Credit Markets, Limited Commitment and Government Debt

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[1] The 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:

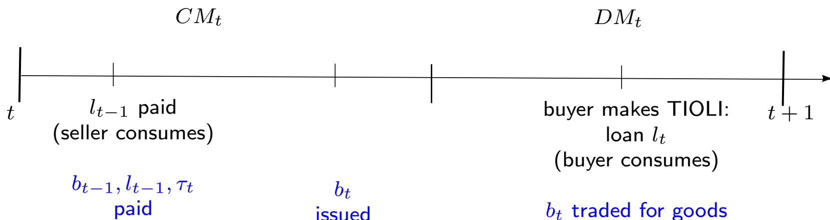
- Tri-party repo mkt
- Sovereign debt

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



Equilibria

Private credit vs government bonds

- default on
  - previous period loan (l_t)
  - current period taxes (τ_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 $(t, t+1)$ $\Rightarrow$ 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 $\Rightarrow$ always sufficient goods to pay for obligations

Alternative mechanism

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

- τ_t goods paid by non defaulters as contribution to a default/guarantee fund in CM_t
- b_t license to trade, issued by the mechanism, traded on a mkt open at end of CM_t
  - $\forall i \;\; b_t(i)$ is a claim to a unit of consumption good in CM_{t+1} delivered by the mechanism in the event that buyer i defaults in CM_{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 τ_{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 $\eta_t = \int_{\{i:H_t(i)=0\}} di$

Alternative mechanism: equilibrium

- market clearing

$$\int_0^1 b_t(i)di = B_t \qquad \forall t$$

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