Dynamic Risk Sharing in a Fiscal Union

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Heterogeneity across regions is a salient feature of the U.S. economy. In this paper, I focus on U.S. states.

Motivation

Questions

Two questions:
1. Empirical: How do regions share risks over the business cycle?
2. Quantitative: Does regional heterogeneity matter for aggregate fluctuations, and what’s the role of macro policies?

Some key concepts:
- regional risk: the conditional standard deviation of idiosyncratic shocks to U.S. state-level output/income growth
- regional risk sharing: the smoothing of income shocks through capital market, credit market, government transfers etc.

Empirically,
- Countercyclical regional income risk.
- Most (70%-80%) of the regional income shocks are insured away.
- No significant difference in the level of risk sharing between normal and recession times.
- State-contingent federal fiscal transfers help stabilize the regional economy, especially during recessions.

Model implies that,
- Countercyclical regional risk amplified the magnitude of output slump in the Great Recession by 0.6 percentage points, through precautionary saving motives
- State-contingent fiscal transfers effectively dampened output plunge by 0.4 percentage points, by providing insurance to regions that needed it the most

What I find

Dynamic Panel GMM Estimation

1. Complete market: idiosyncratic income shock pass-through
\[ \Delta \log y_{i,t} = \mu_i + \chi_{i,t} + \Xi_t \] (1)
2. Assume the following exogenous process for regional output and consumption:
\[ \Delta \log \sigma_{i,t} = \mu_i^2 + \phi_i + \chi_{i,t}^2 + \varphi_i \Xi_t + \omega_i \epsilon(t \leq 1997) + e_i^2 \] (2)
\[ \omega_i, \epsilon_i, e_i^2, \Xi_t \text{ are i.i.d. noises with variances } \sigma_{\omega}^2, \sigma_{\epsilon}^2, \sigma_{\omega}^2, \sigma_{e}^2 \] (3)

Basic Model Features

A continuum of heterogeneous regions, subject to regional idiosyncratic risks, that reside in the same monetary and fiscal union;
- Representative household within each region that borrows and lends with each other with nominal bonds and subject to a borrowing constraint;
- Intermediate goods are traded across regions without frictions;
- Regional firms set prices subject to nominal rigidity.

The goal is to study the implications of regional risk and risk sharing patterns for aggregate fluctuations.

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Conclusions

This paper documents a countercyclical pattern of regional risk, which worsens risk sharing and amplifies the aggregate impact of a negative aggregate productivity shock.
- Regional risk sharing does not vary over the business cycle, suggesting a role for federal fiscal transfers in regional risk sharing.
- Quantitatively, state-contingent fiscal transfers help stabilize both regional and aggregate economy.
- Highlight the redistribution channel of automatic stabilizers.