Discussion of “Currency Choice in Contracts” by Drenik, Kirpalani, and Perez

Alessandro Dovis
U Penn and NBER

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Summary

This paper studies interaction between

- Denomination of nominal contracts
- Monetary policy

Two main results

- If inflation volatile more contracts in foreign currency
  - As in data
- Equilibrium potentially constrained inefficient
  - Too little use of domestic currency
  - Rationale for policies that discourage use of foreign currencies
My discussion

- Review mechanism for inefficiency

- Comments
  - Efficiency (too little use of domestic currency): How robust?
    - Sketch out example where opposite true
  - Is evidence on dollar-deposit relevant for mechanism?
Environment

- Two periods, state of the economy in second period \( s \in S \)
- Buyer, producer, and monetary authority
- Buyer has preferences

\[
(1 + \lambda) x + \sum_s \Pr(s) \theta_b(s) c_b(s) - \sum_s \Pr(s) \psi \left( \frac{1}{\phi(s)} - \frac{1}{\phi^*(s)} \right)^2
\]

and endowment \( y \) of numeraire good in second period
- Producer has preferences

\[
-\chi + \sum_s \Pr(s) \theta_p(s) c_p(s) - \sum_s \Pr(s) \psi \left( \frac{1}{\phi(s)} - \frac{1}{\phi^*(s)} \right)^2
\]
Environment

- Two periods, state of the economy in second period $s \in S$
- Buyer, producer, and monetary authority
- Buyer has preferences
  \[(1 + \lambda) x + \sum_s Pr(s) \theta_b(s) c_b(s) - \sum_s Pr(s) \psi \left( \frac{1}{\phi(s)} - \frac{1}{\phi^*(s)} \right)^2\]
  and endowment $y$ of numeraire good in second period
- Producer has preferences
  \[-x + \sum_s Pr(s) \theta_p(s) c_p(s) - \sum_s Pr(s) \psi \left( \frac{1}{\phi(s)} - \frac{1}{\phi^*(s)} \right)^2\]
- No inflation-bias: $\sum_s Pr(s) \theta_b(s) = \sum_s Pr(s) \theta_p(s)$
Optimal private contract with state contingent transfer

\[
\max_{x, t(s)} \left( (1 + \lambda) x + \sum_s \Pr(s) \theta_b(s) [y - t(s)] \right)
\]

subject to participation constraint

\[-x + \sum_s \Pr(s) \theta_p(s) t(s) \geq 0\]

feasibility constraint for all \(s\):

\[t(s) \leq y\]

Want:

- High \(t(s)\) if \(\theta_p(s) > \theta_b(s)\)
- Low \(t(s)\) if \(\theta_p(s) > \theta_b(s)\)
Market incompleteness

- Payments cannot depend on $s$

- Payments indexed in two currencies
  - Domestic currency: $t_d$
  - Foreign currency: $t_f$

- Value of currency (in terms of numeraire good)
  - Domestic currency: $\phi_d(T,s)$
  - Foreign currency: $\phi_f(s)$ (exogenous)
Optimal private contract with non-contingent transfers

Given $T = (T_d, T_f)$ and strategy $\phi_d(\cdot)$ solve

$$\max_{x, t_d, t_f} (1 + \lambda) x + \sum_s \Pr(s) \theta_b(s) [y - t_d \phi_d(T, s) - t_f \phi_f(s)]$$

subject to participation constraint

$$-x + \sum_s \Pr(s) \theta_b(s) [t_d \phi_d(T, s) + t_f \phi_f(s)] \geq 0$$

feasibility constraint for all $s$:

$$t_d \phi_d(T, s) + t_f \phi_f(s) \leq y$$
Optimal private contract with non-contingent transfers

Given $T = (T_d, T_f)$ and strategy $\phi_d(\cdot)$ solve

$$\max_{x, t_d, t_f} \ (1 + \lambda) x + \sum_s \Pr(s) \theta_b(s) [y - t_d \phi_d(T, s) - t_f \phi_f(s)]$$

subject to participation constraint

$$-x + \sum_s \Pr(s) \theta_b(s) [t_d \phi_d(T, s) + t_f \phi_f(s)] \geq 0$$

feasibility constraint for all $s$:

$$t_d \phi_d(T, s) + t_f \phi_f(s) \leq y$$

Desirable to have payments denominated in currency with

- $\phi_i(s)$ high if $\theta_p(s) > \theta_b(s)$
- $\phi_i(s)$ low if $\theta_p(s) > \theta_b(s)$

so it can replicate state contingencies
Optimal private contract with non-contingent transfers

Given $T = (T_d, T_f)$ and strategy $\phi_d(\cdot)$ solve

$$\max_{x, t_d, t_f} (1 + \lambda) x + \sum_s \Pr(s) \theta_b(s) [y - t_d \phi_d(T, s) - t_f \phi_f(s)]$$

subject to participation constraint

$$-x + \sum_s \Pr(s) \theta_b(s) [t_d \phi_d(T, s) + t_f \phi_f(s)] \geq 0$$

feasibility constraint for all $s$:

$$t_d \phi_d(T, s) + t_f \phi_f(s) \leq y$$

Desirable to have payments denominated in currency with

- Low volatility not correlated with $\theta_p(s) - \theta_b(s)$
  - Because feasibility constraint
  - Same result dropping feasibility but curvature in consumption numeraire good
Monetary policy

Monetary authority given \((T_d, T_f)\) and \(s\) chooses \(\phi_d\) to solve

\[
\max_{\phi_d} \theta_b (s) [y - T_d \phi_d - T_f \phi_f (s)] + \theta_p (s) [T_d \phi_d + T_f \phi_f (s)]
\]

\[
- 2\psi \left( \frac{1}{\phi_d} - \frac{1}{\phi^* (s)} \right)^2
\]
Monetary policy

Monetary authority given \((T_d, T_f)\) and \(s\) chooses \(\phi_d\) to solve

\[
\max_{\phi_d} \left( \theta_s(s) - \theta_b(s) \right) T_d \phi_d - 2\psi \left( \frac{1}{\phi_d} - \frac{1}{\phi^*(s)} \right)^2 + \text{t.i.p}
\]

- Trade off two motives
  - Mimic state contingent payments
  - Other motives: \(\phi^*\)

- Higher \(T_d \Rightarrow\) higher incentives to create state contingencies
Equilibrium can be constrained inefficient

- Higher value by solving

\[
\max_{x, T_d, T_f} (1 + \lambda) x + \sum_s \Pr(s) \theta_b(s) [y - T_d \phi_d(T, s) - T_f \phi_f(s)] \\
- \sum_s \Pr(s) \psi \left( \frac{1}{\phi_d(T, s)} - \frac{1}{\phi^*(s)} \right)^2
\]

subject to

\[
-x + \sum_s \Pr(s) \theta_b(s) [T_d \phi_d(T, s) + T_f \phi_f(s)] \geq 0
\]

\[
T_d \phi_d(T, s) + T_f \phi_f(s) \leq y
\]

given monetary authority strategy \( \phi_d(\cdot) \)

- Too little contracts indexed in domestic currency
How robust is this result?

- Consider a world with $\mathbb{E}(\theta_b) > \mathbb{E}(\theta_s)$ (inflation bias)
  - Ex-post monetary authority wants more inflation to redistribute from producer to buyer

- Private equilibrium can be inefficient

- Too little contracts indexed in foreign currency if
  - $\mathbb{E}(\theta_b) > \mathbb{E}(\theta_s)$
  - $\text{Var}(\theta_b - \theta_s)$ not too large

- Mechanism
  - Private agents take inflation as given
  - Prefer domestic currency because it provides insurance so $t_d > 0$
  - Inflation inefficiently high: $\phi_d < \phi^*$ because incentive to redistribute to buyer
  - Can commit to low inflation by setting $T_d = 0$
Rationale for observed polices

• We observe policies to increase use of domestic currency

• Thus forces in model more prevalent

• But other explanations
  ○ Force domestic currency to maximize seignorage revenues

• Does evidence on deposit in dollars speak to mechanism in model?
  ○ Unit of accounts or means of payments?
Conclusions

• Nice paper on relevant topic

• Interaction between
  ○ Denomination of nominal contracts
  ○ Monetary policy

• More work to understand dominant forces