Discussion on Flood, Marion and Matsumoto's "International Risk Sharing During the Globalization Era"

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Overall

- Interesting paper
- What paper does
  - Describes flaws with current risk-sharing tests
  - Summarizes mixed results in literature on whether risk-sharing has improved
  - Suggests a new test
- What I thought
  - agree with most of it
    - Especially the review of the literature
  - but have a few quibbles and suggestions
    - About the new test

For both: Consider the standard social planner's problem….

$$\max_{\{C^i(S_t)\}\forall i, S_t} \sum_{i=1}^{N} \underset{\substack{\uparrow \\ \text{Planner Weights}}}{\lambda^i} \overbrace{\sum_{t=1}^{\infty} \underset{\substack{\uparrow \\ \text{Utility Time Preference}}}{\delta^t} \sum_{S^t} \mathrm{Prob}(S^t)\, \underbrace{U(C^i(S^t))}_{\text{Period Utility for i}}}^{\text{Expected Utility across States and Time for Country i}}$$

Resource Constraint in each state

$$s.t. \quad \underbrace{\sum_{i=1}^{N} C^i(S^t)}_{\text{Total Consumption}} \leq \underbrace{\sum_{i=1}^{N} Y^i(S^t)}_{\text{Total Output}}, \ \forall\ S^t$$

Define: $\mu(S^t) \equiv$ Lagrangian on Resource Constraint

First order conditions imply:

$$\lambda^i \delta^t U'(C^i(S^t)) = \mu(S^t)$$

Lagrangian on Planner's Resource Constraint in state t

Testable Relationships: Defining

- Realized $\mu(S^t) \equiv \mu_t$
- Utility as CRRA with relative risk aversion parameter $\equiv \gamma$

Log consumption levels are:

$$\ln(C_t^i) = -\frac{1}{\gamma}\left(\ln\left(\frac{\mu_t}{\lambda^i \delta^t}\right)\right)$$

Depends on country and time

Log growth rates, FOCs are:

$$\ln\left(C_{t+1}^i \big/ C_t^i\right) = -\frac{1}{\gamma}\left(\ln\left(\frac{\mu_{t+1}}{\delta \mu_t}\right)\right)$$

Depends only on time

Tests in literature discussed by FMM

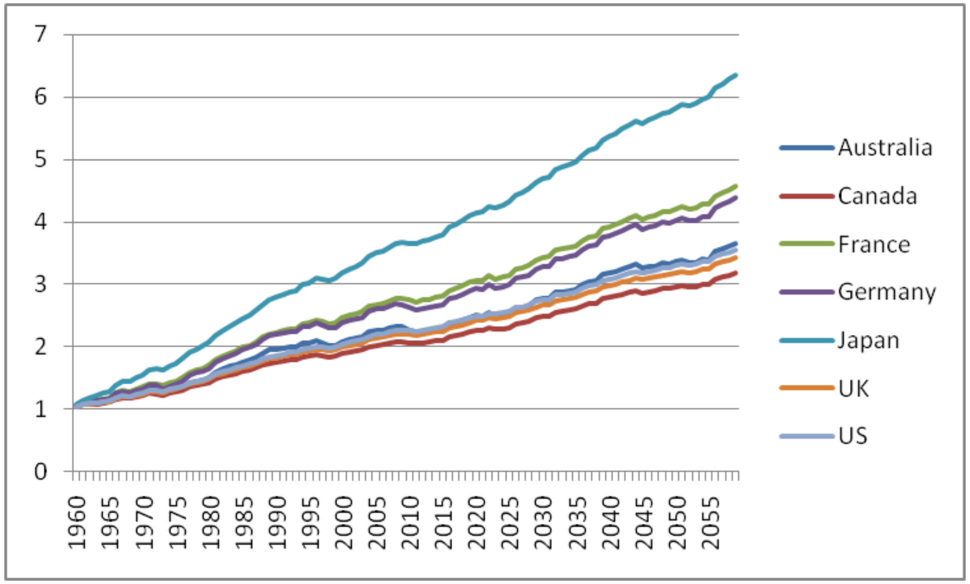
- "ρ" tests: Correlations across countries

- "β" tests: Regression tests on country-specific variables after controlling for world

- General findings
  - Perfect risk-sharing rejections
  - Consumption depends on own idiosyncratic variables
  - Once rejected, tests are difficult to interpret
    - Tests don't say anything about risk-sharing w/out $H_{Alternative}$

I agree with this critique of literature…

For example: Correlation-type tests



FMM note: Just because innovations are correlated doesn't imply risk-sharing

Generated with SAME innovation but own trend
=> correlation = 1
But countries are diverging!

Some OECD countries from PWT

Log Consumption Growth Data Estimates in %	Australia	Canada	France	Germany	Japan	UK	US
Mean	2.17	1.90	3.12	2.85	4.90	2.17	2.29
Std Dev**	3.51	2.05	3.28	3.86	3.35	1.86	1.89
AC 1	-0.07	0.24	0.11	0.16	0.55	0.32	0.19

- FMM response: take out common rolling trend
  - Calculate variance of deviations from this trend

$$\hat{\sigma}^2_{\tau,i,T} = \left(\frac{1}{T}\right) \sum_{t=\tau-T+1}^{\tau} \left[\ln\left(\frac{C_t^i}{C_t^W}\right) - \bar{\mathrm{X}}_\tau \right]^2$$

where

$$\bar{\mathrm{X}}_\tau = \left(\frac{1}{T}\right) \sum_{t=\tau-T+1}^{\tau} \ln\left(\frac{C_t^i}{C_t^W}\right) \quad \text{Mean over past T years}$$

- But does this solve the problem?

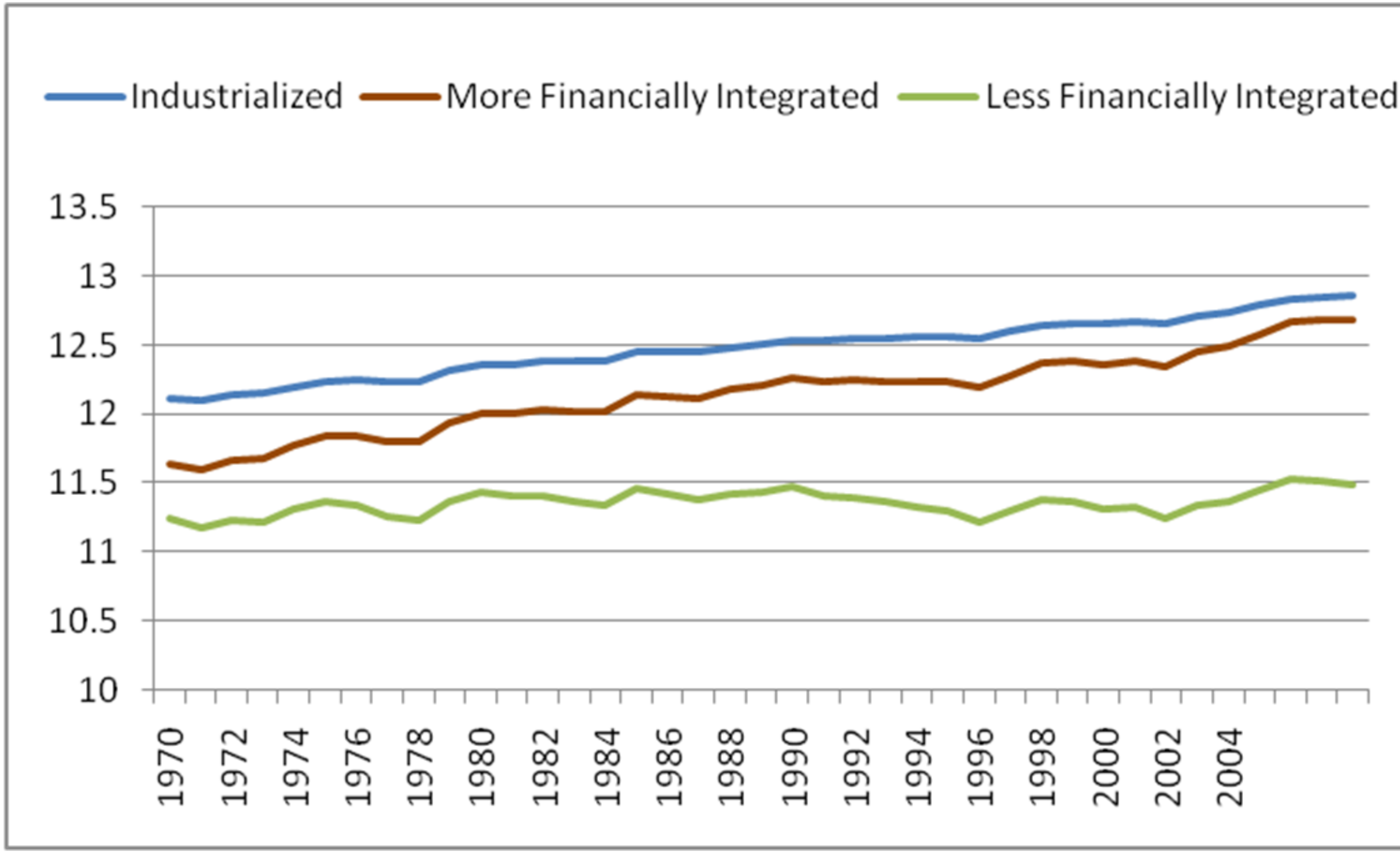
Question 1: What does this test measure?

- To investigate, I pulled off the same data as FMM

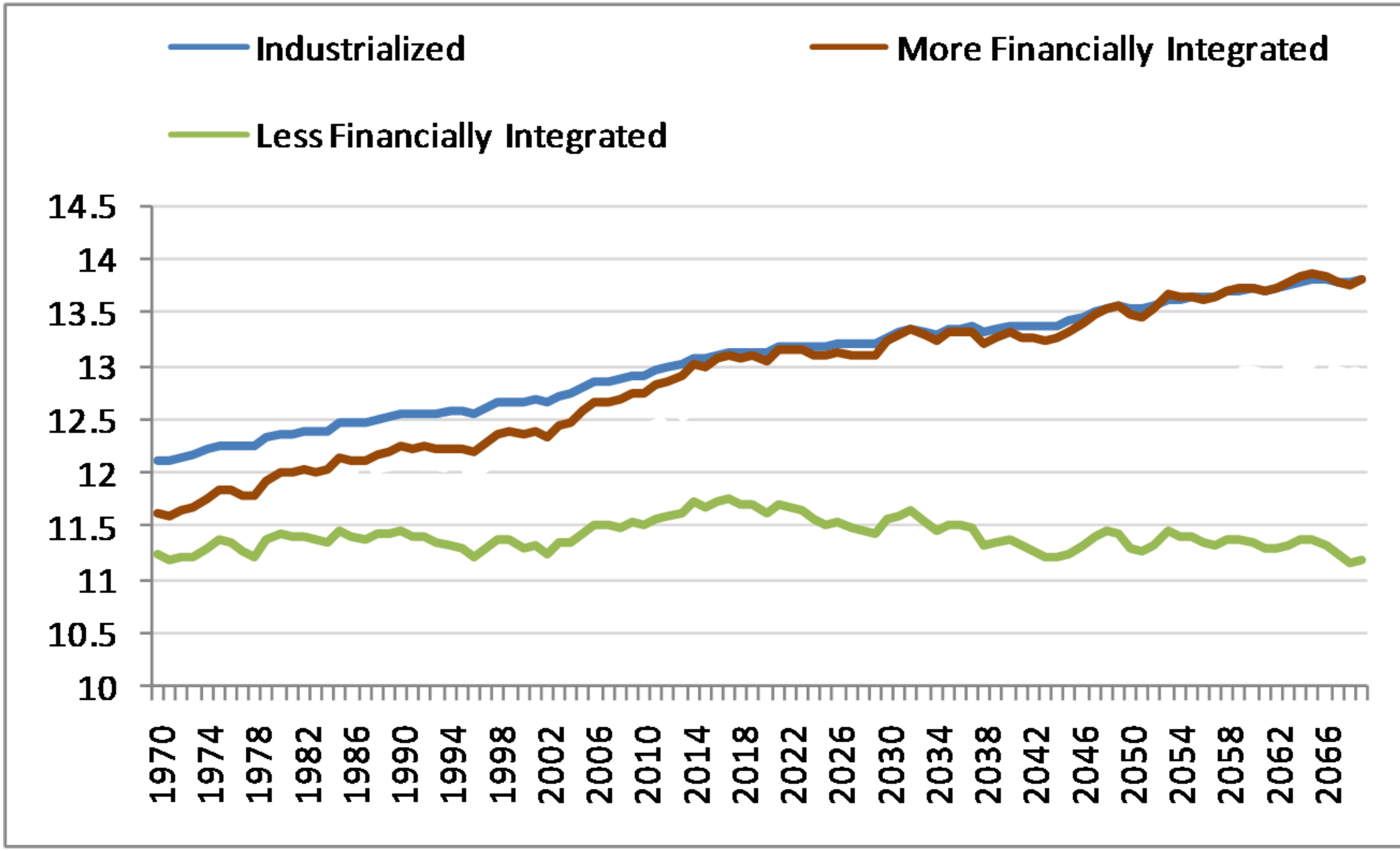
- Reconstructed the three groups:
  - Industrial
  - More Financially Integrated
  - Less Financially Integrated

- Estimated the process individually and then jointly

	Industrial	MFI(exc Arg)	Less Fin Int
Mean	2.04%	2.82%	0.81%
Std Dev	2.11%	4.63%	6.56%



Growth rate for MFI > Industrial > FFI
Note: China, Mean is 5.14%!


Industrialized
More Financially Integrated
Less Financially Integrated
14.5
14
13.5
13
12.5
12
11.5
11
10.5
10
1970
1974
1978
1982
1986
1990
1994
1998
2002
2006
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2018
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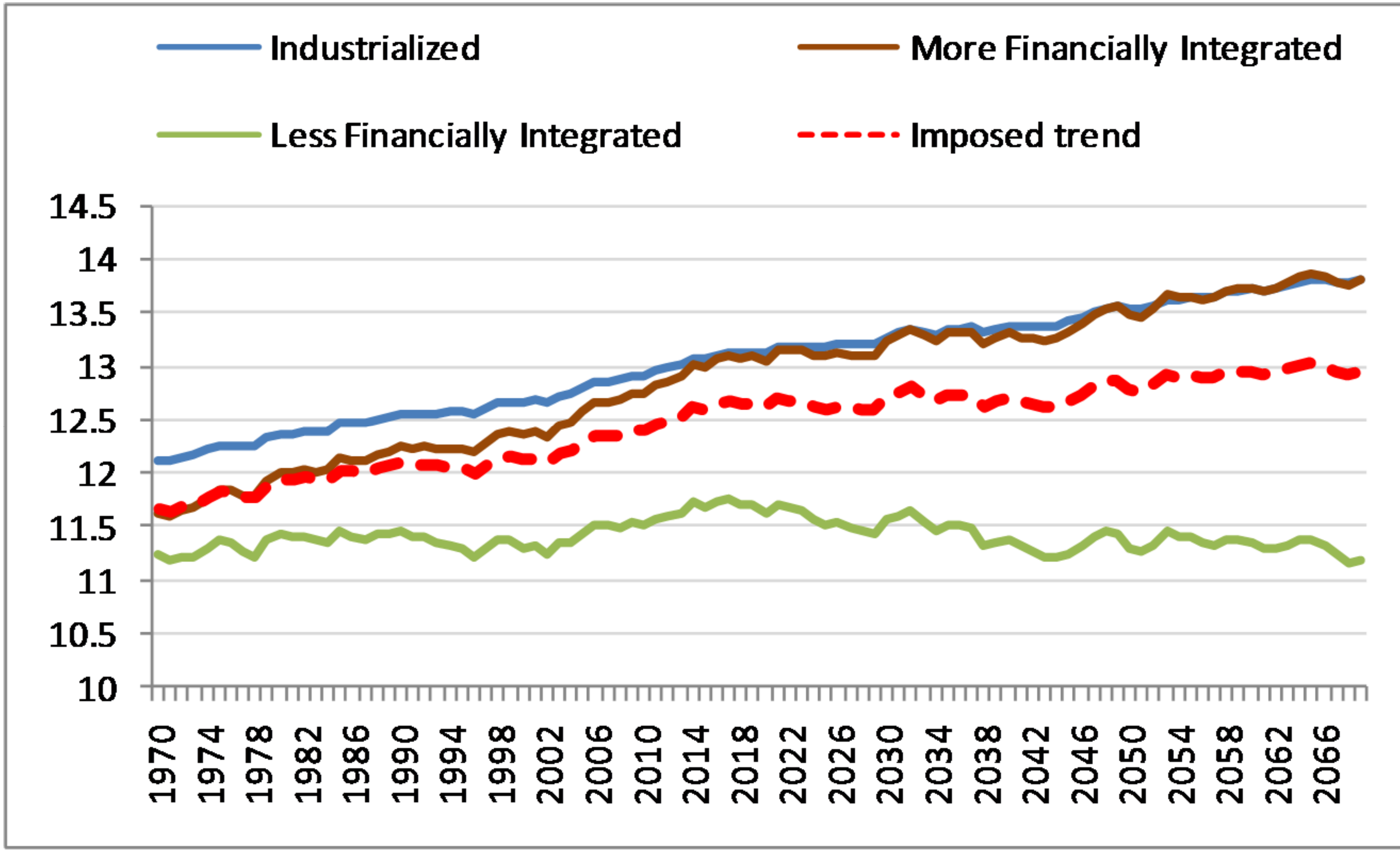


So what do variations in consumption away from varying trend line tell us about risk-sharing?

- Are the MFI countries just catching up?
- Are the LFI countries disappearing?

Question 2: Is test really robust to utility, consumption & output?

Utility Assumptions in FMM: CRRA

- But Obstfeld (1994) - calculating risk-sharing gains with trends
  - Requires risk aversion ≠ elasticity of intertemporal substitution

Empirical Assumptions in FMM: consumption log-normal i.i.d.

- But last twenty years or research has shown doesn’t fit
  - Consumption distribution
  - Asset pricing - Risk-free rate, equity premium, etc., etc.

Recent work (Bansal and Yaron (2002) and many others)

- estimate "long run risk" component in consumption

$$\ln(C_{t+1}^i / C_t^i) = g^i + x_t^i + \nu_{t+1}^i$$

$$x_{t+1}^i = \rho^i x_t^i + \varepsilon_{t+1}^i$$

"Long Run Risk" Component

explain asset return behavior with γ≠IES

Implications of "long run risk" for the FMM test?

- FMM consider deviations from world consumption
- Standard model

$$C_t^i = Q_t^i C_t^w$$

Stock price of the country i output

When consn is iid log normal

$$\ln(C_t^i / C_t^w) = \ln(Q^i / Q^w) \Rightarrow \text{constant}$$

But more generally,

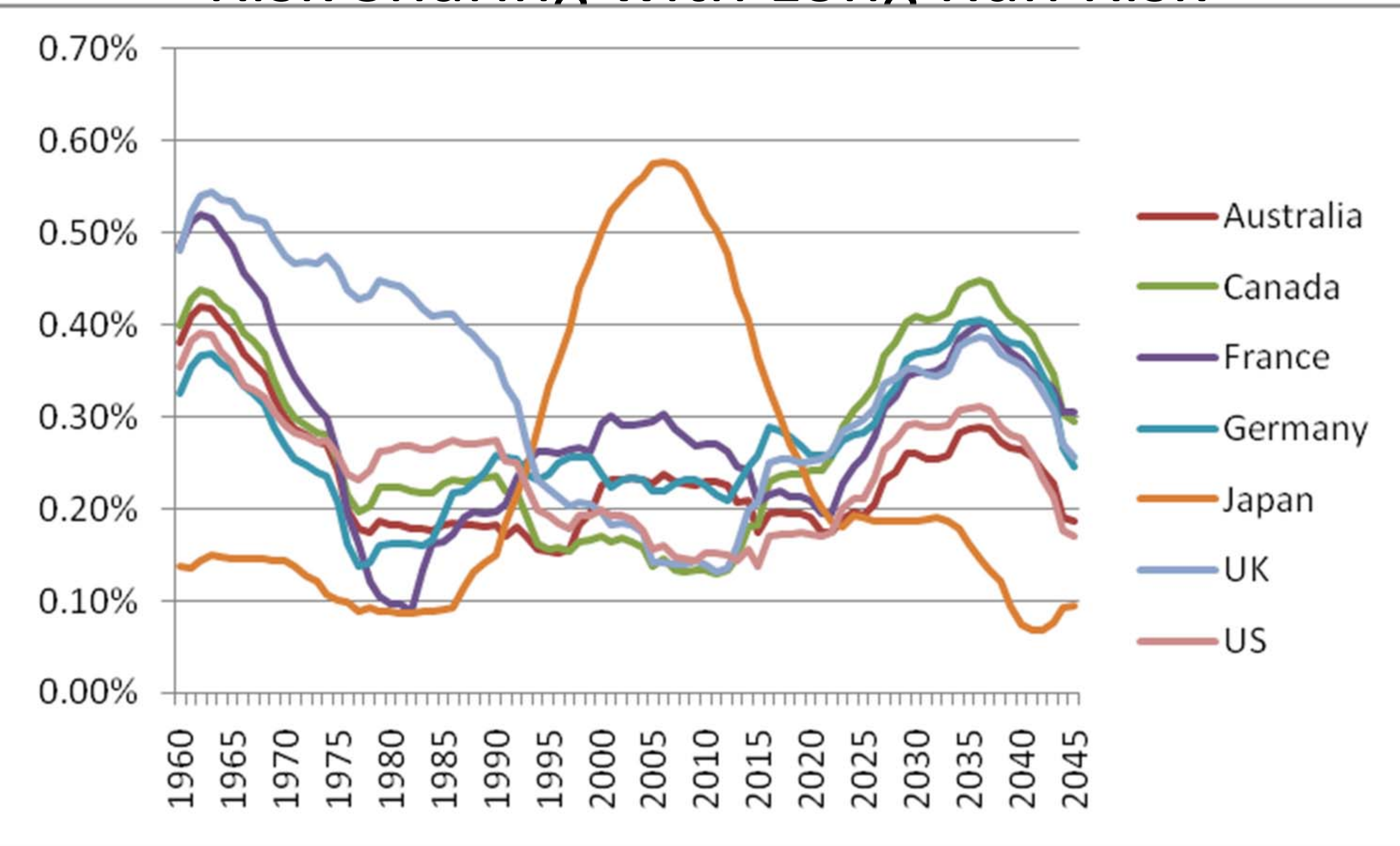
$$\ln(C_t^i / C_t^w) = \ln(Q_t^i / Q_t^w) \Rightarrow \text{time varying}$$

- In Lewis and Liu (2008, In progress)
  - Estimate empirical long run risk by country
    - Using SMM, extract consumption jointly with asset price moments
    - Calculate complete markets solution as benchmark

$$\ln(Q_t^i / Q_t^w) - \ln(C_t^i / C_t^w) = A_0 + \underbrace{A_1 \bar{x}_t}_{\text{World Long Run Risk}} + \underbrace{A_2 x_t^i}_{\text{Country i Long Run Risk}}$$

- To see how FMM test operates under complete risk sharing with long run risk
  - “Best case”: 7 OECD countries
  - Ran simulation of FMM test with 15 yrs (10 yrs similar)

FMM Test using Simulated Optimal Risk Sharing with Long Run Risk



Quibble 3: Last (and most minor)

- Primary motivation for paper goes like this
  - No clear evidence for improvement in consumption risk-sharing despite globalization
  - Therefore, tests must be wrong
- "You lost me at hello"
  1. Shouldn't we be looking at data to learn
     - Not just confirm what we believe?
  2. US-based household portfolio studies continue to find low levels of risk-sharing
     - Despite more sophisticated financial markets
  3. And what about home bias?
- For greater risk-sharing, more integrated markets might be a necessary condition
  - But they are not sufficient!

In summary

- I liked the paper, especially the critique of the literature
- Had a few quibbles
    1. Variance test may be capturing differences in growth, not risk-sharing
    2. Variance test not robust to more realistic distributions
    3. Premise that globalization *must* imply risk-sharing seems too strong