Discussion of “Warehouse Banking”

By Donaldson, Piacentino and Thakor

Basic Argument

- the ability to safeguard valuables (commodities storage) is a natural complement to the other features of banking—lending and payments services.

- Partial complementarity stories

- Payments services and lending (‘knowing your customer’)
- Payments services and safeguarding valuables (‘goldsmith banks’)
- Reliability (or pledgeability) and any of the other individual functions

- Setup

Three periods, risk neutrality, continuum of three types of players: Farmers, Laborers, and Warehouses (banks)

Endowment: Farmer: seed corn in period 0

Laborer: labor in period 0

Consumption: All agents consume period 2 corn

- Setup

Technology: Farmer can use seed corn and labor to produce period 1 corn (Leontief function for simplicity; not important)

Warehouse can store corn efficiently between periods; other agents inefficiently. (1 unit in 1 – δ out)

- Parameter restrictions

- Farmers technology is productive (NPV positive)
- Depreciation in private storage not too high (if extremely high then the incentive problem discussed below will not bind)

- First best

- Farmers are efficient users of grain at date 0; all corn is used in production.
- Warehouses efficient storers of grain at date 1.
- Labor is employed by farmers up to marginal revenue product in production function

- No-credit benchmark

- Farmers divide grain endowment between input and wages to laborers in the efficient production mix
- Grain not being used for input is stored in the warehouse (i.e., laborers deposit their wages)

- Contracts:

- Laborers anonymous; any promises they make for future payment unenforceable.

- Benefits of Borrowing

- Without borrowing, less output than first best; farmers would like to pay with future corn rather than period 0 corn.
- But by hypothesis they can't be trusted by laborers: they are not identifiable to laborers (or to each other)

- Specifically

- Warehouses issue promises to pay grain one period ahead; these promises are transferable.
- If issued in return for receipt of grain, the rate of exchange is in effect a gross interest rate.

- More importantly:

- Warehouse and farmer can exchange IOUs (All IOUs are also transferrable debt).
- Farmer uses warehouse IOU to pay laborer, thereby saving on seed corn.
- (The authors make a big deal of the difference between ‘real’ and ‘fake’ warehouse receipts, depending on whether the warehouse actually possesses the promised grain. ‘Fake’ receipts are nonetheless useful)

- Why does this make a difference?

- Because warehouse more reliable than farmer
- AND because warehouse better able to collect on debts than laborer

- Warehouse more reliable than farmer

Because (by assumption)

  - Either warehouse deposits are pledgeable (tied down)
  - Or warehouse has more forfeitable wealth
  - Extensions endogenize this

- Warehouse better debt collector than laborer

- Warehouse stores grain more efficiently (carrot)
- Once it holds grain, between periods 1 and 2 it can use it to offset unpaid debts (stick)

- Why doesn’t a deadbeat farmer store his grain with a different warehouse?
- Because the warehouse lender sells the IOU to whichever warehouse stores his grain, which then offsets any defaulted debt.

- Market equilibrium

- Prices as given, maximize date 2 consumption subject to budget constraints. Farmers also have IC constraint on their borrowing.
- In equilibrium
  - gross interest rate = 1 each period for deposits
  - Lending to farmers interest rate = 1 because IC constraint means riskless
  - Wages = marginal cost of labor
  - No private grain storage

- Equilibrium is the second best outcome:

- Same as maximization problem for farmer given the budget constraint, non-negativity and incentive compatibility:

  Temptation: store output yourself.

  Proper behavior: repay first period loan, store remaining output for higher return.

- Outcome generally better than no-borrowing, but not first best, because farmers collectively are at limit of their incentive constraints for repayment.

- Farmer's identity

- Must be linkable to his IOU. If that is the case, why couldn't he issue his own to pay laborer, who then exchanges it with warehouse in period 1?
- (Several possible answers)
- But illustrates delicacy of description.

- In short

- This paper makes clear some important but subtle aspects of payment and banking
- Perhaps the key features of a bank, as illustrated in this paper, are superior enforcement and superior ability to establish identities.

- Paper then has lots of interesting things to say

- Narrow banking (not good)
- Liquidity creation (multiplier): ability to pledge equal to output of grain not just to endowment.
- Monetary policy (interest rate affects in surprising ways: high interest rates let the bank lend more.)