Rethinking the Effects of Financial Liberalization in Emerging Markets

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An *emerging market* is a country with high but uncertain growth potential.

What are the effects of financial liberalization in an emerging market? We focus on:
- consumption, investment, growth, and welfare

Conventional view is that consumption stabilizes, investment and growth increase, and welfare improves.

But we know that in some emerging markets financial liberalization has led to:
- increase in consumption volatility
- current account surpluses
- reduction in investment and growth

Why does this happen? What are the welfare implications?
A model of asset trade with endogenous enforcement

- Two periods, Today and Tomorrow (with state $s \in S$ occurring with prob $\pi_s$)
- Consider a country with many individuals, $i \in I$, that maximize

$$u(c_{i0}) + \beta \cdot \int_{s \in S} \pi_s \cdot u(c_{is})$$

subject to

$$(c_{i0} - y_{i0}) + \int_{s \in S} \pi_s \cdot \frac{(c_{is} - y_{is})}{R_s} = 0$$

$$c_{is} \geq y_{is} \text{ if } s \notin E$$

FOC’s are given by

$$u'(c_{is}) = \begin{cases} 
    \frac{u'(c_{i0})}{\beta \cdot R_s} & \text{ if } s \in U_i \\
    \frac{u'(y_{is})}{\beta \cdot R_s} & \text{ if } s \notin U_i 
\end{cases}$$

$$U_i = \{ s \in S : s \in E \text{ or } u'(c_{i0}) \leq \beta \cdot R_s \cdot u'(y_{is}) \}$$

where $U_i$ are states for which borrowing constraint does not bind for $i$

- From now on we assume $u(\cdot) = \ln(\cdot)$

- What determines enforcement?
  - With strong institutions, $E = S$
  - With weak institutions, $E$ results from maximizing ex-post average utility in each state
Autarky equilibrium

- Prices clear domestic markets
  \[ R_s = \begin{cases} \beta^{-1} \cdot \frac{y_s}{y_0} & \text{if } s \in E \\ 0 & \text{if } s \notin E \end{cases} \]

- Then \( U_i = E \) and equilibrium consumption is
  \[ c_{i0} = \frac{\omega_i}{\omega} \cdot y_0 \] and
  \[ c_{is} = \begin{cases} \frac{\omega_i}{\omega} \cdot y_s & \text{if } s \in E \\ \frac{\omega_i}{y_{is}} & \text{if } s \notin E \end{cases} \]
  where \( \frac{\omega_i}{\omega} \) is the relative wealth of \( i \)
  \[ \frac{\omega_i}{\omega} = \frac{y_{i0}}{y_0} + \beta \cdot \int_{s \in E} \pi_s \cdot \frac{y_{is}}{y_s} \cdot 1 + \beta \cdot \int_{s \in E} \pi_s \]

- If the country has weak institutions any proposed \( E \) must satisfy
  \[ \int_{i \in I} \ln c_{is} - \int_{i \in I} \ln y_{is} \geq 0 \text{ for all } s \in E \]
Trade equilibrium

- Rest-of-world has good institutions \((E^* = S)\) and is large

- Prices clear world markets

\[
R_s = R^*_s = \beta^{-1} \cdot \frac{y^*_s}{y_0^*} \quad \text{for all } s \in S
\]

- Then \(U_i \equiv \left\{ s \in S : s \in E \text{ or } \frac{y_{is}}{y_s^*} \leq \frac{\omega_i}{\omega^*} \right\}\) and equilibrium consumption is

\[
c_{i0} = \frac{\omega_i}{\omega^*} \cdot y_0^* \quad \text{and} \quad c_{is} = \left\{ \begin{array}{ll}
\frac{\omega_i}{\omega^*} \cdot y_s^* & \text{if } s \in U_i \\
\frac{\omega_i}{\omega^*} \cdot y_{is} & \text{if } s \notin U_i
\end{array} \right.
\]

where \(\frac{\omega_i}{\omega^*}\) is the relative wealth of \(i\)

\[
\frac{\omega_i}{\omega^*} = \frac{y_{i0}}{y_0^*} + \beta \cdot \int_{s \in U_i} \pi_s \cdot \frac{y_{is}}{y_s^*} \quad \frac{1}{1 + \beta \cdot \int_{s \in U_i} \pi_s}
\]

- If the country has weak institutions any proposed \(E\) must satisfy

\[
\int_{i \in I} \ln c_{is} - \int_{i \in I} \ln (y_{is} + x_{is}^*) \geq 0 \quad \text{for all } s \in E
\]
The experiment

- Financial liberalization is a move from autarky to trade

- Before trade liberalization prices are

\[ R_s = \begin{cases} \beta^{-1} \cdot \frac{y_s}{y_0} & \text{if } s \in E \\ 0 & \text{if } s \notin E \end{cases} \]

- Rest-of-world has strong institutions \((E^* = S)\), flat endowments \((y^*_s = y^*_0 \text{ for all } s \in S)\), and is large

- After trade liberalization prices are

\[ R_s = R^*_s = \beta^{-1} \text{ for all } s \in S \]

  - interest rate equal to (inverse of) time preference
  - insurance at actuarially fair prices

- An emerging market is a country with high but uncertain growth potential

\[ \int_{s \in S} \pi_s \cdot \left( \frac{y_s}{y_0} \right) \geq 1 \]

- To simplify, we assume \( S = \{G, B\} \) with \( \pi_G = \pi_B = \frac{1}{2} \)
Financial liberalization with strong institutions: the conventional view

- Before liberalization, individual and aggregate consumption move one-to-one

\[ c_{i0} = \frac{\omega_i}{\omega} \cdot y_0, \quad c_{iB} = \frac{\omega_i}{\omega} \cdot y_B \quad \text{and} \quad c_{iG} = \frac{\omega_i}{\omega} \cdot y_G \]

\[ c_0 = y_0, \quad c_B = y_B \quad \text{and} \quad c_G = y_G \]

where

\[ \frac{\omega_i}{\omega} = \frac{1}{1 + \beta} \cdot \left( \frac{y_{i0}}{y_0} + \beta \cdot \frac{1}{2} \cdot \left( \frac{y_{iB}}{y_B} + \frac{y_{iG}}{y_G} \right) \right) \]

- After liberalization, individual and aggregate consumption are both flat

\[ c_{i0} = c_{iB} = c_{iBG} = \frac{1}{1 + \beta} \cdot \left( y_{i0} + \beta \cdot \frac{1}{2} \cdot (y_{iB} + y_{iG}) \right) \]

\[ c_0 = c_B = c_G = \frac{1}{1 + \beta} \cdot \left( y_0 + \beta \cdot \frac{1}{2} \cdot (y_B + y_G) \right) \]

- Financial markets allow countries to smooth consumption even if output fluctuates over time and across states of nature
Financial liberalization revisited: the case of weak institutions

Example #1: Why do high-growing countries run current account surpluses?

- *(Borrowing and lending model)* Assume $y_i B = y_i G = y_i I$ and $\beta = 1$
- Assume $E^A = E^T = \emptyset$
- Before liberalization, there is both individual and country autarky
  \[
  c_i 0 = y_i 0 \quad \text{and} \quad c_i 1 = y_i 1
  \]
  \[
  c_0 = y_0 \quad \text{and} \quad c_1 = y_1
  \]
- After liberalization, we have instead that

  \[
  c_i 0 = \begin{cases} 
  \frac{1}{2} \cdot (y_i 0 + y_i 1) & \text{if } i \in I^U \\
  y_i 0 & \text{if } i \notin I^U
  \end{cases} 
  \quad \text{and} \quad
  c_i 1 = \begin{cases} 
  \frac{1}{2} \cdot (y_i 0 + y_i 1) & \text{if } i \in I^U \\
  y_i 1 & \text{if } i \notin I^U
  \end{cases}
  \]

  \[
  c_0 = y_0 - \frac{1}{2} \cdot \int_{i \in I^U} (y_i 0 - y_i 1) \quad \text{and} \quad c_1 = y_1 + \frac{1}{2} \cdot \int_{i \in I^U} (y_i 0 - y_i 1)
  \]

  where $I^U = \{ i \in I \mid y_i 1 \leq y_i 0 \}$

- Aggregate consumption volatility increases
- Welfare increases: $I - I^U$ are not affected, $I^U$ are better off and lend now
Financial liberalization revisited: the case of weak institutions

Example #1: Why do high-growing countries run current account surpluses?

- How does financial liberalization affect enforcement?

- Before liberalization, there is enforcement if

\[
\int_{i \in I} \ln \left( \frac{\omega_i}{\omega} \right)^A - \int_{i \in I} \ln \left( \frac{y_{i1}}{y_1} \right) \geq 0
\]

- After liberalization, there is enforcement if

\[
\int_{i \in I} \ln \left( \frac{\omega_i}{\omega} \right)^T - \int_{i \in I} \ln \left( \frac{y_{i1}}{y_1} \right) \geq \ln \frac{y_1}{\frac{1}{2} \cdot (y_0 + y_1)} (> 0)
\]

- Unless terms-of-trade effects increase inequality a lot, incentives to enforce payments are reduced
  
  - Why? Not enforcing now brings the benefits of defaulting on foreign payments

- If financial liberalization lowers enforcement (\(E^A = S, E^T = \emptyset\)), aggregate consumption volatility still increases but now welfare is reduced
  
  - Autarky borrowers become constrained and cannot borrow now
  - Autarky lenders lend at worst terms or become constrained
Financial liberalization revisited: the case of weak institutions

Example #2: **Why does financial liberalization increase consumption volatility?**

- *(Insurance model)* Assume \( y_{iB} < y_{iG} \) and \( \beta = +\infty \)
- Assume \( E^A = E^T = \{B\} \)
- Before liberalization, there is both individual and country autarky
  \[
  c_{iB} = y_{iB} \quad \text{and} \quad c_{iG} = y_{iG}
  \]
  \[
  c_B = y_B \quad \text{and} \quad c_G = y_G
  \]
- After liberalization, we have instead that
  \[
  c_{iB} = \begin{cases} 
  \frac{1}{2} \cdot (y_{iB} + y_{iG}) & \text{if } i \in I^U \\
  y_{iB} & \text{if } i \notin I^U 
  \end{cases}
  \quad \text{and} \quad
  c_{iG} = \begin{cases} 
  \frac{1}{2} \cdot (y_{iB} + y_{iG}) & \text{if } i \in I^U \\
  y_{iG} & \text{if } i \notin I^U 
  \end{cases}
  \]
  \[
  c_B = y_B - \frac{1}{2} \cdot \int_{i \in I^U} (y_{iB} - y_{iG}) \quad \text{and} \quad c_G = y_G + \frac{1}{2} \cdot \int_{i \in I^U} (y_{iB} - y_{iG})
  \]
  where \( I^U = \{i \in I \mid y_{iG} \leq y_{iB}\} \)
- Aggregate consumption volatility increases
- Welfare increases: \( I - I^U \) are not affected, \( I^U \) are better off and get insurance now
- If \( E^A = E^T = \{G\} \), welfare still increases but aggregate consumption volatility decreases
Financial liberalization revisited: the case of weak institutions

Example #2: Why does financial liberalization increase consumption volatility?

- How does financial liberalization affect enforcement?

- Before liberalization, there is enforcement if

\[
\int_{i \in I} \ln \left( \frac{\omega_i}{\omega} \right)^A - \int_{i \in I} \ln \left( \frac{y_i}{y_B} \right) \geq 0 \quad \text{and} \quad \int_{i \in I} \ln \left( \frac{\omega_i}{\omega} \right)^A - \int_{i \in I} \ln \left( \frac{y_i}{y_G} \right) \geq 0
\]

- After liberalization, there is enforcement if

\[
\int_{i \in I} \ln \left( \frac{\omega_i}{\omega} \right)^T - \int_{i \in I} \ln \left( \frac{y_i}{y_B} \right) \geq 0 \quad \text{and} \quad \int_{i \in I} \ln \left( \frac{\omega_i}{\omega} \right)^T - \int_{i \in I} \ln \left( \frac{y_i}{y_G} \right) \geq \ln \frac{y_G}{\frac{1}{2} \cdot (y_B + y_G)} (> 0)
\]

- Unless terms-of-trade effects increase inequality a lot
  
  - incentives to enforce are not affected in bad times
  
  - incentives to enforce are reduced in good times since it means defaulting on foreign payments

- If financial liberalization lowers enforcement in good times \((E^A = S, E^T = \{B\})\), consumption volatility still increases but now welfare is reduced
  
  - Pro-cyclical become constrained and cannot get insurance now
  
  - Counter-cyclical get insurance at worse terms or become constrained
Investment and growth

- Assume now that there is investment Today, \( k_i \), and production Tomorrow, \( F_{is}(k_i) \)

- Individuals now maximize

\[
\ln(c_{i0}) + \beta \cdot \int_{s \in S} \pi_s \cdot \ln(c_{is})
\]

subject to

\[
(c_{i0} + k_i - y_{i0}) + \int_{s \in S} \pi_s \cdot \frac{(c_{is} - F_{is}(k_i))}{R_s} \leq 0
\]

\[
c_{is} \geq y_{is} \text{ if } s \notin E
\]

FOC's are given by

\[
u'(c_{is}) = \begin{cases} 
\frac{u'(c_{i0})}{\beta \cdot R_s} & \text{if } s \in U_i \\
\frac{u'(F_{is}(k_i))}{u'(c_{i0})} & \text{if } s \notin U_i
\end{cases}
\]

\[
1 = \int_{s \in U_i} \pi_s \cdot \frac{1}{R_s} \cdot F'_{is}(k_i) + \int_{s \notin U_i} \pi_s \cdot \frac{\beta \cdot u'(F_{is}(k_i))}{u'(c_{i0})} \cdot F'_{is}(k_i)
\]

\[
U_i = \{s \in S : s \in E \text{ or } u'(c_{i0}) \leq \beta \cdot R_s \cdot u'(F_{is}(k_i))\}
\]

- With strong institutions \((E^T = E^A = S)\), financial liberalization raises investment and growth

- With weak institutions \((E^T \text{ and } E^A \text{ endogenous})\)
  - investment and growth might fall since unproductive individuals invest less and lend abroad
  - decline in enforcement and welfare more likely due to potential effect of liberalization on investment
Final remarks

- What are the effects of financial liberalization in an emerging market? We focus on
  - consumption, investment, growth, and welfare

- Conventional view is that consumption stabilizes, investment and growth increase, and welfare improves

- But we find that when institutions are weak financial liberalization might lead to
  - increase in consumption volatility
  - current account surpluses
  - reduction in investment and growth
  - decline in enforcement

- The net effect on welfare might be negative if the decline in enforcement is severe enough