Currency Choice in Contracts

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Macroeconomics Within and Across Borders
Introduction and Motivation

- Central role of currency: serve as unit of account in credit contracts
  - Coexistence of currencies in denomination of contracts
  - Especially so in emerging economies
- Use of foreign currency linked to policy instability
- Recent attempts by governments to prevent dollarization
What We Do

- Questions:
  - What determines currency denomination of private contracts?
  - What are the implications for optimal policy?

- Framework:
  - Economy with private contracts & endogenous monetary policy
  - Optimal currency choice trades-off **price risk** & **insurance property**
  - Government chooses inflation and is subject to policy risk
  - **Complementarities** between effectiveness of monetary policy & use of LC contracts
Overview of Main Results

1. Nature of equilibrium depends on level of policy risk
   ▶ Agents in countries with high (low) policy risk → use of FC more (less) likely
   ▶ Intermediate policy risk → multiple equilibria

2. Room for policy regulation of currency in contracts
   ▶ Equilibria can feature under use of local currency

3. Applications
   ▶ Trade-offs extend to model with on-equilibrium default
   ▶ International contracts - larger use of dollar, mon. pol. less effective
   ▶ Hysteresis due to currency matching of prior debt stocks

Literature Review
Outline

1. Baseline Model
   1.1 Competitive Equilibria
   1.2 Constrained Efficiency

2. Applications & Extensions
   2.1 Model with Default
   2.2 International Contracts
   2.3 Hysteresis
Environment

- Two periods
- Agents: private agents and government
- Buyers and sellers sign bilateral contract
  - Sellers provide special good in exchange of future payments
  - Payments denominated in local and/or foreign currency
- Government chooses price level in local currency
- Foreign currency price exogenous and stochastic
  - Captures real exchange rate risk
Timing

- Buyers and sellers sign contracts
- Shocks are realized
- Government chooses agg. price level
- Signed contracts are executed, consumption takes place

$t = 1$

$t = 2$
Buyers and Sellers

- Sellers’ preferences:
  \[ u_s = -x + \mathbb{E}[\theta_s c_s] \]

- Buyers’ preferences:
  \[ u_b = (1 + \lambda)x + \mathbb{E}[\theta_b c_b] \]

- \( x \) provision of special good. \( \lambda > 0 \) → gains of trade
- \( c_s, c_b \) consumption of numeraire good
- \( \theta_s, \theta_b \) stochastic taste shocks w/ support \([\theta_i, \bar{\theta}_i] \) and \( \mathbb{E}[\theta_i] \)
  - captures reasons for why it’s desirable to shift resources btw agents
- both endowed with \( y \) numeraire good in \( t = 2 \)

- **Assumption 1:** \( (1 + \lambda)\mathbb{E}[\theta_s] - \mathbb{E}[\theta_b] \geq 0 \)
  - Guarantees seller wants to sell and buyers want to buy
Bilateral Contracts

- Bilateral contract: \((x, b_l, b_f)\)
  - \(x\) units of special good provided to buyer in \(t = 1\)
  - \(b_c\) units of currency \(c\) promised to seller in \(t = 2\)

- Assumptions:
  1. Non state-contingent
  2. Denominated in currencies: local \((l)\) and foreign \((f)\)
  3. Payments always feasible

- Currencies: units of account, stochastic at \(t = 1\)
  - \(\phi_c\): value of currency \(c\) in terms of numeraire good
    - High \(\phi_l\) \(\leftrightarrow\) low inflation in local currency
Bilateral Contracts

Optimal contract for the buyer solves

$$\max_{x \geq 0, b_l \geq 0, b_f \geq 0} (1 + \lambda)x + \mathbb{E}[\theta_b (y - b_l \phi_l - b_f \phi_f)]$$

subject to

- Participation Const.: $\mathbb{E}[\theta_s (b_l \phi_l + b_f \phi_f)] \geq x$
- Payments Feasibility: $b_l \phi_l + b_f \phi_f \leq y \quad \forall \phi_l, \phi_f$
Bilateral Contracts

- Participation constraint always binds
- Payment feasibility binds for worst deflation realizations: $\phi_l, \phi_f$
- Problem simplifies to

$$\max_{b_l \geq 0, b_f \geq 0} \mathbb{E} \left[ ((1 + \lambda)\theta_s - \theta_b) (b_l \phi_l + b_f \phi_f) \right]$$

s.t. $b_l \phi_l + b_f \phi_f = y$

- Solution: choose currency with highest marginal benefit $M_c$

$$M_c \equiv ((1 + \lambda) \mathbb{E} [\theta_s] - \mathbb{E} [\theta_b]) \frac{\mathbb{E} [\phi_c]}{\phi_c} + \text{cov} \left( \theta_s (1 + \lambda) - \theta_b, \frac{\phi_c}{\phi_c} \right)$$

\[
\begin{aligned}
&\text{Price Risk} \\
&\text{Insurance Properties}
\end{aligned}
\]
Bilateral Contracts: Optimal Currency Choice

\[ M_f = \lambda \frac{E[\phi_f]}{\phi_f} \]
Government’s Problem

- Government’s problem is

$$\max_{\phi_l} \theta_b C_b + \theta_s C_s - l(\phi_l)$$

where

$$C_b = y - \phi_l B_l - \phi_f B_f$$
$$C_s = y + \phi_l B_l + \phi_f B_f$$

- $$l(\phi_l) = \frac{\psi}{2} \left( \phi_l - \hat{\phi} \right)^2$$, loss from deviating from inflation target

- $$\hat{\phi}$$ stochastic inflation target w/ support $$[\underline{\phi}, \bar{\phi}]$$

- $$\frac{\mathbb{E}[\hat{\phi}]}{\hat{\phi}}$$ captures policy risk, main source of cross-country variation
What is the Inflation Loss?

- Third agent (household)
  - Linear preferences on consumption & quadratic disutility of labor
  - Endowed w/ money claims & consumption s.t. cash-in-advance constraint

- Government
  - Needs to finance stochastic $g$
  - Can tax labor $\tau$ & choose inflation

- HH utility can be expressed as

$$\text{const} - \psi \left( \phi_l - \left( \frac{\hat{\tau}(1 - \hat{\tau}) - g}{m} \right) \right)^2$$
Optimal Monetary Policy

- Optimal inflation policy given by

\[ \phi_l(B_l) = \hat{\phi} + \frac{1}{\psi} (\theta_s - \theta_b) B_l \]

- High inflation when buyers value consumption more relative to sellers

- How does \( B_l \) affect \( M_l \)?

  - Higher \( B_l \) \( \rightarrow \) inflation reacts more to \( \theta_s, \theta_b \) \( \leftrightarrow \) more insurance
  - Higher \( B_l \) \( \rightarrow \) higher inflation volatility \( \leftrightarrow \) more price risk
Assumptions

Assumption 2:

\[
\frac{1}{2} \text{var}(\theta_s - \theta_b) + \lambda [\text{var}(\theta_s) - \text{cov}(\theta_s, \theta_b)] \geq \kappa_1
\]

where \( \kappa_1 \) depends on model parameters

1. What is needed?
   - Sufficiently large variation in state-contingent mg. utilities

2. What does it imply?
   - Insurance channel
   - Price risk channel
   - Guarantees

3. What if it does not hold?
   - Similar characterization of equilibria, policy prescriptions change
Assumptions

Assumption 2:
When $\theta_b, \theta_s$ are iid:

$$\text{var}(\theta) > (\bar{\theta} - \theta)$$

1. What is needed?
   - Sufficiently large variation in state-contingent mg. utilities

2. What does it imply?
   - Insurance channel > Price risk channel
   - Guarantees $M_i$ increasing in $B_i$

3. What if it does not hold?
   - Similar characterization of equilibria, policy prescriptions change
Competitive Equilibria for Different Policy Risk

Proposition:

- **Full Foreign**
- **Multiple Equilibria** (Full FC/Interior/Full LC)
- **Full Local**

- Low $\hat{\phi}$
- $\mu_2$
- $\mu_1$
- High $\hat{\phi}$

- High Policy Risk
- Medium Policy Risk
- Low Policy Risk

- Definition of Equilibrium
Competitive Equilibria

\[ M_l(B_l) \]

\[ \lambda \frac{E[\hat{\phi}]}{\hat{\phi}} L \]

\[ M_f \]

\[ y \frac{y}{\phi_l} \]
Competitive Equilibria

\[ M_l(B_l) \]

\[ \lambda \frac{E[\hat{\phi}]}{\hat{\phi}} L \]

\[ \lambda \frac{E[\hat{\phi}]}{\hat{\phi}} M \]

\[ \frac{y}{\bar{\phi}_l} \]

\[ M_f \]
Competitive Equilibria

\begin{align*}
\lambda \frac{E[\hat{\phi}]}{\hat{\phi}} & \quad L \\
\lambda \frac{E[\hat{\phi}]}{\hat{\phi}} & \quad M \\
\lambda \frac{E[\hat{\phi}]}{\hat{\phi}} & \quad H
\end{align*}
Global Games Approach

- Policy risk is no longer common knowledge
- Each buyer-seller pair receives noisy signal

\[ \xi_i = \mathbb{E} \left[ \hat{\phi} \right] + \epsilon_i \]

where \( \epsilon_i \sim U \left[ -\eta, \eta \right] \)

**Proposition:** For \( \eta \) small enough, there is a unique eq that satisfies:

\[
b_l (\xi) = \begin{cases} 
0 & \xi < \xi^* \\
\frac{y}{\phi^{**}} & \xi > \xi^* 
\end{cases}
\]

where \( \mu_1 > \frac{\xi^*}{\hat{\phi}} > \mu_2 \)
Equilibrium Selection for Different Policy Risk

- **Full Foreign**
- **Multiple Equilibria** (Full FC/Interior/Full LC)
- **Full Local**

Low $\mathbb{E}[\hat{\phi}] / \hat{\phi}$  \hspace{1cm} $\mu_2$  \hspace{1cm} $\mu_{GG}$  \hspace{1cm} $\mu_1$  \hspace{1cm} High $\mathbb{E}[\hat{\phi}] / \hat{\phi}$

- **Full Foreign Global Games**
- **Full Local Global Games**
Outline

1. Baseline Model
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   1.2 Constrained Efficiency

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   2.2 International Contracts
   2.3 Hysteresis
Recent Examples of Policy Regulation

- Is regulating currency denomination of contracts optimal?
- Full prohibition of foreign currency contracts
  - Brazil, Colombia
- Restrictions in foreign currency borrowing
  - Croatia, Hungary, India, Poland and Turkey
- Full dollarization in 2000
  - Ecuador, El Salvador
Social Planner’s Problem

• Choose allocation & inflation s.t. same constraints as private agents

\[
\max_{x \geq 0, \phi_l, B_l \geq 0, B_f \geq 0} \left( \mathbb{E}[-x + \theta_s c_s] + \mathbb{E}[(1 + \lambda)x + \theta_b c_b] - \mathbb{E}[l(\phi_l)] \right)
\]

subject to

Budget Const.: \[c_b = y - B_l \phi_l - B_f \phi_f\]
\[c_s = y + B_l \phi_l + B_f \phi_f\]

Participation Const.: \[\mathbb{E}[\theta_s (B_l \phi_l + B_f \phi_f)] \geq x\]

Payments Feasibility: \[B_l \phi_l + B_f \phi_f \leq y \quad \forall (\phi_l, \phi_f)\]

Monetary Policy: \[\phi_l = \hat{\phi} + \frac{1}{\psi} (\theta_s - \theta_b) B_l\]
Constrained Efficiency for Different Policy Risk

- Given Assumption 2, problem of SP is strictly convex
  \[ \Rightarrow \text{compare utilities at } B_l = 0 \text{ and } B_l = \frac{y}{\phi^*} \]

- Trade-off given by:

  \[ \text{Local price risk + Insurance - Cost of Inflation} \geq \text{Foreign price risk} \]

**Proposition:** There exists \( \mu_{SP} \) with \( \mu_2 < \mu_{SP} < \mu_1 \) such that:

1. if \( \mathbb{E}[\hat{\phi}] \geq \mu_{SP} \), solution to Social Planner’s problem is \( B_{l_{SP}} = \frac{y}{\phi^*} \);
2. if \( \mathbb{E}[\hat{\phi}] \leq \mu_{SP} \), solution to Social Planner’s problem is \( B_{l_{SP}} = 0 \).
Constrained Efficiency for Different Policy Risk

Full Foreign  Multiple Equilibria  Full Local
(Full FC/Interior/Full LC)

Low \( \mathbb{E}[\hat{\phi}] \) \( \mu_2 \) \( \mu_{SP} \) \( \mu_1 \) High \( \mathbb{E}[\hat{\phi}] \)

Full Foreign  Constrained Efficient  Full Local  Constrained Efficient
Constrained Efficiency for Different Policy Risk

Full Foreign
GG selection

Full Local
GG selection

Low $\mathbb{E}[\hat{\phi}]$

Full Foreign
Constrained Efficient

Full Local
Constrained Efficient

High $\mathbb{E}[\hat{\phi}]$

$\mu_{SP}$  $\mu_{GG}$
Applications and Extensions

1. Model with Strategic Default
2. International Contracts
3. Hysteresis
Model with Strategic Default

- Allow buyers to default on payments in period 2
- No taste shocks
- Default is full, seller receives nothing
- If buyers default, suffer cost $\chi(\phi_l b_l + \phi_l b_l)$
  - Cost of default stochastic: $\chi \sim F_{\chi}[\chi, \bar{\chi}]$ with $\chi < 1 < \bar{\chi}$
  - Default costs depend on the level of defaulted debt
  - Implies buyers optimally default when $\chi < 1$
- If buyers default, government partially inflates away cost of default
Model with Strategic Default

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  - Default costs depend on the level of defaulted debt
  - Implies buyers optimally default when $\chi < 1$
- If buyers default, government partially inflates away cost of default

**Proposition:**
The baseline model with taste shocks is identical to the model with default in eq outcomes
Economy with International Contracts

- International contracts more likely to be denominated in FC

- Economy with two symmetric countries: $i, j$
  - Continuum of buyers trade with continuum of sellers of other country

- Three available currencies: $i, j, f$
  - Assumption: both countries have same level of policy risk
Economy with International Contracts

- International contracts more likely to be denominated in FC
- Economy with two symmetric countries: \( i, j \)
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  - Assumption: both countries have same level of policy risk

\[
\begin{align*}
\hat{\phi} & \quad \hat{\phi} \\
\mu_2 & \quad \mu_2^I \\
\mu_1 & \quad \mu_1
\end{align*}
\]

- **Domestic Contracts**
  - Full Foreign
  - Multiple Equilibria
  - Full Local

- **Full Foreign\**
- **International Contracts\**
Hysteresis in Model with Credit Chains

- Dollarization persists after episodes of inflation stabilization
- Buyers endowed with $y$ and claims $\hat{b}_l, \hat{b}_f$
- Assumption: $\text{var}(\theta)$ not too large
Hysteresis in Model with Credit Chains

- Dollarization persists after episodes of inflation stabilization
- Buyers endowed with $y$ and claims $\hat{b}_l, \hat{b}_f$
- Assumption: $\text{var}(\theta)$ not too large

**Proposition:** Optimal contract is given by:

- If $M_l \geq M_f$:
  
  \[
  b_l = \hat{b}_l + \frac{y}{\phi_l}, \quad b_f = \hat{b}_f
  \]

- If $M_l < M_f$:
  
  \[
  b_l = \hat{b}_l, \quad b_f = \hat{b}_f + \frac{y}{\phi_f}
  \]

- Policy risk only determines currency of new borrowing flows
- Currency matching of stocks is optimal $\Rightarrow$ path dependence
  
  $\Rightarrow$ Allows for more borrowing and provision of special good
Conclusion

- Study general equilibrium of economy with private contracts & endogenous monetary policy
- Nature of equilibria depend on degree of policy risk
- Room for policy regulation of currency in contracts
Dollarization and Fiscal Policy Risk

![Graph showing the relationship between Deposit Dollarization and Volatility of Government Expenditures for various countries. The graph includes a scatter plot with points representing different countries, and a trend line indicating a positive correlation between the two variables. The x-axis represents the Volatility of Government Expenditures, ranging from 0 to 0.2, while the y-axis represents Deposit Dollarization, ranging from 0 to 100. The countries are marked with their country codes, such as ALB, ARG, ARM, AUT, AZE, BHS, BLR, BOL, BWA, BGR, KHM, CHL, COL, CRI, HRV, CYP, CZE, DNK, DOM, ECU, EGY, FIN, GRC, GTM, HND, HKG, HUN, ISL, IND, IDN, ITA, JPN, JOR, KAZ, KHM, LTU, MKD, MDG, MYS, MUS, MEX, MDA, MAR, MOZ, NLD, NZL, NIC, NOK, PAK, PRY, PER, PHL, POL, RUS, SVN, ZAF, ESP, LKA, URY, BOL, LBN, ARM, ZAR, and others.]}
Literature Review

• Currency choice in debt contracts, price setting, means of payment

• Global role of dollar

• Currency and policy choice
Equilibrium

**Definition:** A competitive equilibrium is an allocation for private citizens \((x, b_l, b_f)\), aggregate denomination choices \((B_l, B_f)\), and govt policy \(\phi_l\) such that:

1. Given \(\phi_l\), and \((B_l, B_f)\) the private allocation solves the contracting problem
2. Given \(B_l\), \(\phi_l\) solves govt problem
3. Aggregate choices coincide with private ones, \(b_l = B_l\) and \(b_f = B_f\)
Model with Strategic Default

- Allow buyers to default on payments in period 2
  - Allows private contracts to introduce state contingency
- No taste shocks
- Default is full, seller receives nothing
- If buyers choose to default, suffer cost $\chi (\phi_l b_l + \phi_l b_t)$
  - Cost of default stochastic: $\chi \sim F_\chi[\chi, \bar{\chi}]$ with $\chi < 1 < \bar{\chi}$
  - Default costs depend on the level of defaulted debt
  - Implies buyers optimally default when $\chi < 1$

- Fixed Costs of Default Model
Contract Problem

• Optimal contract for the buyer solves

\[
\max_{x \geq 0, b_l \geq 0, b_f \geq 0} (1 + \lambda)x \\
+ \mathbb{E} \left[ \begin{array}{c}
(y - \phi_l b_l - \phi_f b_f) \mathbb{I}_{\chi \geq 1} + (y - \chi (\phi_l b_l + \phi_f b_f)) \mathbb{I}_{\chi < 1}
\end{array} \right]
\]

subject to

Participation constraint:

\[
\mathbb{E} \left[ (b_l \phi_l + b_f \phi_f) \mathbb{I}_{\chi \geq 1} \right] \geq x
\]

Payments feasibility:

\[
b_l \phi_l + b_f \phi_f \leq y \quad \forall \phi_l, \phi_f
\]
Default Model: Government Problem

- Government maximizes utility of buyers and sellers

\[
\max_{\phi_l} \left\{ -\chi \phi_l B_l \right\} \mathbb{I}_{\chi \geq 1} - l(\phi_l)
\]

loss from default

- Optimal inflation choice

\[
\phi_l = \begin{cases} 
\hat{\phi} & \text{if } \chi \geq 1 \\
\hat{\phi} - \frac{1}{\psi} \chi B_l & \text{if } \chi < 1 
\end{cases}
\]

- If buyers default, government partially inflates away cost of default
  
  ▶ Given policy risk, local currency has a higher marginal benefit
Mapping of Default Model into Baseline

- Define

\[
\theta_s = \begin{cases} 
0 & \text{if } \chi < 1 \\
1 & \text{if } \chi \geq 1 
\end{cases} \quad \text{and} \quad \theta_b = \begin{cases} 
\chi & \text{if } \chi < 1 \\
1 & \text{if } \chi \geq 1 
\end{cases}
\]

**Proposition:**
The baseline model with the above taste shocks is identical to the model with default in eq outcomes

**Assumption 1’:** \[ \lambda (1 - F\chi(1)) > \mathbb{E} [\chi | \chi < 1] F\chi(1) \]

- gains of trade
- losses from default

Additionally, if assumption above is satisfied, then the model also satisfies the original assumptions 1 and 2
Dollarization in International & Domestic Contracts

Economy with International Contracts

- Economy with two symmetric countries: $i, j$
  - Continuum of buyers and sellers in each country
  - Buyers trade with sellers of other country

- Three available currencies: $i, j, f$
  - Assumption: both countries have same level of policy risk

$$\frac{\mathbb{E} \left[ \hat{\phi}_i \right]}{\hat{\phi}_i} = \frac{\mathbb{E} \left[ \hat{\phi}_j \right]}{\hat{\phi}_j}$$

- Focus on symmetric eq & region with full use of $f$ as unique eq
Economy with International Contracts

- Optimal contract for buyer in country $i$ and seller in country $j$ solves

$$\max_{x_i, b_{ii} \geq 0, b_{ij} \geq 0, b_{if} \geq 0} \left( 1 + \lambda \right) x_i - \mathbb{E} \theta_{ib} (\phi_i b_{ii} + \phi_j b_{ij} + \phi_f b_{if})$$

subject to

Participation Const.: $-x_i + \mathbb{E} \theta_{js} (\phi_i b_{ii} + \phi_j b_{ij} + \phi_f b_{if}) \geq 0$

Payments Feasibility: $\phi_i b_{ii} + \phi_j b_{ij} + \phi_f b_{if} \leq y \quad \forall \phi_i, \phi_j, \phi_f$

- Government of country $i$ maximizes utility of its citizens only

$$\phi_i = \hat{\phi}_i + \frac{1}{\psi} (\theta_{is} B_{ji} - \theta_{ib} B_{ii})$$
CE in Economy with International Contracts

Domestic Contracts

Full Foreign

Multiple Equilibria

Full Local

Low \[ \frac{E[\hat{\phi}]}{\hat{\phi}} \]

\[ \mu_2 \]

\[ \mu_I \]

\[ \mu_1 \]

High \[ \frac{E[\hat{\phi}]}{\hat{\phi}} \]

Full Foreign

International Contracts
CE in Economy with International Contracts

- Government’s ability to provide insurance is undermined

\[
\text{International Contract}
\]
\[
\phi_i = \hat{\phi}_i + \frac{1}{\psi} (\theta_{is} - \theta_{ib}) B_i
\]

\[
\text{Domestic Contract}
\]
\[
\phi_i = \hat{\phi}_i + \frac{1}{\psi} (\theta_{is} - \theta_{ib}) B_i
\]
Hysteresis in Dollarization

Argentina

Bolivia

Peru

Uruguay

Deposit Dollarization

Annual Inflation
Hysteresis in Model with Credit Chains

- Buyers endowed with $y$ and claims $\hat{b}_l, \hat{b}_f$
  - Currency claims from prior contract in which buyer was seller
- Optimal contract for the buyer solves
  \[
  \max_{x \geq 0, b_l \geq 0, b_f \geq 0} (1 + \lambda)x + \mathbb{E} \left[ \theta_b \left( y - (b_l - \hat{b}_l)\phi_l - (b_f - \hat{b}_f)\phi_f \right) \right]
  \]
  subject to
  
  Participation Const.: $x \leq \mathbb{E} \left[ \theta_s (b_l \phi_l + b_f \phi_f) \right]$
  
  Payments Feasibility: $y \geq (b_l - \hat{b}_l)\phi_l + (b_f - \hat{b}_f)\phi_f \quad \forall \phi_l, \phi_f$

- Government’s problem remains the same
- Additional assumption: $\text{var}(\theta)$ not too large
**Proposition:** Optimal contract is given by:

\[
\begin{align*}
&\text{if } M_l \geq M_f : \\
&\quad b_l = \hat{b}_l + \frac{y}{\phi_l} \quad b_f = \hat{b}_f \\
&\text{if } M_l < M_f : \\
&\quad b_l = \hat{b}_l \quad b_f = \hat{b}_f + \frac{y}{\phi_f}
\end{align*}
\]

- Policy risk only determines currency of *new* borrowing flows
- Currency matching of stocks is optimal
  - Allows for more borrowing and provision of special good
  - Leads to path dependence
Model with Fixed Cost of Default

- Same model as before with different cost of default
  - If buyers choose to default, suffer cost $\chi \in \{\chi_L, \chi_H\}$
  - Implies buyers optimally repay when $\phi_l b_l + \phi_f b_f < \chi$
- No taste shocks ($\theta_i = 1$) nor policy risk ($\hat{\phi}_l = \phi_f = 1$)
- Government problem
  - If $\hat{\phi}_l b_l + \phi_f b_f < \chi$, set $\phi_l = \hat{\phi}_l$
  - If not, set $\phi_l$ to induce repayment as long as

$$\chi > \frac{\psi}{2} \left( \frac{\chi - \phi_f B_f}{B_l} - \hat{\phi} \right)^2$$
Proposition

There exists an eq with full use of FC & another with full use of LC. If $\psi$ is small enough, aggregate welfare is higher in the one with LC.

- Complementarities btw private and govt actions still in place
  - Higher use of LC makes govt use inflation to avoid default
  - State-contingent inflation makes LC more attractive