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Endogenous supply of fiat money

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Abstract

We consider whether reputation concerns can discipline the behavior of a long-lived self-interested agent who has a monopoly over the provision of fiat money. We obtain that when this agent can commit to a choice of money supply, there is a monetary equilibrium where it never overissues. We show, however, that monetary equilibria with no overissue do not exist when there is no commitment. This happens because the incentives this agent has to maintain a reputation for providing valuable currency disappear once its reputation is high enough. More generally, we prove that in the absence of commitment overissue happens infinitely often in any monetary equilibrium. We conclude by showing that imperfect memory can restore the positive result obtained with commitment.

JEL classification: C73; D82; D83; E00

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1. Introduction

Frictions in trade are necessary if money is to be valued as a medium of exchange. The standard approach to model these frictions is to assume that trade is anonymous and decentralized. Under these assumptions, a large body of work has shown that money is feasible when its supply is exogenous. However, if the amount of money in circulation is determined by self-interested agents, this can lead to the so-called dynamic inconsistency problem: if money has value, any agent with the ability to print money faces a temptation to overissue, as any deviation from a

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pre-specified plan of action is likely to go unnoticed in a decentralized economy. In other words, money may not be feasible if its supply is endogenous.

The existing literature on endogenous money deals with the dynamic inconsistency problem by assuming a form of record keeping: the behavior of note issuers can be publicly monitored. See Berentsen [5], Cavalcanti et al. [6], Cavalcanti and Wallace [7], Martin and Schreft [16], Ritter [18], and Williamson [19], for example. [1] In this article we depart from this approach and address the dynamic inconsistency problem in a decentralized economy where money is issued by a single self-interested agent and its choice of money supply is *private*. The absence of record keeping means that agents can only learn about the money supply from their own experience, i.e., information is decentralized. Hence, the monitoring of the money supplier's behavior is private and imperfect. This assumption about information is a natural one in an economy where trade is decentralized.

The starting point of our analysis is a simple version of the model introduced in Kiyotaki and Wright [13], modified in a number of ways. First, as indicated above, the money supply is privately determined in each period. Moreover, the money supplier is either patient or impatient, and this is also its private information. Second, the other agents in the economy can now decide between staying in autarky or entering the market and transacting with the help of money. The money supplier's revenue from money issue in a given period is proportional to how much new currency it prints and to the measure of agents who choose the market at this point in time. In particular, holding everything else constant, this revenue is higher if there is overissue. Finally, autarky is always better than the market if money is always overissued, which happens when the money supplier is impatient, but the opposite is true when overissue never takes place.

Since the market is always worse than autarky when the money supplier is impatient, the patient money supplier faces a trade-off between short-run gains from overissue and long-run losses due to a decrease in its reputation for providing valuable currency. Indeed, if it overissues, the agents in the economy become more convinced that the money supplier they face is impatient, leading to a smaller revenue from money issue in future periods. The idea that reputation concerns may help solve the dynamic inconsistency problem is not new. Klein [14] considers an environment where such trade-off is present. In his model, however, this trade-off is assumed rather than derived, and it turns out that this has important consequences.

Notice that in general the choice of money supply affects both the frequency of trade meetings (the extensive margin) and the terms of trade in such meetings (the intensive margin). However, since in our environment money and goods are indivisible and there is an unit upper bound on money holdings, the only margin that is affected is the extensive one. This simplifies the analysis considerably, but preserves the trade-off between reputation and short-run gains from overissue.

We first consider the case where the choice of money supply in the first period is binding, the so-called full-commitment case. We show that in this situation there is an equilibrium where the patient money supplier never overissues as long as its discount factor is high enough. The intuition is simple. If the patient money supplier behaves as expected and never overissues, its reputation increases over time, which leads to a steady stream of revenue from money issue. If, instead, the patient supplier deviates and always overissues, its revenue from money issue increases in the short-run. However, its reputation for being patient disappears over time, and so its revenue from money issue decreases to zero in the long-run. Hence, if the patient money supplier cares enough about the future, deviating is not profitable.

[1] An exception is Monnet [17], who establishes the feasibility of endogenous fiat money without monitoring. The dynamic inconsistency problem is not present in his framework, though.