

Comments on T. Koepl, C. Monnet and T. Temzelides' "A Dynamic Model of Settlement."
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Aim: Examine how settlement system helps achieving the efficient allocation

Framework: Periodic model of random matching and centralized meeting

In odd number of periods, random bilateral meeting for trading specialized nondurables

with probability γ , an agent has an opportunity to consume: utility $u(q)$

with probability γ , an agent has an opportunity to produce: cost $e(q)$

with probability $1 - 2\gamma$, an agent cannot consume nor produce

Social planner cannot observe whether the agent has an opportunity to trade, nor whether he consumes, but observes how much the agent produces

In even number of periods, centralized meeting for trading general nondurables

utility of consuming $l = l$, cost of producing $l = l$.

People maximize the expected discounted utility

The first best without the incentive constraint: To consume and produce q^* specialized goods whenever having opportunity, where

$$u'(q^*) = e'(q^*).$$

The planner's problem: choose q and l to maximize

$$\gamma \frac{u(q) - e(q)}{1 - \beta}, \text{ subject to}$$

$$-e(q) + l + \beta\gamma \frac{u(q) - e(q)}{1 - \beta} \geq 0, \quad (ICP),$$

$$u(q) - \frac{\gamma}{1 - \gamma}l + \beta\gamma \frac{u(q) - e(q)}{1 - \beta} \geq 0, \quad (ICC).$$

$$-\frac{\gamma}{1 - \gamma}l + \beta\gamma \frac{u(q) - e(q)}{1 - \beta} \geq 0, \quad (ICN).$$

(ICP) and (ICN) can be combined to $e(q) \leq \beta u(q)$.

\Rightarrow the first best can be achieved if $e(q^*) \leq \beta u(q^*)$.

The planner's problem is "decentralized" through the payment system.

At the end of decentralized trading periods, the payment system assigns:

balance of the producers of $q^* = d$,

balance of consumers and non-traders $= -\frac{\gamma}{1-\gamma}d$.

In the centralized trading period, people trade the balance and general goods competitively in order to clear the balance at the end. (without clearing, people cannot participate in future)

producers consume general goods by $l = pd$

non-producers produce general goods by $l = p\frac{\gamma}{1-\gamma}d$.

As long as $e(q^*) \leq \beta u(q^*)$ and $l = pd \in [e(q^*) - \beta\gamma\frac{u(q^*) - e(q^*)}{1-\beta}, \beta(1-\gamma)\frac{u(q^*) - e(q^*)}{1-\beta}]$, the payment system achieves the first best allocation.

Comments:

Important question, and inherently good approach

The competitive economy is indeterminate, with a continuum of equilibria with different l even with the same d . \implies real indeterminacy

We do not observe a competitive payment system in which those who buy and those who do not buy nor sell are treated equally. Perhaps, this payment system is "too centralized".

Why the planner can observe the output of all the agents in decentralized meeting?

In usual payment system, the buyer instructs the payment system to transfer his balance to the producer who sells him output.

The payment system does not observe output. \implies The pair of agents can transfer balance without the actual trade of output.