Rethinking the Effects of Financial Liberalization

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Some facts

- What are the effects of financial liberalization in emerging markets?

- The conventional view was that liberalization would lead to
  - capital inflows
  - higher investment and growth
  - international risk sharing
  - development of domestic financial markets
  - higher welfare
Some facts

- What are the effects of financial liberalization in emerging markets?
- The conventional view was that liberalization would lead to
  - capital inflows
  - higher investment and growth
  - international risk sharing
  - development of domestic financial markets
  - higher welfare
- However, liberalization has led to
  - small, volatile, and procyclical net capital flows
  - unchanged or even lower investment and growth
  - higher consumption volatility
  - domestic markets which are unstable and prone to crises
  - welfare?
A model of financial liberalization based on sovereign risk

- Standard ingredients
  - government only cares about domestic residents
  - it cannot commit to enforce payments
  - constrained asset trade with foreigners
A model of financial liberalization based on sovereign risk

- Standard ingredients
  - government only cares about domestic residents
  - it cannot commit to enforce payments
  - constrained asset trade with foreigners

- New ingredients
  - heterogeneity within country → scope for domestic asset trade
  - government cannot discriminate between domestic and foreign creditors
  - interactions between domestic and foreign asset trade
    - temptation to default on foreigners may lead to domestic default
    - cost of domestic default may lead to repayment to foreigners
Preferences, technology, and assets

- Emerging market (EM) lasts for two periods: Today ($t = 0$) and Tomorrow ($t = 1$)
- Inhabited by individuals $i \in [0, 1]$ and a government
Preferences, technology, and assets

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- Inhabited by individuals $i \in [0, 1]$ and a government

- Individual $i$
  - maximizes expected utility of consumption Tomorrow: $\max E[u(c(i))]$
  - receives endowment Today: $y \leq 1$
  - can invest in project that requires investment $1$ Today and delivers $A(i)$ Tomorrow
  - $A(i)$ is decreasing in $i$
  - can borrow Today by selling domestic bonds, but repays only if government enforces payments
  - can lend Today by buying domestic and foreign bonds, but gets repaid on domestic bonds only if government enforces payments
Preferences, technology, and assets

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- Government
  - chooses enforcement to maximize average utility of domestic residents
  - announces Today enforcement policy for Tomorrow
  - with probability \(1 - \pi\) it keeps its promises
    - with probability \(\pi\) it behaves opportunistically
  - \((1 - \pi)\) is a measure of the strength of institutions
Preferences, technology, and assets

- Note: To find the equilibrium
  - conjecture first that there is always enforcement
  - solve the model
  - check if ex-post government prefers to enforce
    * if it does, there is always enforcement
    * if it does not, solve model without enforcement when government is opportunistic
Autarky

- Individual maximization implies that \( i \) invests if \( A(i) \geq R \) so for the threshold individual \( \bar{i} \)

\[
A(\bar{i}) = R
\]

- Since all the endowment is invested, aggregate investment is

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\bar{i} = y
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- The hurdle rate for projects, which equals the interest rate on domestic bonds, is

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R = A(y)
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- Individual and aggregate consumption are given by
  \[
  c(i) = \begin{cases} 
  A(i) - A(y) \cdot (1 - y) & \text{if } i \leq y \\
  A(y) \cdot y & \text{if } i > y
  \end{cases}
  \]
  \[
  c = \int_0^y A(i) \cdot di
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\end{cases}
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\[
c = \int_{0}^{y} A(i) \cdot di
\]

- The government chooses to enforce since payments are from individuals with low marginal utility to individuals with high marginal utility.
Financial liberalization

- EM can now borrow from or lend to an international financial market (IFM) that
  - acts competitively, is risk neutral, does not discount the future, and can commit to make payments
  - buys or sells any asset offering zero expected return
  - assume EM is relatively poor/productive: $A(y) \geq 1$
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- Assumption (NON-DISCRIMINATION): government may either enforce all payments or enforce none
  - enforcement of payments to domestic creditors may be lost
  - enforcement of payments to foreign creditors may take place
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- Three steps:
  - solve model under full enforcement
  - characterize enforcement trade off and, if enforcement is not possible,
  - solve model under enforcement failure
Financial liberalization: Full enforcement

- Gross interest rate on domestic and foreign bonds
  \[ R = R^* = 1 \]

- Consumption and investment are given by
  \[ c(i) = \begin{cases} 
  A(i) - (1 - y) & \text{if } i \leq \bar{i} \\
  y & \text{if } i > \bar{i}
  \end{cases} \]
  \[ A(\bar{i}) = R = 1 \]
  \[ c = \int_{0}^{\bar{i}} A(i) \cdot di - (\bar{i} - y) \]
Financial liberalization: Enforcement trade off

- If government enforces, consumption is given by
  \[ c(i) = \begin{cases} 
  A(i) - (1 - y) & \text{if } i \leq \bar{i} \\
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  \end{cases} \]

- If government does not enforce, consumption is given by
  \[ c^{NE}(i) = \begin{cases} 
  A(i) & \text{if } i \leq \bar{i} \\
  0 & \text{if } i > \bar{i} 
  \end{cases} \]

- Government enforces if
  \[
  (1 - \bar{i}) \cdot [u(y) - u(0)] \geq \int_0^{\bar{i}} [u(A(i)) - u(A(i) - (1 - y))] \cdot di
  \]

  - LHS is gain to (domestic) savers. RHS is loss to borrowers
  - enforcement lowers average consumption, but improves distribution
Financial liberalization: Enforcement trade off

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- Enforcement is facilitated by higher
  - initial endowment \( y \): increases size of domestic payments and decreases size of foreign payments
  - variance of domestic productivities: increases size of domestic payments relative to foreign ones
  - risk aversion: increases importance of redistribution
Financial liberalization: Enforcement failure

- Gross interest rate on domestic and foreign bonds are actuarially fair

\[ R = \frac{1}{1 - \pi} \quad \text{and} \quad R^* = 1 \]

- Since domestic bonds are risky and the risk premium is zero, only IFM buys domestic bonds
Financial liberalization: Enforcement failure

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\[
c_E(i) = \begin{cases} 
A(i) - \frac{1 - y}{1 - \pi} & \text{if} \ i \leq \bar{i} \\
y & \text{if} \ i > \bar{i}
\end{cases}
\]

\[
c_N(i) = \begin{cases} 
A(i) & \text{if} \ i \leq \bar{i} \\
y & \text{if} \ i > \bar{i}
\end{cases}
\]

\[
(1 - \pi) \cdot u \left( A(\bar{i}) - \frac{1 - y}{1 - \pi} \right) + \pi \cdot u(A(\bar{i})) = u(y) \quad \Rightarrow \quad A(\bar{i}) > 1
\]

\[
c_E = \int_0^{\bar{i}} A(i) \cdot di - \bar{i} \cdot \frac{1 - y}{1 - \pi} + (1 - \bar{i}) \cdot y \quad \text{and} \quad c_N = \int_0^{\bar{i}} A(i) \cdot di + (1 - \bar{i}) \cdot y
\]
Financial liberalization: Enforcement failure

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- Consumption and investment are characterized by

\[ c_E(i) = \begin{cases} \frac{A(i) - \left(1 - \frac{1 - y}{1 - \pi}\right)}{y} & \text{if } i \leq \bar{i} \\ \frac{1 - y}{1 - \pi} & \text{if } i > \bar{i} \end{cases} \quad \text{and} \quad c_N(i) = \begin{cases} A(i) & \text{if } i \leq \bar{i} \\ \frac{1 - y}{1 - \pi} & \text{if } i > \bar{i} \end{cases} \]

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- Investment is low when enforcement risk is high, i.e. when
  - institutions are weak (high \(\pi\)): payments are more concentrated for a given level of debt
  - endowment \(y\) is low: payments are larger for a given probability of repayment
Poor country – No discrimination
The effects of financial liberalization

- Effects depend on whether liberalization affects enforcement
The effects of financial liberalization

- Effects depend on whether liberalization affects enforcement

- Enforcement is maintained when EM is rich/unproductive or somewhat poor/productive ($y$ not too low)
  - the temptation to default on foreigners is not strong enough
  - liberalization has even more positive effects than in traditional models (complete markets)
The effects of financial liberalization

- Effects depend on whether liberalization affects enforcement
  - Enforcement is maintained when EM is rich/unproductive or somewhat poor/productive \((y\) not too low)  
    - the temptation to default on foreigners is not strong enough  
    - liberalization has even more positive effects than in traditional models (complete markets)
  - Enforcement worsens when EM is very poor/productive \((y\) low)  
    - temptation to default on foreigners is too strong  
    - enforcement is lost when government acts opportunistically  
    - if institutions are strong \((\pi \approx 0)\), enforcement is only lost with small probability  
    - if institutions are weak, effects of liberalization are very different from traditional models
The effects of financial liberalization

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  - if institutions are strong ($\pi \approx 0$), enforcement is only lost with small probability
  - if institutions are weak, effects of liberalization are very different from traditional models

- If EM is poor/productive and institutions are weak, liberalization results in
  - lower investment, lower growth, capital outflows: borrowing becomes very risky
  - higher aggregate consumption volatility: EM receives payments when enforcement fails, makes more payments when there is enforcement
  - higher individual consumption volatility: domestic risk sharing is destroyed
  - instability in domestic financial markets: all domestic trade is lost
  - lower welfare: savers lend at a lower rate and borrowers are subject to enforcement risk
Strong institutions

\[ \Delta w \]

- Discrimination
- No discrimination

\[ A^{-1}(1) \]
Weak institutions

Δw

Discrimination

No discrimination

A^{-1}(1)

1

y
Final remarks

- We propose a simple model that accounts for effects of financial liberalization in emerging markets
  - small, volatile, and procyclical net capital flows
  - unchanged or even lower investment and growth
  - higher consumption volatility
  - domestic markets which are unstable and prone to crises

- In traditional models, either there is no heterogeneity or enforcement is discriminatory
  - results qualitatively similar to complete-markets model

- In our model, there is heterogeneity and enforcement is non-discriminatory
  - interactions between domestic and international asset trade
  - results qualitatively different from complete-markets model

- Important implications for
  - welfare effects of financial liberalizations
  - policy and design of optimal financial systems