Discussion on Flood, Marion and Matsumoto’s
“International Risk Sharing During the Globalization Era”

By Karen K. Lewis
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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....

\[
\begin{align*}
\text{Max} \quad & \sum_{i=1}^{N} \lambda^i \sum_{t=1}^{\infty} \delta^t \sum_{S^t} \text{Prob}(S^t) \quad U(C^i(S^t)) \\
\text{S.t.} \quad & \sum_{i=1}^{N} C^i(S^t) \leq \sum_{i=1}^{N} Y^i(S^t), \quad \forall S^t
\end{align*}
\]

Define: \( \mu(S^t) = \text{Lagrangian on Resource Constraint} \)
First order conditions imply:

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

**Testable Relationships:** Defining

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

Log consumption levels are:

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

Log growth rates, FOCs are:

$$
\ln \left( \frac{C^i_{t+1}}{C^i_t} \right) = -\frac{1}{\gamma} \left( \ln \left( \frac{\mu_{t+1}}{\delta \mu_t} \right) \right)
$$
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 $H_{\text{Alternative}}$

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!

<table>
<thead>
<tr>
<th>Log Consumption Growth Data Estimates in %</th>
<th>Some OECD countries from PWT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Canada</td>
</tr>
<tr>
<td>Mean</td>
<td>2.17</td>
</tr>
<tr>
<td>Std Dev**</td>
<td>3.51</td>
</tr>
<tr>
<td>AC 1</td>
<td>-0.07</td>
</tr>
</tbody>
</table>
• FMM response: take out common rolling trend
  – Calculate variance of deviations from this trend

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

where

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

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

\[ \ln\left( \frac{C_{t+1}^i}{C_t^i} \right) = g^i + x_t^i + \nu_{t+1}^i \]

\[ x_{t+1}^i = \rho^i x_t^i + \epsilon_{t+1}^i \]

“Long Run Risk” Component

explain asset return behavior with \( \gamma \neq \text{IES} \)

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

\[ \ln\left( \frac{C_t^i}{C_t^w} \right) = \ln\left( \frac{Q_t^i}{Q_t^w} \right) \Rightarrow \text{constant} \]

But more generally,

\[ \ln\left( \frac{C_t^i}{C_t^w} \right) = \ln\left( \frac{Q_t^i}{Q_t^w} \right) \Rightarrow \text{time varying} \]
• 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

\[
\ln \left( \frac{Q^i_t}{Q^w_t} \right) - \ln \left( \frac{C^i_t}{C^w_t} \right) = A_0 + A_1 x_t + A_2 x_t^i
\]

- World Long Run Risk
- 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