Does School Finance Equalization Increase or Decrease Revenue Instability? An Interrupted Time Series Analysis

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Abstract
School finance literature has focused on the distribution of resources across districts, while neglecting the revenue source and stability within districts. This paper defines instability as the unpredictable component of revenue fluctuations. I evaluate whether school finance equalization—a reform that increased state responsibility for district funding—changed instability in districts’ state revenues. Using an Interrupted Time Series design, I exploit variation in the timing of policy adoption across a set of states where the revenue source changed toward a more volatile tax base. I find that instability declines after reform, suggesting that states may buffer districts from revenue shocks.

Research Question
Does state policy, in particular the contribution of state funds to the school finance system, affect district revenue instability? I use school finance equalization as a discrete policy change to estimate the effect of the change in state funding of districts.

Hypotheses
Literature on tax stability and social insurance suggests two possible consequences of an increased role of state funding: 1) Increased instability: State taxes tend to be less stable than local taxes (sales and income vs. property). (See Edgerton et al., 2004; Poterba 1994; Sabel & Holcombe 1996; Dye and McGuire 1991). For states that shifted toward a volatile tax base when they equalized, districts may be subject to more uncertainty. 2) Decreased instability: States have a greater ability to buffer shocks both across districts and across spending categories, if state funding “insures” districts against shocks (Chetty 2006; Blundell et al., 2008).

Measurement of Revenue Instability
Descriptive plot of instability by district-year shows that districts with highly unpredictable years (larger squared residuals) are in equalization states in years immediately before or after the policy is adopted.

Effect within states of policy reform on districts’ instability in state revenues:
• Unit: District d in state s in year t (year centered at 0 for each state’s reform date: t-[*])
• Mechanism: Change in tax base subjects districts to uncertainty, but state can absorb burden of revenue shocks.
• Assumption: Instability would have remained the same in the absence of the policy and tax base change.
• Counterfactual: Use period before as the control: the state-revenue-instability level and trend that would have continued.
• Policy shock is not instability: Redistribution aspect of policy introduces expected change in state revenues (see points around dotted vertical line). I control for this with π3 (During Treatment) parameter: spans 3 years before and after policy change at year 0.
• Change in instability level: π1 (Post-policy period)
• Change in instability trend: π2 (Post-policy period*time trend)

Estimation Results:
Model: controls for the policy shock period, includes state and year fixed effects.
DV: State revenue instability measured as squared residual from lagged growth model.

Conclusion:
Districts within states that equalized and changed their tax base are less revenue-unstable.