Dynamic Risk Sharing in a Fiscal Union[1]

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[1]superceding "Regional Risk and Aggregate Fluctuations"
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Motivation

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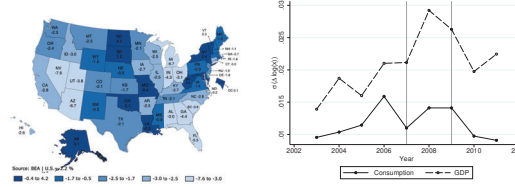
Questions

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.

What I find

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

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Dynamic Panel GMM Estimation

▶ Complete market: idiosyncratic income shock pass-through = 0

▶ Assume the following exogenous process for regional output and consumption:

$$\Delta \log y_{i,t} = \mu_i^y + \chi_{i,t} + \Xi_t \tag{1}$$

$$\Delta \log c_{i,t} = \mu_i^c + \varphi_t^\chi \chi_{i,t} + \varphi_t^\Xi \Xi_t + u_{i,t}\mathbb{I}(t \leq 1997) + e_{i,t}^c \tag{2}$$

$$\chi_{i,t} = \rho^\chi \chi_{i,t-1} + e_{i,t}^\chi \tag{3}$$

$$\Xi_t = \rho^\Xi \Xi_{t-1} + \varepsilon_t \tag{4}$$

▶ $u_{i,t}, e_{i,t}^c, e_{i,t}^\chi, \varepsilon_t$ are i.i.d. noises with variances $\sigma_u^2, \sigma_c^2, \sigma_{\chi,t}^2, \sigma_\Xi^2$

▶ Strategy: cross-sectional moments in identifying idiosyncratic shocks; cross-time moments for aggregate shocks.

Are φ_t^χ and $\sigma_{\chi,t}$ Cyclical?

Project φ_t^χ and $\sigma_{\chi,t}$ on a recession indicator *rec*:

	φ_t^χ	$\sigma_{\chi,t}$
Rec	0.082	0.008***
	(0.136)	(0.003)
Constant	0.234***	0.020***
	(0.070)	(0.001)
N	53	53

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

On average, $\varphi^\chi = 0.26$; $\sigma_\chi = 0.0197$ for normal times and 0.0274 for recessions.

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.

Model Fit and Counterfactual: Aggregate Output
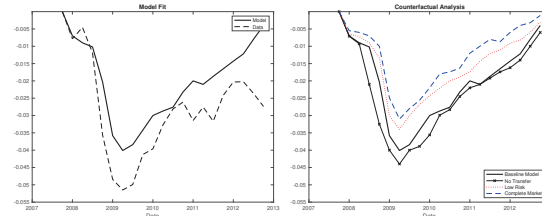
Conclusions

▶ 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**.