Lopez-Martin, Leal and Fritzscher’s ”Commodity Price Risk Management and Fiscal Policy in a Sovereign Default Model”

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Summary

Figure: Model

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Summary

- Fall in the price of oil can be smoothed by external borrowing, but if credit constraint is binding, adjustment involves a fall in public expenditures, increase in taxes, which lowers output.

- In this context, introduce three hedging instruments:
  1. indexed debt
  2. options
  3. forward contracts
  (all on the price of oil)

- **Result** (based on calibration to Mexico): Hedging reduces the volatility of a range of variables, and the welfare gains are substantial.

<table>
<thead>
<tr>
<th>Welfare gain</th>
<th>indexed bonds</th>
<th>forward sales</th>
<th>put options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.7%</td>
<td>3.4%</td>
<td>4.7%</td>
<td></td>
</tr>
</tbody>
</table>

Olivier Jeanne (JHU) | Lopez-Martin, Leal and Fritzschers’s "Commodity Price Risk Management and..."
I like the paper, it asks an important question and makes steps towards the answer

Comments

- Comment 1: country vs. government
- Comment 2: impact of hedging on external credit constraint
- Comment 3: welfare gain measurement
- Comment 4: assumptions about hedging
1) Country vs. government

- The model has a meaningful distinction between government and private sector
  - in particular no Ricardian equivalence because of distortionary taxes

- Good thing, but the paper seems to go only half-way in the right direction

- The private sector has no access to any financial instrument of any kind
  - it is not directly exposed to oil price risk either (implicit assumption about hedging?)

- From an analytical perspective, wouldn’t it preferable to clarify what’s new in a model with just a representative consumer?
2) Impact of hedging on external credit constraint

- Given consumer’s impatience, an important channel for welfare is the impact of hedging on the credit constraint
  - without opportunistic default hedging tends to relax the constraint (Borensztein et al, 2013)
  - but with opportunistic default? (this paper)

- Hedging tends to restrict the external credit constraint

<table>
<thead>
<tr>
<th></th>
<th>base</th>
<th>indexed bonds</th>
<th>forward sales</th>
<th>put options</th>
</tr>
</thead>
<tbody>
<tr>
<td>debt/GDP</td>
<td>0.236</td>
<td>0.164</td>
<td>0.209</td>
<td>0.230</td>
</tr>
</tbody>
</table>

- I would have expected a different result, at least in the case of options
  - for example, through strategic use of options to increase the cost of default

- Intuition?
3) Welfare gain measurement

- Puzzling result: hedging yields substantial welfare gains even though it restricts the external credit constraint

- This comes from how the welfare gains are measured in the paper

- Welfare gain from introducing a new instrument at a given point in time

\[ V_{new}(state_t) - V_{old}(state_t) \]

- In order to have a measure independent of initial conditions, take the average of this welfare gain in the "stochastic steady state" without instrument

\[ E_{old}(V_{new} - V_{old}) \]

- This is not what this paper does
Welfare gain measurement (cont’ed)

Instead, the authors compare the stochastic steady state with new instrument to the stochastic steady state without instruments

$$\mathbb{E}_{\text{new}} (V_{\text{new}}) - \mathbb{E}_{\text{old}} (V_{\text{old}})$$

By doing so they do not take into the welfare gain/cost of changing the credit constraint in the transition to the new equilibrium

- a restriction in the credit constraint will be counted as a welfare gain
4) Assumptions about hedging

- The benchmark model assumes that the government can issue only fully-indexed debt (repayment varies one-for-one with oil price)
  - this may lead to excessive indexation
  - intermediate indexation (or mix of indexed and non-indexed debt) should be the benchmark

- The put options are free
  - why?
  - how is it that they do not yield larger welfare gains?
Interesting paper

One issue needs to be clarified

- explain the impact of hedging on the external credit constraint
- measure the welfare gain of hedging in a way that takes into account its impact on the credit constraint

THANK YOU!