Discussion

“Limited Risk Sharing and International Equity Returns”

by Shaojun Zhang
Questions

:: Why are international equity markets more connected than macro variables?

:: Who are the beneficiaries of international financial market integration?
Answers

:: Limited stock market participation

:: Stock market participants
Contributions

:: Advances the success of the limited participation model in important ways
  ▶ Innovative new data
  ▶ Correlations and volatilities
  ▶ Asset pricing tests

:: Model/story works surprisingly well
  ▶ Low consumption correlations, high equity return correlations
  ▶ Sensible asset pricing properties
  ▶ Works for integrated markets, not segmented markets
• Takes the stockholder, non-stockholder empirical question to a two-country setting.

• In a way, you know that the story is going to push us in the right direction. So its very important to check it out quantitatively. It does surprisingly well. It delivers exactly the ingredients of the puzzle:
  – Low correlations in macro fundamentals, high correlations in international equity returns
  – Sensible asset price properties (low and stable risk free rate, high expected equity returns, high equity vol, lots of aggregate risk concentrated on a sub-group....
  – All of this vanishes if markets are segmented, not integrated ... explains what we see between U.S. and Europe and U.S. and Asia.
Comments
Comments

1: Calibration: cross-country income correlations very small

2: One good model: no relative prices
Income Correlations

Table 7: Benchmark Calibration: Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean of Wage Share</td>
<td>$L_0 = 0.75$</td>
</tr>
<tr>
<td>Mean of Dividend Share</td>
<td>$D_0 = 0.25$</td>
</tr>
<tr>
<td>Persistence of Wage</td>
<td>$\rho = 0.99$</td>
</tr>
<tr>
<td>Persistence of Dividend</td>
<td>$\kappa = 0.89$</td>
</tr>
<tr>
<td>Vol of Wage Shock</td>
<td>$\text{vol}(z) = 0.0120$</td>
</tr>
<tr>
<td>Vol of Dividend Shock</td>
<td>$\text{vol}(u) = 0.0065$</td>
</tr>
<tr>
<td>Corr of Wage and Dividend Shock</td>
<td>$\text{corr}(u_i, z_i) = -0.05$</td>
</tr>
<tr>
<td>Cross Corr of Wage Shock</td>
<td>$\text{corr}(z_1, z_2) = 0.39$</td>
</tr>
<tr>
<td>Cross Corr of Dividend Shock</td>
<td>$\text{corr}(u_1, u_2) = 0.13$</td>
</tr>
<tr>
<td>Cross Corr of the Two Shocks</td>
<td>$\text{corr}(u_i, z_j) = 0.06$</td>
</tr>
<tr>
<td>Non-stockholder EIS</td>
<td>$\sigma_n = 0.1$</td>
</tr>
<tr>
<td>Stockholder EIS</td>
<td>$\sigma = 0.3$</td>
</tr>
<tr>
<td>Non-stockholder Risk aversion</td>
<td>$\gamma_n = 10$</td>
</tr>
<tr>
<td>Stockholder Risk aversion</td>
<td>$\gamma = 10$</td>
</tr>
<tr>
<td>Discount factor</td>
<td>$\beta = 0.985$</td>
</tr>
<tr>
<td>Income Share of Stockholders</td>
<td>$\mu = 0.48$</td>
</tr>
<tr>
<td>Non-stockholder Borrowing Limit</td>
<td>$b_n = -0.39$</td>
</tr>
<tr>
<td>Stockholder Borrowing Limit</td>
<td>$b_s = -0.36$</td>
</tr>
</tbody>
</table>
Point: Half of the thing you’re trying to explain is kind of assumed.

- The puzzle is that consumption correlations are low and asset returns correlations are high.

- But here income correlations are really low, by any sort of NIPA standards. So getting low consumption correlations is partly baked in.

- Moreover, what this model does not deliver is one of the most important cross-country macro facts ... consumption correlations are lower than output correlations, the opposite of what most models of risk sharing imply. So one wonders if this model is really getting at the heart of the low consumption correlations part of the puzzle.

  – Where is this coming from? I’m not entirely sure? Financial income is closer to earnings than it is dividends. It is a crude measure of aggregate free cash flow (that doesn’t incorporate taxes, depreciation, etc.), not the more typical measure of dividends. Labor income is total compensation for employees, not the NIPA measure of labor’s share of GDP or something. It behaves quite differently across countries. Correlation of 0.4 instead of 0.8. Some discussion/justification is clearly warranted.
Point

:: Are the low consumption correlations baked in?

:: Key feature of data: income correlations *higher* than consumption correlations

:: Where is this coming from, vis-a-vis dividends & labor’s share?
Large Equity Correlations

Nevertheless ...

:: Model *does* deliver high equity-return correlations
   
   ▶ Low cash flow correlations offset by strong discount rate effect between home and foreign stockholders

:: But does one-good nature of the model sweep one of the defining characteristics of this literature under the rug?
• So the model kind of bakes in the low consumption correlations.

• Nevertheless, it DOES get the high return correlations .... in spite of the low cash flow correlations the discount rate effect from the stockholders plays a big role.

• But the one-good nature of the model makes me wonder if we’ve swept one of the defining features of this literature under the rug.
Relative Prices: Limitations of One-Good Model

Real exchange rates have played a central role in previous analysis of international risk sharing.

:: Cole-Obstfeld
• It’s worth noting that relative prices have played a central role in most questions regarding IRS. Most well known is Cole Obstfeld, who showed that relative price movements can generate full risk sharing even under financial autarky.

• So, naturally, this makes one wonder if the imperfect risk sharing that drives the low consumption correlations in this paper would survive the introduction of multiple goods. Probably not. Relative price movements would probably help these non-stockholders a lot.
Relative Price Variability:  \textit{Stockholders}

\[ d + (\lambda - \lambda^*) = m^* - m \]

\[ \sqrt{\text{Var}(\lambda - \lambda^*)} = \sqrt{\text{Var}(m^*) + \text{Var}(m) - 2\text{Cov}(m, m^*)} \]

\[ = \sqrt{.5^2 + .5^2 - \frac{1}{2} 0.5 \cdot 0.5^2} \]

\[ = 0.66 \]
Moreover, there's kind of a variability puzzle that BCS and others have highlighted.

In general the IMRS of H and F of STOCKHOLDERS are connected as follows.

A huge challenge to the literature has been that high variance in $m$ means that the LHS will have huge variance unless $m$ and $m^*$ are super-highly correlated. If $\lambda = 1$ then we can observe LHS and the high variance is very unrealistic.

Here, $d = 1$ but $\lambda$ is random. A back of the envelope estimate of its stdev is 63%.

This, of course, is a shadow price and I'd like to see the paper report it ... the variance in the difference in logs of STOCKHOLDER's lagrange multipliers. Probably too big?

The big issue asks if we relax $d = 1$ — surely the real exchange rate between stockholders is not 1.0 — does the lambda variation all get sucked into the $d$ variation, leaving us with a model characterized by the thing that people have struggled with for years.

Limited participation model with traded and non-traded goods

:: *Financial* market frictions aren’t enough

:: Cole-Obstfeld effect generates lots of risk-sharing between non-stockholders

:: *Goods* market frictions very helpful

:: Non-traded goods and distributions costs generate (i) limited risk sharing, (ii) sensible relative price behavior.

- These CMU students find that this is exactly what happens.
Takeaway

:: Important new data and theory

:: One-good model is a sensible place to begin

:: Robustness to multiple goods may be problematic because of relative price behavior