Credit Markets, Limited Commitment and Government Debt

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1The opinions are the author’s and do not necessarily reflect those of the Federal Reserve Board or its staff
Why I like the paper

The broad question:

▶ What features do means of payment need to have?

The answers it suggests:

▶ Incentives
▶ Insurance
Why I like the paper

It tells us something we see in financial mkts:

- Tri-party repo mkt
- Sovereign debt
Motivation of the paper:

- What inefficiencies arise in credit markets from limited commitment?
  - Agents cannot be forced to accept an allocation
  - Multiplicity of asymmetric equilibria

- Is there a role for the government to improve on the allocation?
  - Relax incentive constraints
The model

- Bilateral trade btw identical agents:
  - motive for trade: temporal mismatch between production and consumption (non-storable consumption good, produced with labor)
  - once consumption has occurred no commitment to produce

\[
CM_t \quad \quad DM_t
\]

\[
t \quad l_{t-1} \text{ paid (seller consumes)} \quad t + 1
\]

\[
bt_{-1}, l_{t-1}, \tau_t \text{ paid} \quad \quad bt \text{ issued}
\]

buyer makes TIOLI: loan \(l_t\) (buyer consumes)

\(bt\) traded for goods
Equilibria

Private credit vs government bonds

- default on
  - previous period loan \((l_t)\)
  - current period taxes \((\tau_t)\)

- good non-storable
  - no notion of collateral to discipline incentives or provide insurance to seller
  - bond carried through markets \((CM_t, DM_t)\) and periods \((t, t + 1)\) ⇒ used as means of payment
Role of government

Government:

- faces **same** limited commitment problem as private agents (sellers), but with tax collection

- welfare improvement cannot stem from better ability at collecting on its debts nor better information about who defaulted.
Role of bond $b_t$

Bond is all that matters:

1. is similar to a license to trade in the $DM_t$
   - with limited info no seller agrees to produce for private credit, but does for bonds

2. is insured by a loss mutualization scheme, paid off by:
   - taxes (non defaulter bears this)
   - newly issued bonds (everyone who buys bonds bears this, also defaulters who mimic non defaulters)
   - taxes are necessary if the interest rate on bonds exceeds 1
Alternative mechanism

A means of payment needs to have

1. some sense of information insensitivity (incentives)
   - acquiring the means of payment is a necessary condition to trade, even for strategic defaulters: discipline on incentives

2. some sense of guarantee of delivery (insurance)
   - positive measure of non defaulters and demand for bonds ⇒ always sufficient goods to pay for obligations
Alternative mechanism

Suppose agents can set up a mechanism \( \{ \tau_t, b_t(i), R \}_{t,i} \) such that:

- \( \tau_t \) goods paid by non defaulters as contribution to a default/guarantee fund in \( C_M_t \)

- \( b_t \) license to trade, issued by the mechanism, traded on a mkt open at end of \( C_M_t \)

- \( \forall i \ b_t(i) \) is a claim to a unit of consumption good in \( C_M_{t+1} \) delivered by the mechanism in the event that buyer \( i \) defaults in \( C_M_{t+1} \)
Alternative mechanism

We could think of $b_t(i)$ as:

- Credit Default Swap (CDS) on participant $i$, issued by the mechanism, purchased at price $q_t$
- mechanism membership titles, purchased at price $q_t$
Alternative mechanism: equilibrium

Set of rules $\mathcal{R}$:

- seller in $DM_t$ issues a loan $l_t$ to buyer $i$ only if he transfers $b_t(i)$

- $b_t(i)$ paid off in $CM_{t+1}$ if buyer $i$ defaults on his loan $l_t$

- resources to pay off $b_t(i)$ obtained by contributions to the default fund $\tau_{t+1}$ and new issuance of $b_{t+1}(i)$ at price $q_{t+1}$:

$$
\int_0^1 \tau_{t+1}(i) di + q_{t+1} \int_0^1 b_{t+1}(i) di = \eta_{t+1} \int_0^1 l_{t+1}(i) di
$$

with $\eta_t = \int_{\{i: H_t(i) = 0\}} d i$
Alternative mechanism: equilibrium

- Market clearing

\[ \int_0^1 b_t(i)di = B_t \quad \forall t \]

with \( B_t \) appropriately supplied by the mechanism (to maximize welfare):

\[ \beta B_t = x^* \]
Role of the price of the bond $q_t$

Price of bonds introduces a trade off between incentives and output:

- a high price of acquiring the means of payment relaxes incentive constraint:
  - societal weight of defaulters split among everyone, including defaulters, not just non-defaulters/survivors.

- a high price of bonds induces lower consumption/output:
  - buyer chooses $b_t$ equalizing marginal utility of the bond with marginal cost (its price).

Trade off is entirely coming from the buyer’s side.
Conclusion

- What features do means of payment need to have?
  - incentives
  - insurance

- When can the government bond help? Is it really the government or other things?
  - Private mkts can do pretty well