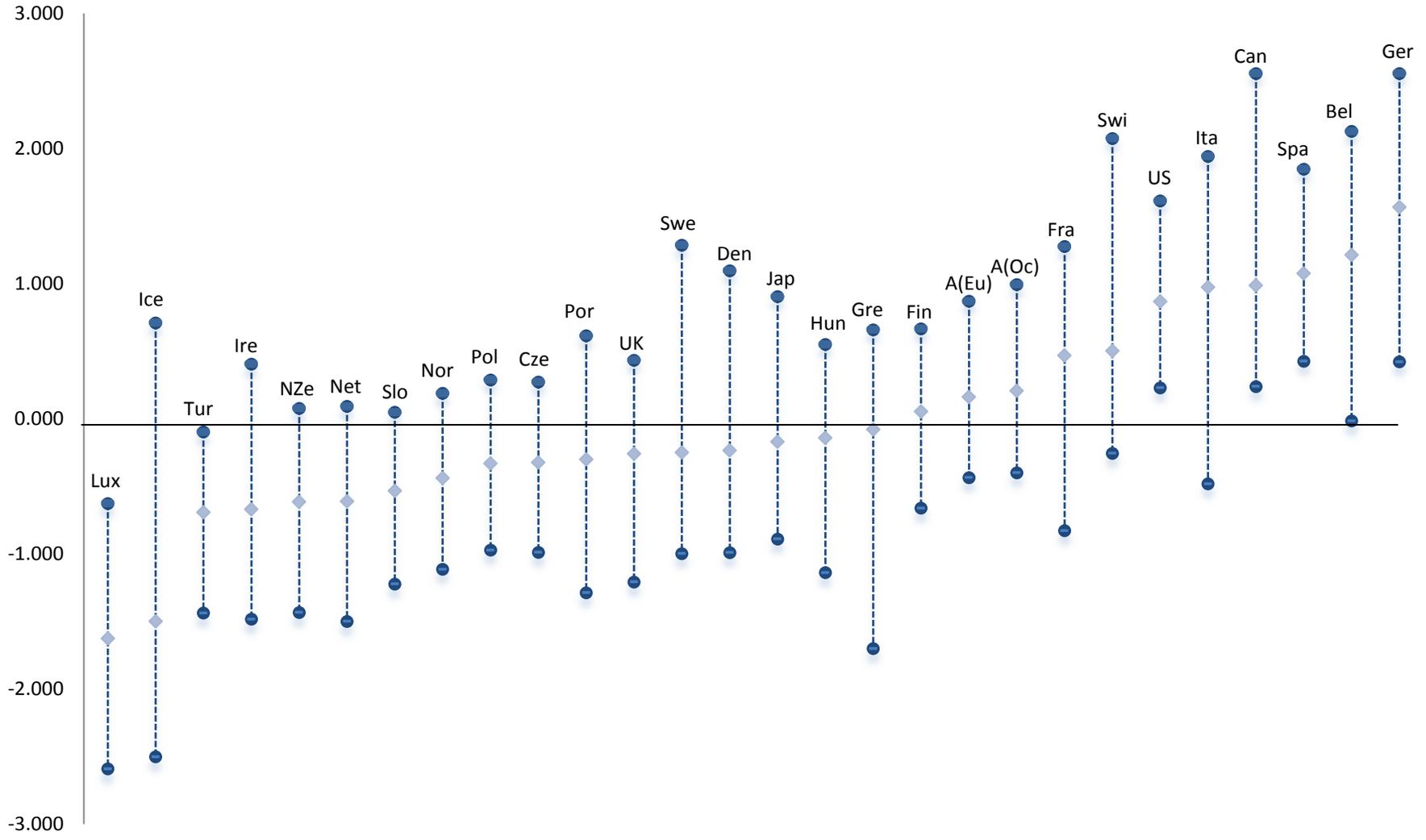
The Model

- The advantages of using a Bayesian approach:
 - missing data is automatically estimated,
 - it does not rely on asymptotic theory,
 - straightforward interpretations of uncertainty,
 - point estimates and credible intervals are estimated directly from the posterior distribution.

The Model

Factor	Factor loading	95% Credible interval	% of total variance
Subnational exp.	9.025	(0.166, 19.450)	40.57
Subnational tax	8.330	(0.643, 17.120)	37.45
Institutional depth	1.163	(0.216, 1.945)	5.23
Law making	0.422	(0.008, 0.838)	1.90
Representation	1.523	(0.121, 2.685)	6.85
Federal	1.782	(0.051, 4.538)	8.01

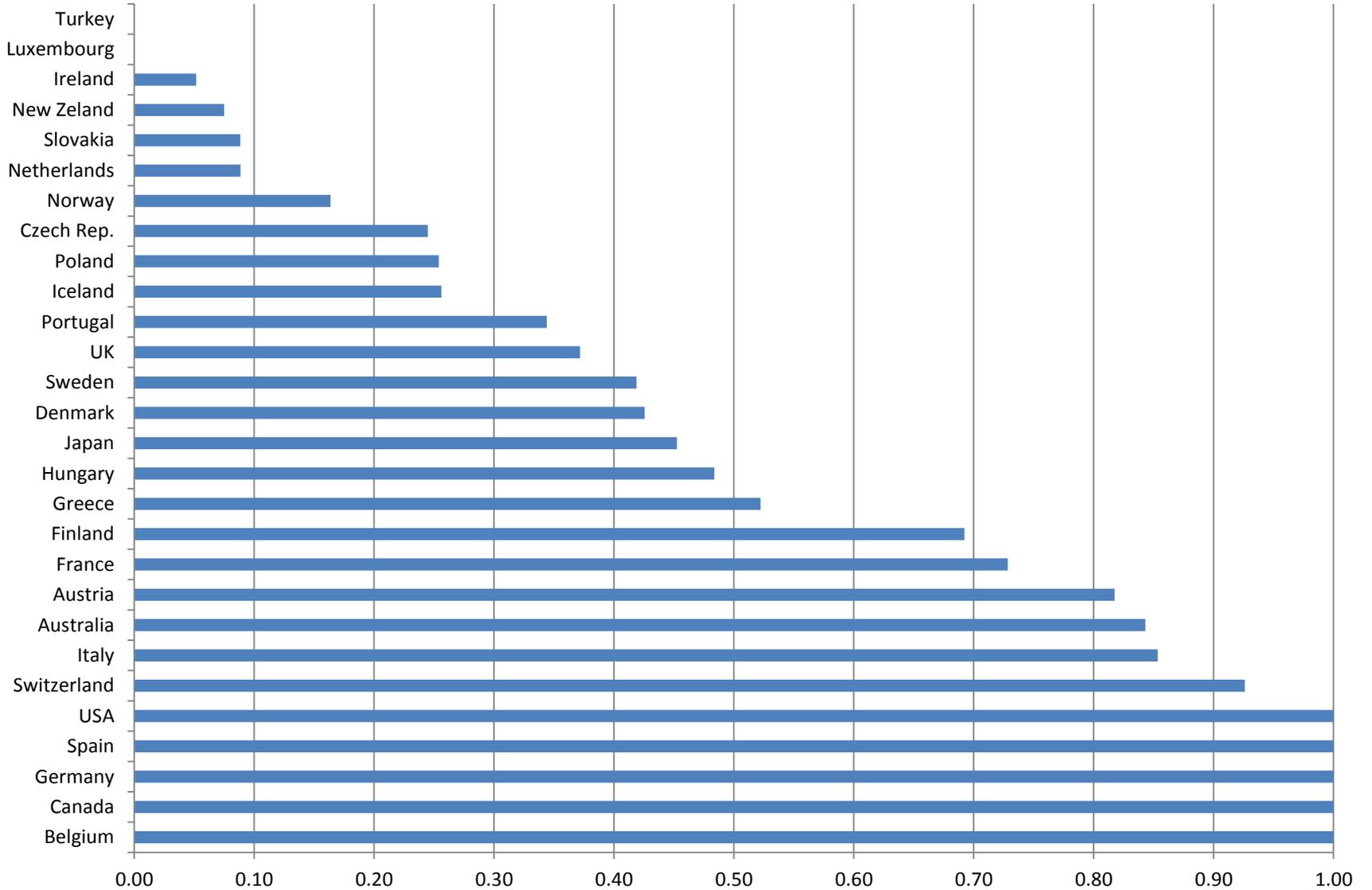
The Index



The Index

- Validity:
 - Face validity;
 - Content validity;
 - Convergent validity.
- Reliability:
 - Great degree of uncertainty.

The Index



Conclusion

- A more encompassing, robust, and informative index.
- Adequate validity but low degree of reliability.
- This is only a snapshot, but sets the foundations for a more complete index of decentralization.