International Currency Portfolios

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NBER IFM Meeting || March 4, 2011

NYU STERN

This version: March 3, 2011

What's this about?

Questions

- Does intervention affect exchange rate? What does this mean?
- Should private agents hold foreign debt? How much?
- Do public positions in foreign debt substitute for private positions?

Plan

- What we knew already [this is harder than it looks]
- What we learn from Michael [how to do it right]
- What's left for the rest of us

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Portfolio balance models

Traditional Tobin-Brainard approach

- Specify private demand functions for assets
- Government changes supplies, moves you move along demand
- Recent apps: long/short, private assets, fx reserves

Appealing, but harder than it looks

- Demand for assets depends on their characteristics
- Hard to know characteristics until you solve the model
- Irrelevance highlights extreme cases: changes in supply entirely offset by changes in demand

Irrelevance theorems: Modigliani-Miller

Nature of theorems

- If A is an equilibrium, then B supports same allocation

Equilibrium consists of

- Agents maximize subject to constraints
- Government satisfies budget constraint
- Markets clear

Capital structure of a firm (Modigliani-Miller)

- Key input: equity is residual claim
- Note: demand for equity changes with leverage
- Issues: taxes, bankruptcy, incentives, ...

Irrelevance theorems: government finance

Key issues in any such theorem

- What's the residual?
  (money, bonds, taxes, spending, ...)
- Is it irrelevant?
  (money neutrality, lump-sum taxes, complete markets, ...)

Government finance

- Money and capital
- Nominal and indexed debt
- **Domestic and foreign-denominated debt**

Bottom line

- Impact depends on policy, economic structure
- Complicated, but not empirical

Model: mechanics

Two countries, two goods (one each)

Governments

- Stochastic purchases of home goods
- Stochastic money growth
- Lump-sum taxes
- Liabilities: money, bonds, foreign bonds (residual)

Linear technology: $y = rK$, r constant

Representative consumers in each country

- Log utility, Cobb-Douglas aggregator with home bias
- Cash constraint [$\Rightarrow$ inflation tax]
- Portfolio choice: domestic capital, domestic and foreign bonds, domestic money [$\Rightarrow$ incomplete markets]

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Model: results

Increase variance of money growth

$\Rightarrow$ higher exchange rate volatility, lower bond returns

Increase variance of government purchases

$\Rightarrow$ higher price volatility, lower bond returns

Increase ratio of debt to GDP

$\Rightarrow$ lower price volatility, higher bond returns

Unanticipated purchase of foreign debt

$\Rightarrow$ price level falls, valuation effects?

Thoughts for future work

Make it simpler

- Is loglinear approximation possible?
- Closed economy government finance problems?

Make it more complicated

- Vary elasticity of substitution? [Cole-Obstfeld?]
- Restrict private agents to domestic bonds? [China]
- Short-run liquidity effects?

Exchange rates and intervention

- Let reserves respond to exchange rate: does it matter?

Related work

Portfolio balance approach

- Govt finance: Haliassos & Tobin, Handbook, 1988
- Exchange rates: Branson, de Macedo, Kouri, Tobin

Irrelevance in macroeconomics

- Correia, Nicolini, & Teles, JPE, 2008
- Peled, JME, 1985
- Sargent and Smith, AER, 1987
- Wallace, AER, 1981
- Good summary in Sargent's red book, ch 8

Supply and demand in financial markets

- Duffie, JF, 2010
- Garleanu, Pedersen, & Poteshman, RFS, 2009