CCFEA

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Discussion: *Liquidity Saving Mechanisms and Bank Behaviour*
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ABM- B a F

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Design issues In LVPS

Two polar extremes:

- Deferred Net Settlement (DNS)
- Real Time Gross Settlement (RTGS)

	Liquidity	Delay
DNS	Low +	High
RTGS	High	Low

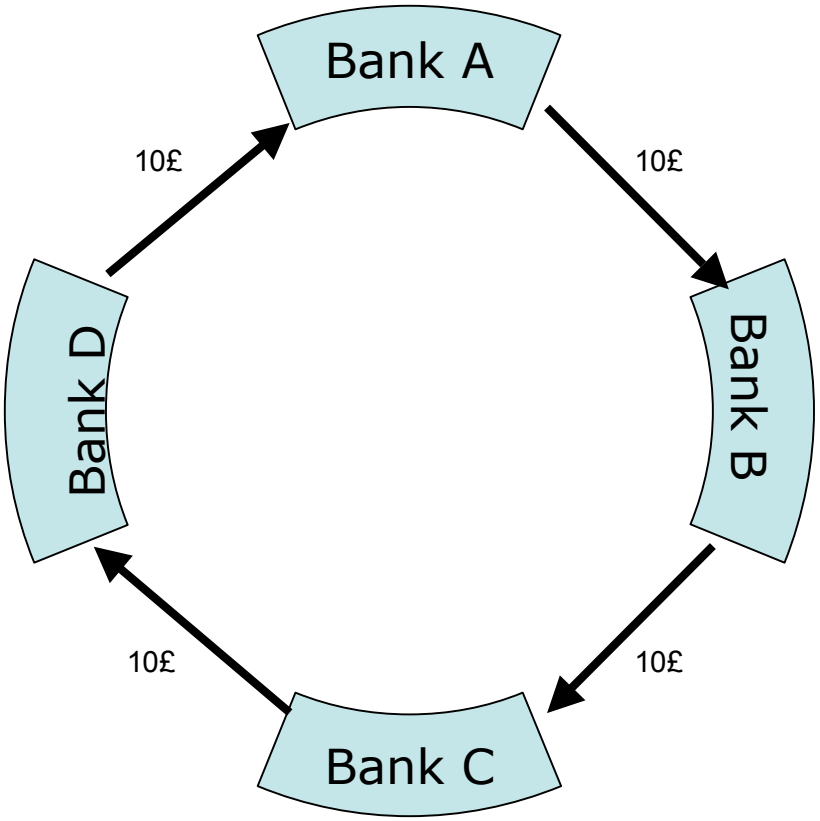
→ Hybrids

What are the design issues in a LVPS?

Three objectives :

1. Reduction of settlement risk
2. Improving efficiency of liquidity usage : _ of a country's GNP goes through the interbank system on a *daily* basis
3. Improving settlement speed (operational risk)

Example: DNS vs. RTGS



	Liquidity
DNS	0 £
RTGS	40 £

Logistics of liquidity posting

- Intraday liquidity can be obtained in two ways: waiting for incoming payments; or posting liquidity.

- Two ways of posting liquidity in RTGS:
  - Just in Time (JIT): raise liquidity whenever needed paying a fee to a central bank, like in FedWire US
  - Open Liquidity (OL): obtain liquidity at the beginning of the day by posting collateral, like in CHAPS UK

- A good payment system should encourage participants to efficiently recycle the liquidity in the system.

- Folk theorem: "A dollar posted earlier in the day improves the liquidity recycling capabilities of RTGS"

Risk-efficiency trade off (I)

- RTGS avoids the situation where the failure of one bank may cause the failure of others due to the exposures accumulated throughout a day;

- However, this reduction of settlement risk comes at a cost of increased intraday liquidity needed to smooth the non-synchronized payment flows.

Risk-efficiency trade off (II)

- Free Riding Problem:
  - Nash equilibrium à la Prisoner's Dilemma, where non-cooperation is the dominant strategy

- If liquidity is costly, but there are no delay costs, it is optimal at the individual bank level to delay until the end of the day.

- Free riding implies that no bank voluntarily post liquidity and one waits for incoming payments. All banks may only make payments with high priority costs.

- So **hidden queues** and gridlock occur, which can compromise the integrity of RTGS settlement capabilities.

Main Ingredients of Galbiati-Soramaki Model

- ****Extant Constraint: CHAPs RTGS, banks can send payments for execution only if there are funds available**
- Banks maintain hidden queues to save liquidity on 'non-urgent' or large payments
- If these queues can be made public in Central Queues, some of them can be netted out
- LSM : Liquidity saving mechanism and also delay reducing
- How to incentivize public queues of payments?
- Not clear from G&S how this happens without weakening CHAPS requirement that all liquidity is posted in the morning
- Banks can reduce liquidity posted in the morning and go for 'excessive' use of central netting during the need and end up needing more liquidity : G&S call this a 'bad' equilibrium
- All I can say is that 'bad' equilibrium may only be in terms of greater delay and sometimes unpaid items

Some Questions

- Page 5 :Is LMM (Liquidity management mechanism) same as DNS ? No liquidity posted am and delay till end of day and then netted ?
- Symmetric equilibria (baks experience similar sized inlows and outflows; but banks in Chaps are not symmetric)
- How do banks learn how to minimize cost functions : $a\_ + \sum u_r (t_r - t_r")$

- Banks pick threshold : if above this try and execute and if below this delay

- Non trivial problem
- Is adaptie learning is used ?
- Ask Practitioners ?

Herfindahl Index Asymmetry And Liquidity Needs

	Bilateral DNS	Lower Bound (Multilateral DNS)	Upper Bound
Equal Size Banks (Proxied Data) Herfindhal Index 1/14 ~ 0.071	0	0	£2.4 bn
Real Chaps Data Herfindhal Index ~ 0.2	£ 19.6 bn	£5.6 bn	£22.2 bn
Proxied Data (IID Real) Herfindahl Index ~ 0.2	£19.6 bn	£5.6 bn	£17.6 bn

Note that total value of payments is the same in all scenarios

Bank Failure analysis

- IPSS allows to simulate the failure of a bank, and to observe the effects. For example, under JIT:

Scenario	Failure big bank (K)	Failure small bank (F)
Chaps IID Real	32,384 £94.2 bn	2,634 £1.0 bn
Equal size banks (with same total value of payments and arrival time)	11,732 £21,1 bn	

- Note that, because of the asymmetry of the UK banking system, a failure of a bank would have a very different effect, depending on the size of the failed bank.

What can IPSS do?

http://privatewww.essex.ac.uk/~aalent/IPSS/IPSS_2_10.exe

Interbank structure

- Heterogeneous banks in terms of their size of payments and market share

  -tiering N+1;

  -impact of participation structure on risks.