The Great Recession: Divide Between Integrated and Less Integrated Countries

Guillermo Hausmann-Guil
University of Virginia

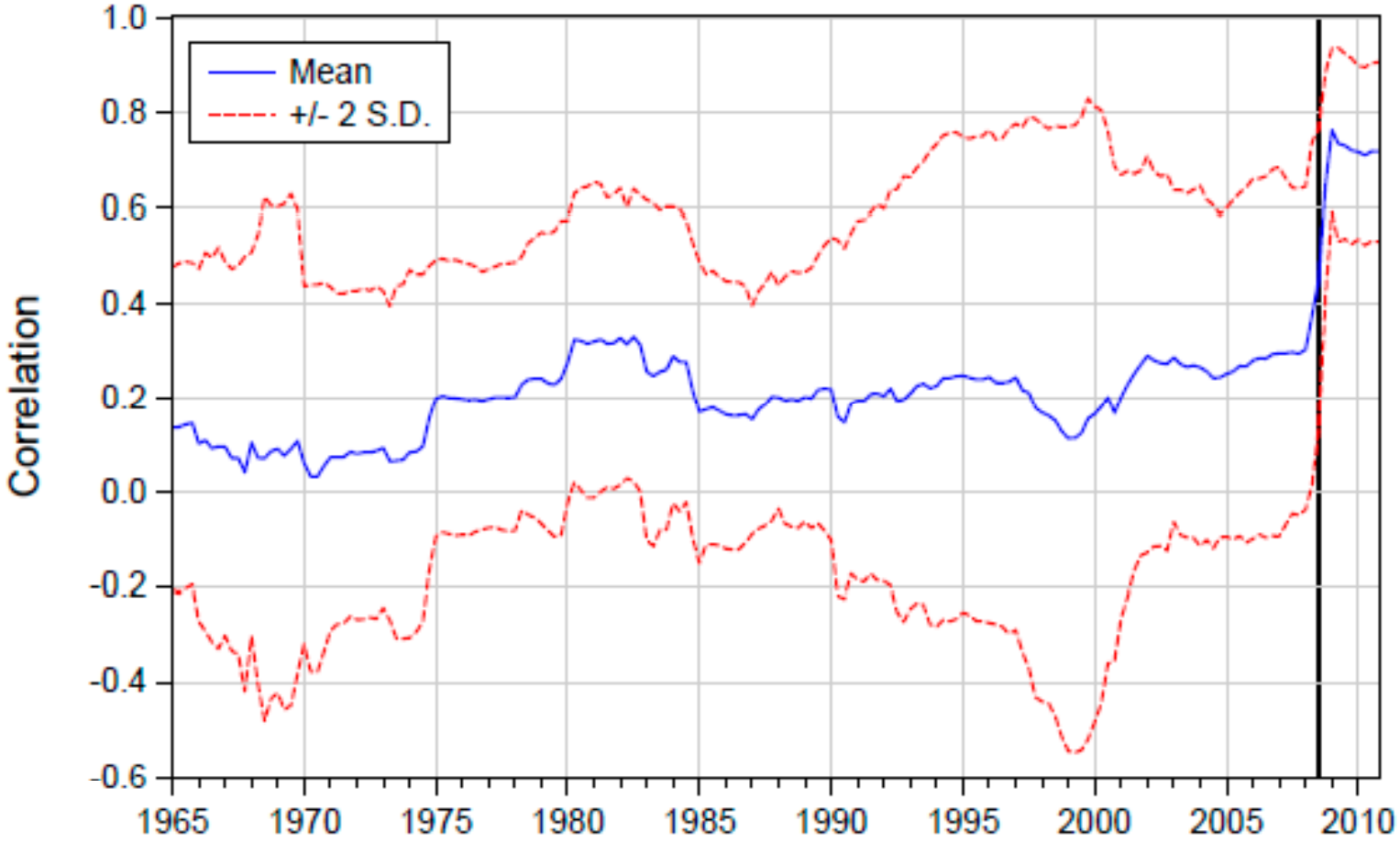
Eric van Wincoop
University of Virginia and NBER

Gang Zhang
University of Virginia

Some Stylized Facts about the Great Recession

- Remarkable synchronicity of business cycles across the globe
- Overall the drop in output, consumption, investment were of similar magnitude in the rest of the world as in the United States
- A significant literature has found no robust evidence that more integrated countries were more heavily impacted
- However, we document that below a certain threshold for integration countries were impacted much less

Correlation Quarterly GDP growth among G7 countries (10 year rolling windows)-Perri-Quadrini



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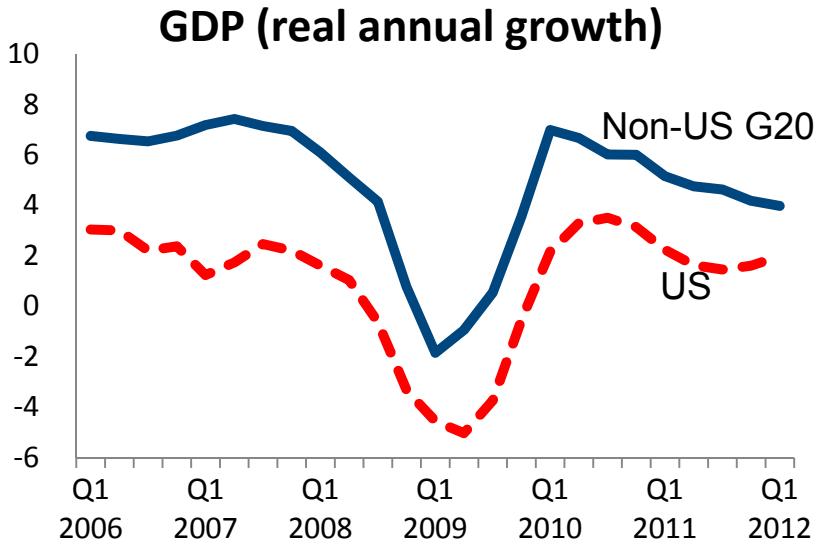
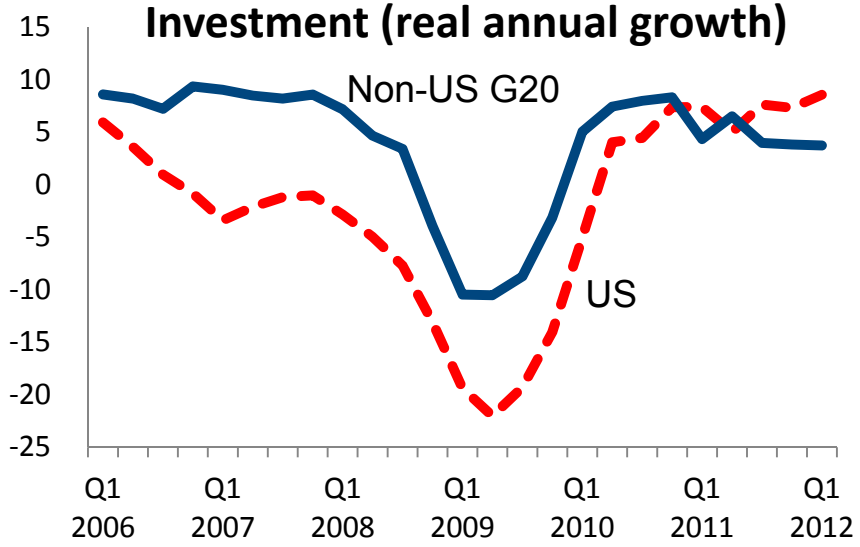
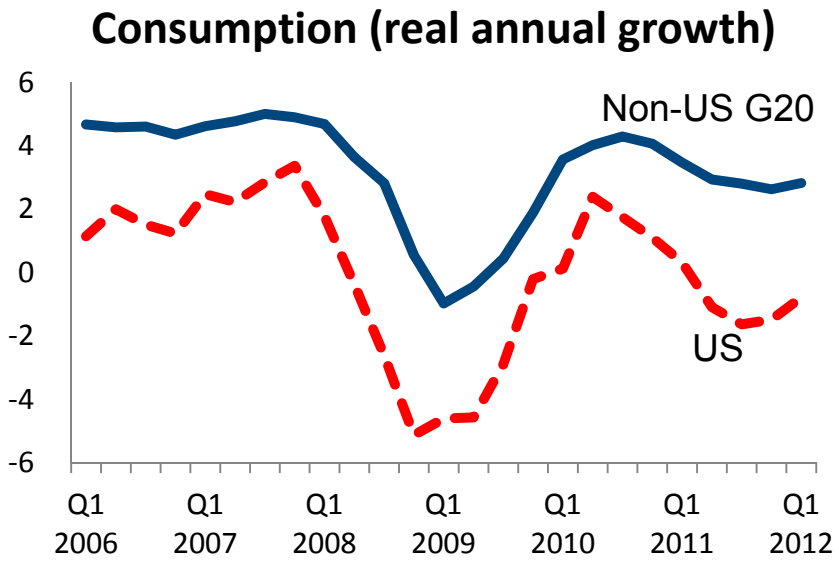
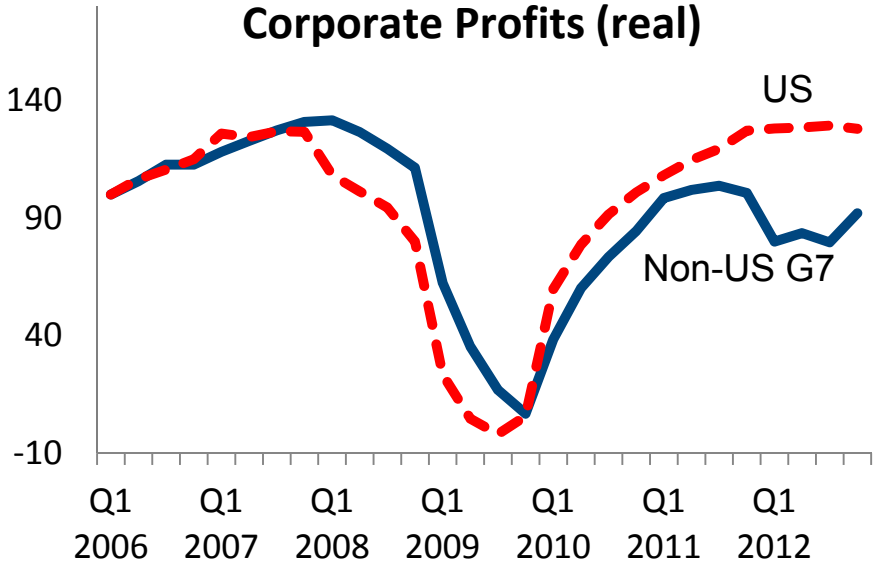
Strong Synchronization of Business Cycles during Great Recession









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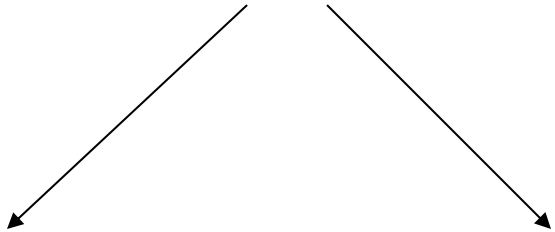
Conventional Theory



Common shocks

Transmission of shocks

Conventional Theory

Common shocks?

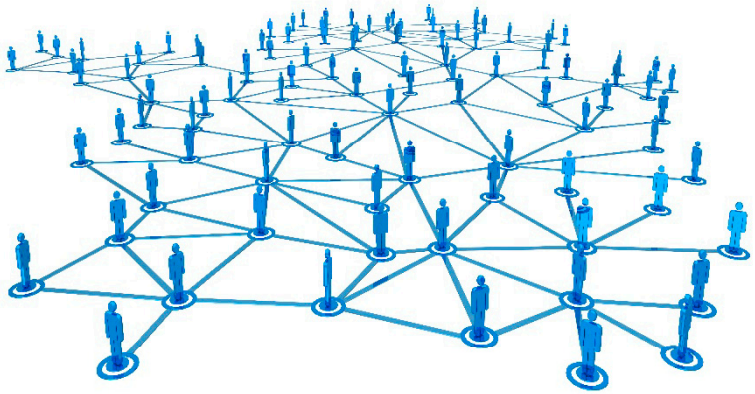
Huge shock to the housing market, but it most certainly was not global

Turmoil in financial markets, but the epicenter was largely the United States, so not a common shock

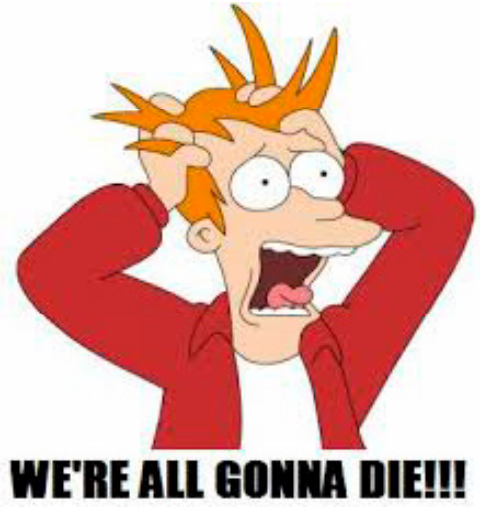
Conventional Theory

Transmission of shocks

- Transmission depends on the nature of shocks
- Even when transmission is positive, it is partial at best when countries are not perfectly integrated
- Models with complex financial networks generate tipping point effects even with limited integration
- But even those are not completely convincing:
  - Lots of evidence that a decline in credit was not the main reason behind the Great Recession
  - Harder to tell network stories with ordinary households and firms

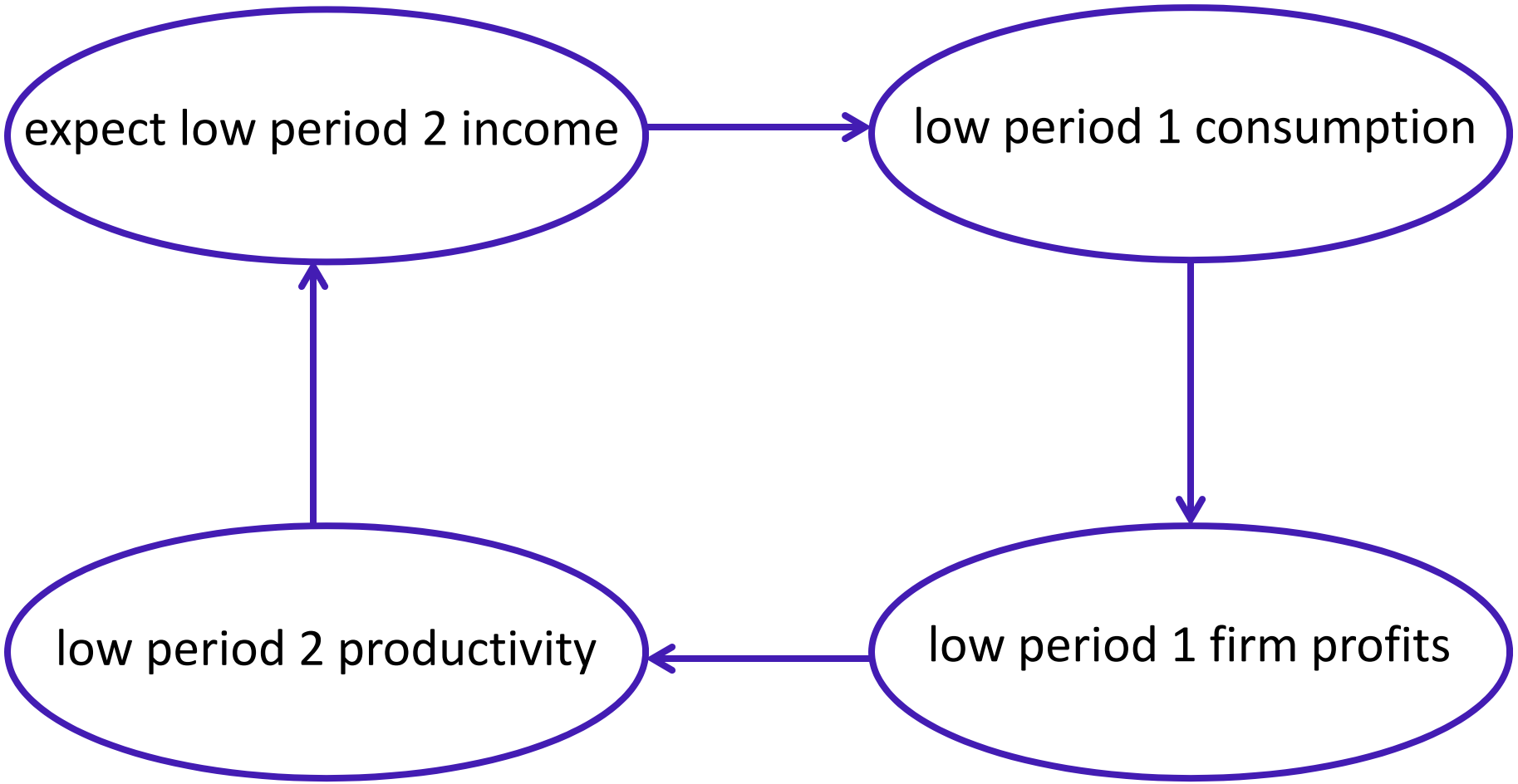


Our Explanation: Self-Fulfilling Panic



- Beliefs of economic deterioration in the future will set in motion actions (like a drop in consumption and investment) that ultimately make those beliefs self-fulfilling
- There are many models of such self-fulfilling expectation shocks; many have been applied to the Great Recession

Self-Fulfilling Global Panics



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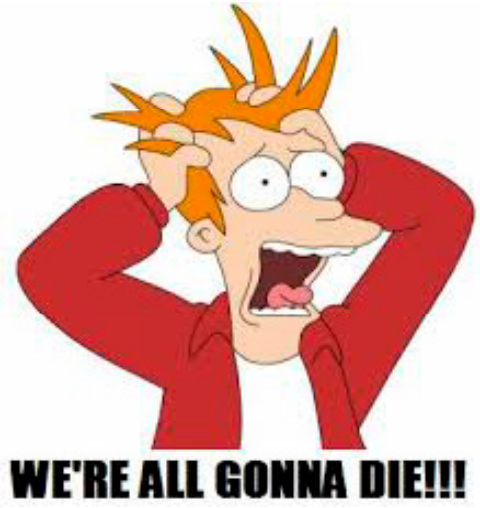

- Bacchetta and van Wincoop (2014) show that such expectation shocks are necessarily coordinated across countries when they are sufficiently integrated
- When countries are partially, but sufficiently, interdependent, it is not an equilibrium for some countries to have rosy beliefs about the future while others expect a deep recession
- The theory has another implication, which we explore more here, which is that countries below some threshold level of integration should not panic
- Integration matters, but only in terms of what side of the threshold you are on

Remainder of the Talk

1. Present evidence that there was an integration threshold, such that the drop in GDP was much larger for countries whose integration level was above the threshold than for those below the threshold

2. At a non-technical level discuss the model we use to address these stylized facts

3. Explain intuitively why the model is consistent with the evidence

Econometric Approach

Measure of integration:

$$q_i = \alpha\, \text{trade}_i + (1-\alpha)\, \text{financial}_i$$

Regression: $y_i = \delta_i + \beta' x_i + \varepsilon_i$

$$\delta_i = \begin{cases} 0 & \text{if} \quad q_i(\alpha) \le \gamma \\ 1 & \text{if} \quad q_i(\alpha) > \gamma \end{cases}$$

- follow the Threshold Estimation literature and estimate the parameters, including α and γ, with maximum likelihood

Key Regression Results

Without dummies

	(1)	(2)
VARIABLES	**Forecast error**	**GDP growth 09**
Log(Trade openness)	-1.774	-0.589
	(1.1057)	(1.1415)
Log(Financial openness)	-0.679	-1.116
	(1.1011)	(1.1730)
Observations	110	110
R-squared	0.232	0.319

Robust standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**

With integration dummy

	(1)	(2)
VARIABLES	**Forecast error**	**GDP growth 09**
Joint dummy	-4.716***	-4.413***
	(1.2050)	(1.2721)
Log(Trade openness)	-1.458	-0.294
	(1.0370)	(1.1670)
Log(Financial openness)	1.963	1.357
	(1.2686)	(1.3848)
Observations	110	110
R-squared	0.330	0.383

Robust standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**

The Model

- Continuum of countries on interval [0,1]
- Model focuses on trade integration, only for analytical tractability: easy to capture such integration with one parameter
- Guillermo is working on a paper showing that the same result holds with financial integration
- Two periods
- Households can borrow and lend, but only domestically
- Firms set prices at the start of each period (Keynesian)
- Period 2 is neoclassical because there are no shocks in period 2
- The central bank sets a certain interest rate in period 1 and a zero inflation target from 1 to 2

The Model

- Key assumption

$$A_i = A_H \qquad if\ \pi^i \geq k$$

$$A_i = A_L \qquad if\ \pi^i < k$$

- Trade integration parameter ψ_i for country i
- A higher ψ_i simultaneously leads to a large home bias for domestic goods (lower imports) and a bias by other countries against country i goods (lower exports)
- the integration parameter is uniformly distributed across countries on an interval ranging from no integration to perfect integration

Results

- Equilibria take the following form

1. All integrated countries, up to a certain threshold for integration, either panic at the same time, or none of them panics
2. If the integrated countries panic, at most a fraction of the countries below the threshold integration level will panic

Intuition

In models with multiple equilibria, there are usually 3 cases:

1. Fundamentals are really bad ⟶ bad equilibrium
2. Fundamentals are really good ⟶ good equilibrium
3. Fundamentals are intermediate ⟶ either good or bad equilibrium

- Assume that for the world economy overall we are in case 3: there may be a global panic or a good equilibrium
- Assume also that some events scare people into the global panic equilibrium

Intuition

How does such a global panic affect individual countries?

- The integrated countries are in case 1: for them the panic in most of the world is a really bad “fundamental” (exports go down, profits go down), which pushes them also into the bad equilibrium
- The countries below the integration threshold are in case 3: the panic in most of the world impacts them little, so they do not necessarily panic
- The implication is that the drop in output is on average much larger for the group of countries above the integration threshold

Extension to Big Country

- We consider an extension where one country is big, while the remaining countries are small countries on a continuum of [0,1]
- One can think of the large country as the United States
- We focus on equilibria where the large country panics
- We show that this implies that all small countries above a certain integration level will necessarily panic as well
- It is again the case that at most a subset of small countries below the threshold integration level will panic

Conclusion

- The Great Recession has seen a remarkable synchronization of business cycles, and a decline in GDP, consumption and investment of similar magnitude in the ROW as in the US
- Looking at a cross section of countries, we find that economic integration only matters in a non-linear way: countries below a certain threshold of integration were much less affected
- The paper develops a model with self-fulfilling expectation shocks that is consistent with these results
- We're not dogmatic about this though; there may be other explanations through more standard transmission channels, but this is not easy to do given partial trade and financial integration