Financial Globalization and Risk Sharing: Welfare Effects and the Optimality of Open Markets

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Implications for Monetary Policy and Financial Regulation

The Debate

- Financial Globalization – opening capital markets to foreign investors – has **benefits** and **costs**
  - Schmukler (2003); Kaminsky & Schmukler (2004)
- Benefits: Lower cost of capital, Growth
- Positive impact of financial globalization is limited
  - Prasad, Rogoff, Wei, and Kose (IMF 2003); Bhagwati (1998); Rodrik (1998, 2000)
- The empirical evidence is mixed
  - Stulz (AFA 2005)
- Needed: A neo-classical model that captures both sides of the debate to **understand the trade-off,** and **explain reversals, and incorporate growth**

Literature: Foundation

- Impact of restrictions on the portfolio problem and on asset prices (cost of capital)
  - Black (JFE 74); Stulz (JF, JFE 81); Errunza & Losq (JF 85); Eun & Janakiramanan (JF 86); Alexander, Eun & Janakiramanan (JF 87); Basak (JFQA 96);

- Welfare effects of barriers
  - Subrahmanyam (JFE 75; 1975); Stapleton & Subrahmanyam (JF 77) **Errunza & Losq (JF 89); Obstfeld (AER 94)**

  - **Integration is Pareto Optimal**
- Limitations
  - Take barriers as given (exogenous)
  - Homogenous Agents

An internal contradiction?

- If a model begins by assuming barriers…
- And then shows that when barriers are removed, everyone is better off…
- Then why do the barriers exist in the first place?

- Such models are not designed to explain barriers
- Useful insights on the cost of capital…

Literature: Growth & Efficiency

- A country's financial system affects economic growth
  - King & Levine (QJE 93); Levine & Zervos (AER 98); Rajan & Zingales (AER 98); Demirguc-Kunt & Maksimovic (JF 98); Beck et al. (JME '00, JFE '00); Bekaert et al. (2005)

- Cost of capital drops with allowing foreign investors in
  - Bekaert & Harvey (JF 2000); Errunza & Miller (JFQA 2000)

- There are **reversals** in financial development (Rajan & Zingales JFE '03) and **time variation in integration** (Bekaert & Harvey JF 95; Kaminsky & Schmukler 2004)

Research Questions

- Rational **economic** framework for the existence of barriers
  - Build on existing foundation
  - Consistent with CAPM cost of capital predictions
  - Link asset pricing, risk sharing, and participation
  - Can we capture growth?
- Can we model both **costs** and **benefits** of openness in a rational economic model?
  - Endogenous liberalization decision
- Understand economics of resistance to liberalization
  - Develop policy implications

The Model: Main Features

- Approach: Measure Welfare and Find Asset Prices
- General Equilibrium (GEI)
- Based on standard CARA-Normal models
- Heterogeneous Agents
  - **Endogenous motive to trade** to hedge the risk in their endowment income (Consumption CAPM)
  - Different endowment risk and payoff
- Endogenous **participation decision**
  - Agent decide whether or not to participate in the risky asset market
  - Important new feature

- Trading at time 0; Uncertainty is resolved at time 1
- Two **risky assets**: domestic ($m=d$) and foreign ($m=f$)
  - Load on one "risk factor" each; orthogonal factors

$$\widetilde{z}_m = \overline{z}_m + \beta_m \cdot \widetilde{f}_m + \widetilde{\varepsilon}_m$$

Market (d or f)

Risk factor (random)

  - **Risk-free** asset
- Agents receive risky endowment payoff

$$\widetilde{e}^h = \overline{e}^h + b_m^h \cdot \widetilde{f}_m + \widetilde{\varepsilon}_m^h$$

Heterogeneity:

Agent-specific factor loading

- Initial wealth W_0^h

- Utility of consumption
$$\hat{U}(c_0, c_1) = -e^{-ac_0} - \delta e^{-ac_1}, \quad \delta \in (0,1)$$

- Fixed fee to participate in risky asset market, **k**.

- **k** is the lifetime cost of being an investor
  - Costs impact investment policy (Abel and Eberly *AER* 1994; *REStud* 1996)

- Participation decision depends on investment opportunities.

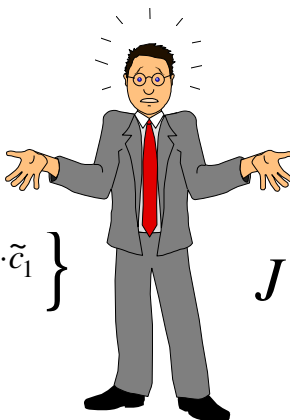# **Agents:** Participation Decision

Participant (p)

Non-Participant (n)

$$J^p\left[W_0^h\right] = \max\left\{-e^{-a \cdot c_0} - \delta \cdot Ee^{-a \cdot \tilde{c}_1}\right\}$$

$$J^n\left[W_0^h\right] = \max\left\{-e^{-a \cdot c_0} - \delta \cdot Ee^{-a \cdot \tilde{c}_1}\right\}$$

c_0^h - Consumption

θ - Demand for Risky assets

c_0^h - Consumption

θ_0 - Bond Holdings

θ_0 - Bond Holdings

$W_0^h = c_0^h + \mathbf{p'} \cdot \mathbf{\theta} + \theta_0 / R + k_m$

$W_0^h = c_0^h + \theta_0 / R$

- Should I incur **k** and invest in risky assets?
  – It depends on the quality of the available investment opportunities

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Agents: Insights

- Generalized Sharpe Ratio Squared is important:
  - Measures quality of investment opportunities

$$S_m^2(h) = \left(\overline{\mathbf{z}}_m - R \cdot \mathbf{p}_m - a \cdot \mathbf{Cov}[\widetilde{e}^h, \widetilde{z}_m]\right)' \mathbf{\Sigma}_m^{-1} (\bullet)$$

- Participant's utility depends on it:

$$J^p\left[W_0^h\right] = f\left(W_0^h; S_m^2(h); \bullet\right)$$

- Participation criterion:

Benefits

Any CARA-Normal Economy

$$S_m^2(h) > 2 \cdot a \cdot R \cdot k_m$$

Costs

- Liberalization affects the set of investment opportunities and prices
  - Affects utility and set of participants

Equilibrium
Asset Pricing with Endogenous Participation

- Several Quantities are **jointly** determined
- Asset prices (domestic and foreign)
  - Supply equals demand from all **participants**
  - Price depends on covariance with the average terminal endowment of all participants (CCAPM is a special case)

$$\widetilde{e}^{M^p} \equiv \int_{M^p} \widetilde{e}^h dP(h)$$

- The sets of domestic and foreign investors who participate
- Liberalization decision affect these quantities

Analysis of Liberalization

- Compare equilibria under Segmentation and Liberalization
  - Segmentation: Investors invest in their own country only
  - Liberalization: Domestic - invest at home; Foreign invest in both foreign and domestic assets
  - The results hold when all investors can invest in all markets
- Results apply to a broad class of economies
  - For tractability assume that factor loadings are **uniformly** distributed in the population
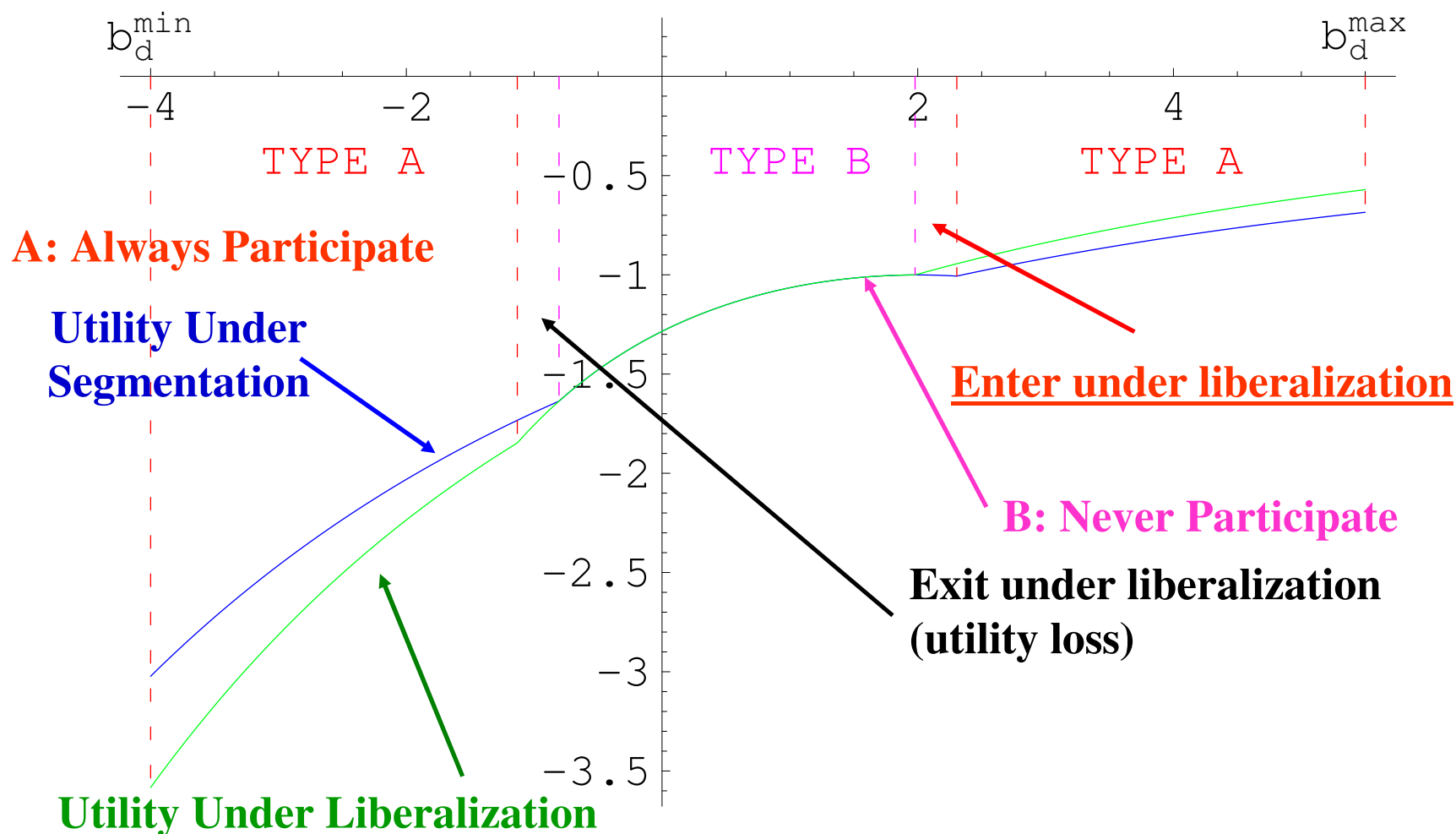
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Effects of Liberalization

- Price of domestic asset rises (cost of capital falls)
- Welfare & Participation effects
- Classes of agents
  - Type A: Always Participate
  - Type B: Never Participate
  - Type C: Participate only under liberalization
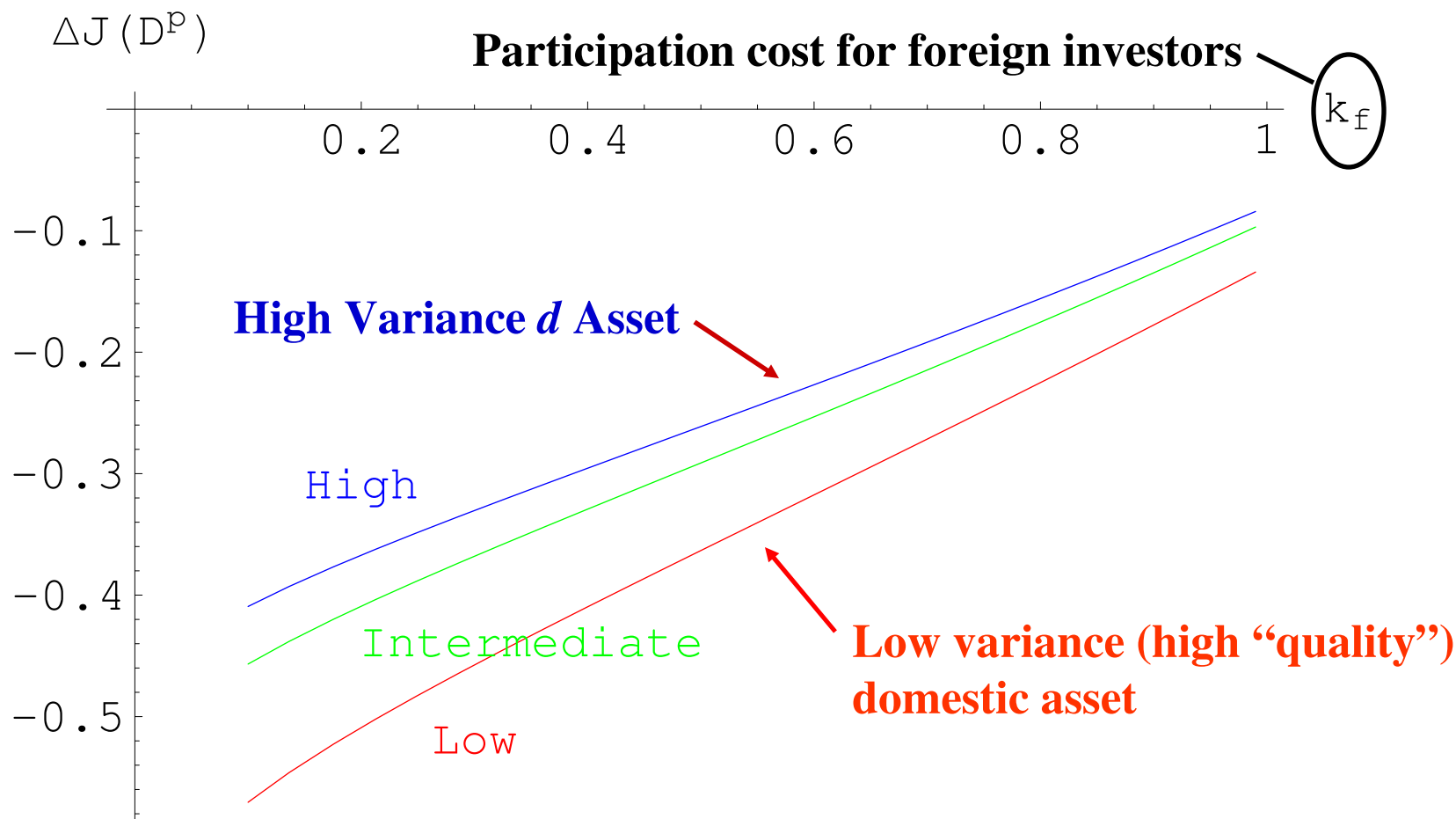 - Type D: Participate only under segmentation
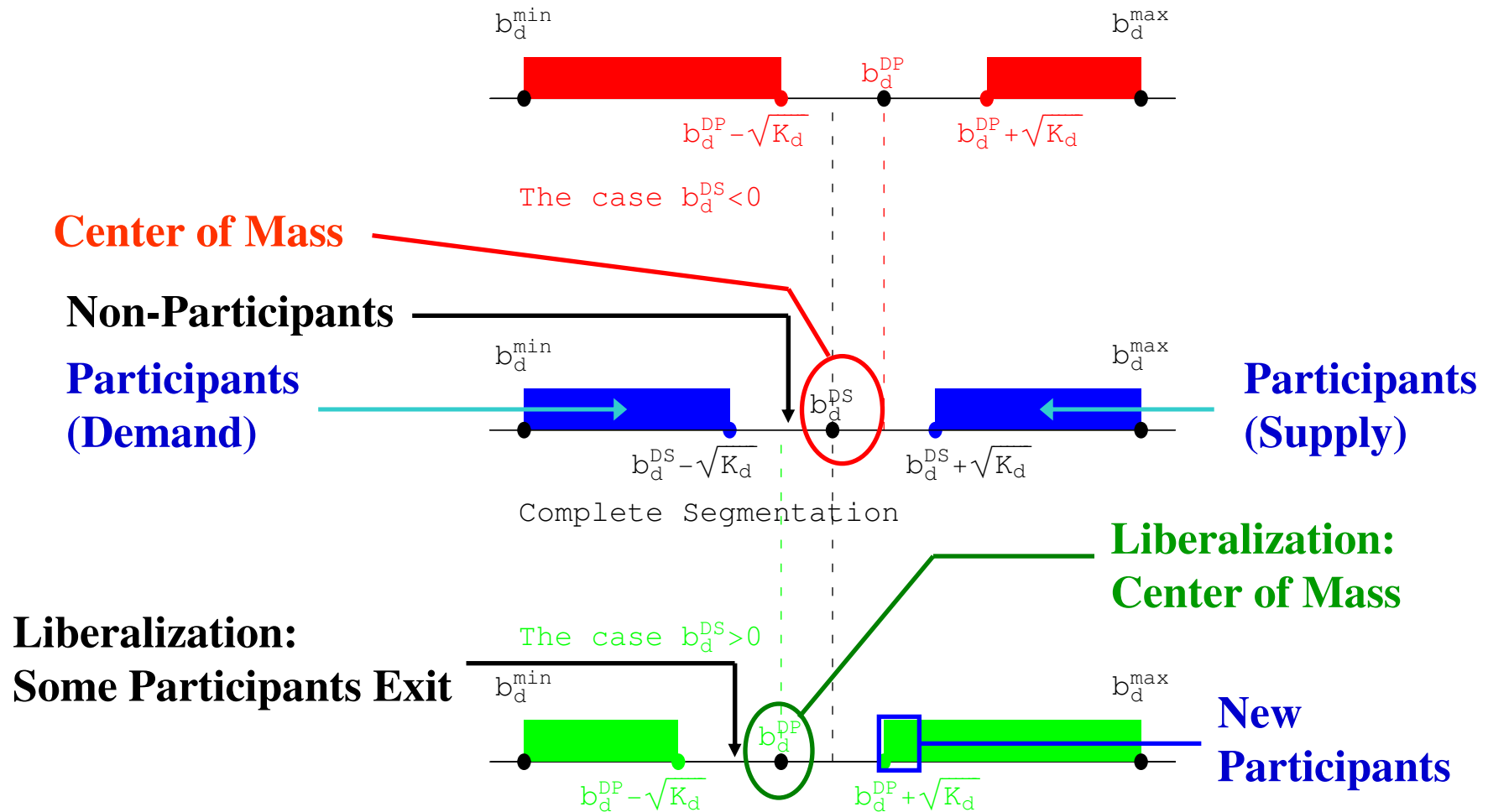
Effect on Domestic Agent Utility

Change in Aggregate Domestic Welfare
(3 Levels of Domestic Asset Risk)

Implications
Theory of "The Iron Curtain"

- Importance of risk sharing mechanisms in a country

- Who finds risk sharing attractive?

- Participation changes with reform
  - A new policy variable

- Endogenous nature of the liberalization decision
  - Liberalization timing is not random

Conclusions

- Liberalization changes the *price of risk sharing*
- A simple General Equilibrium Model with Incomplete markets (GEI) **captures costs and benefits** of liberalization simultaneously
  - A model without agency costs
  - Cost of capital may drop
  - Liberalization may not be Pareto Optimal
  - Aggregate welfare may fall
- Liberalization: Endogenous Economic Decision