

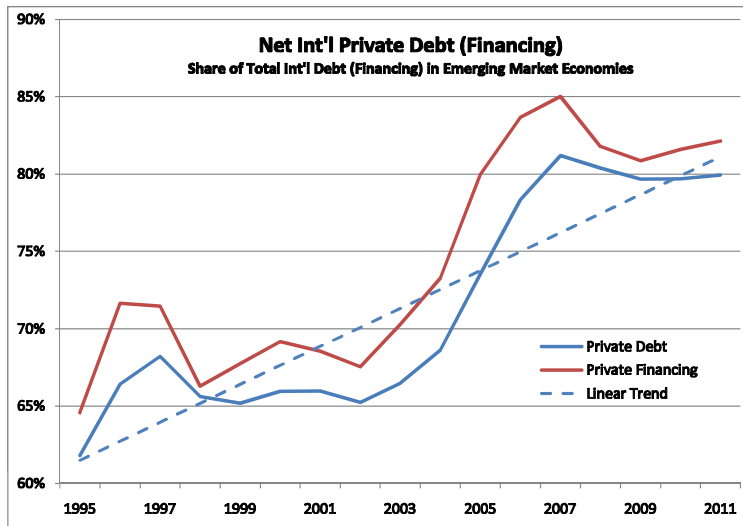
# Private Debt with Pervasive Risk of Default

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Nov. 2010

# Private Sector Debt as % Shares of Total Foreign Debt

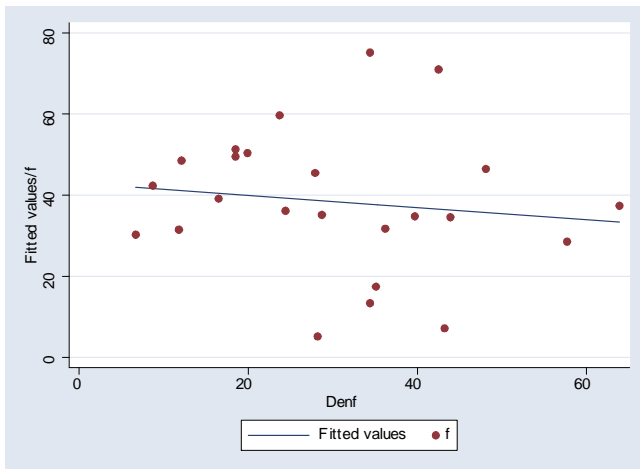


# Is Private Borrowing Good for Welfare?

## Tradeoff between incentive and externality

- Jeske (2006): private debt leads to underborrowing if
  - ▶ Individuals make default decisions
  - ▶ Efficient domestic market
- This paper: private borrowing can be good for welfare if
  - ▶ Retain individual default
  - ▶ No enforcement on domestic debt
  - ▶ Large income gap across individuals

# Private Debt vs. Strength of Domestic Enforcement



# Benchmark Scenario

## Private Borrowing with Perfect Domestic Enforcement

- Individuals cannot commit to repay int'l debt
- Int'l defaulters are excluded from int'l market forever
- Partial exclusion and perfect domestic sharing
  - ▶ individual defaulter on int'l debt can use non-defaulted peers as intermediaries to reenter int'l market

# Improvements on Benchmark

## Centralized Borrowing

- A planner borrows/defaults on behalf of individuals and allocates resources
- Complete exclusion and perfect domestic sharing

## Private Borrowing with Pervasive Risk of Default

- All debts are not enforced
- Domestic defaulters are excluded from both int'l and domestic markets
- Limited partial exclusion and imperfect domestic sharing
  - ▶ indirect channel is restricted

## Related Literature

Differs in what defaulters might be entitled

- Complete exclusion: Kehoe and Levine (1993)
- Partial exclusion:
  - ▶ Other internal opportunities: Kehoe and Perri (2002)
  - ▶ Defaulters can still save: Hellwig and Lorenzoni (2007)
- No penalty, but not able to discriminate between foreign and domestic creditors: Broner and Ventura (2009)

## Numerical Example (Deterministic, 2 Countries, 2 Types)

Country	Type	$t = 0$	$t = 1$
1	A	$1 + (y + \varepsilon)$	$1 - (y + \varepsilon)$
	B	$1 + (y - \varepsilon)$	$1 - (y - \varepsilon)$
Aggr.		$1 + y$	$1 - y$
2	A	$1 - (y + \varepsilon)$	$1 + (y + \varepsilon)$
	B	$1 - (y - \varepsilon)$	$1 + (y - \varepsilon)$
Aggr.		$1 - y$	$1 + y$

# Consumption Deviation

- Log utility, discount factor  $\beta$
- Consumption deviation  $x$  : individuals in country 1 consume  $1 + x$  at even numbered periods and  $1 - x$  at odd numbered periods
  - ▶ Centralized Borrowing

$$x_A^c = x_B^c = x^c < \frac{1 - \beta}{1 + \beta}$$

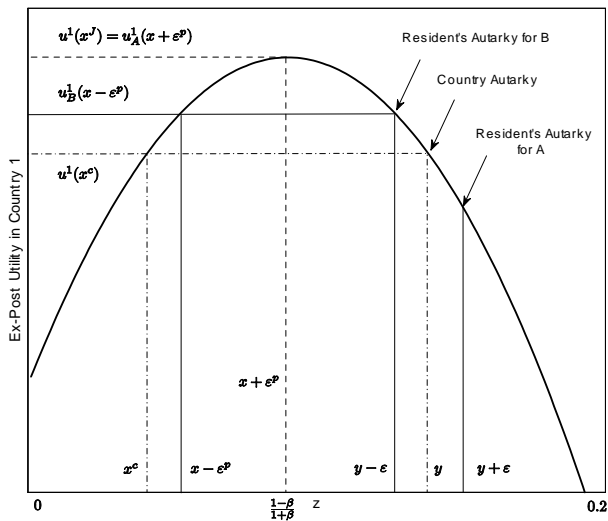
- ▶ Private Borrowing with Perfect Domestic Enforcement

$$x_A^d = x_B^d = x^d = \frac{1 - \beta}{1 + \beta}$$

- ▶ Private Borrowing with Pervasive Risk of Default

$$x_A^p = \frac{1 - \beta}{1 + \beta}, \quad x_B^p < \frac{1 - \beta}{1 + \beta}$$

## Ex-Post Utility



# Ex-Ante Welfare Ranking

Smaller consumption deviation, greater **ex-ante** welfare

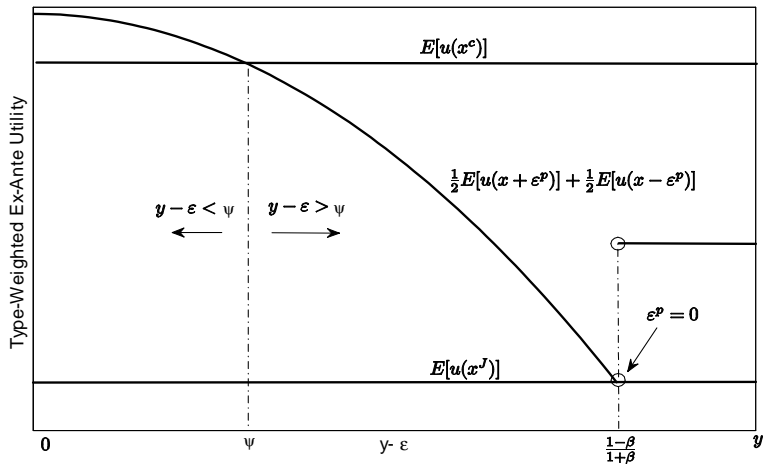
## 1 Centralization better

$$\underbrace{0}_{\text{Perfect Int'l Sharing}} < \underbrace{x^c}_{\text{Centralized}} < \underbrace{x_B^p < x_A^p}_{\text{Pervasive Risk}} \leq \underbrace{x^d}_{\text{Perfect Domestic Enf.}} \leq \underbrace{y}_{\text{Autarky}}$$

## 2 Pervasive risk of default better

$$0 < \underbrace{x_B^p}_{\text{Pervasive Risk: Type B}} < x^c < \underbrace{x_A^p}_{\text{Pervasive Risk: Type A}} \leq x^d \leq y$$

## Ex-Ante Utility



## Model (Probabilistic, Multi Countries, Multi Types)

- $M$  countries,  $N$  types of individuals,  $\theta_t \in \Theta$  states
- E.g., in the numerical example,  $\theta_0 = \left\{ \begin{array}{l} 1+(y+\varepsilon), 1+(y-\varepsilon) \\ 1-(y+\varepsilon), 1-(y-\varepsilon) \end{array} \right\}$
- Endowments are country-, type-, and history-dependent
- Default-free competitive equilibrium and bond pricing rules
- Welfare comparison given exogenous weights on types

# Data Description

## Unbalanced Panel

- 26 emerging market economies  
Argentina, Brazil, Bulgaria, Chile, Colombia, Croatia, Czech Republic, Ecuador, Hungary, Indonesia, Israel, Jordan, Mexico, Morocco, Peru, Philippines, Poland, Romania, Russia, Slovakia, South Africa, Thailand, Turkey, Ukraine, Uruguay, Venezuela
- 6 years 2004-2009, no gap, ending year varies

# Empirical Model (Pooled OLS Results Reported)

$$\begin{aligned}
 & \frac{\text{Private Debt}_{m,t}}{\text{Total Debt}_{m,t}} \\
 = & \beta_0 \underbrace{-0.3D\text{Enf}_{m,t} - 0.5O\text{AS}_{m,t} + 19.3R\text{ating}_{m,t-1} + 0.3I\text{nt}_{m,t}}_{\text{Various Credit Risks ***}} \\
 & + \underbrace{\beta_1 GDP_{m,t} + \beta_2 \Delta GDP_{m,t} + \beta_3 I\text{nflation}_{m,t} + \beta_4 T\text{rade}_{m,t-1}}_{\text{Macroeconomic Diff. Across Countries: +, +, -, +}} \\
 & \underbrace{-0.2b_{m,t-1} + 5.3I\text{nfo}_{m,t}}_{\text{Private Sector Characteristics}} + \beta_t \text{YearDummy}_t + u_m + \varepsilon_{m,t}
 \end{aligned}$$

## Concluding Remarks

- A **centralized arrangement** internalizes an externality, but poorly allocates capital by hurting someone (e.g., type B)
- The **pervasive risk** setup mitigates the externality, and provides better incentives in allocating capital (e.g., maintains type A's welfare level and protects type B's individual borrowing choice)