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Is higher confidence of fiat money necessarily desirable?

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Abstract

We investigate whether higher confidence of fiat money is desirable from the viewpoint of dynamic resource allocation. Using a simple overlapping generations model, we demonstrate that higher confidence of fiat money depresses economic growth and harms the welfare of future generations born sufficiently later.

Keywords: Fiat money; Overlapping generations

JEL classification: E52; O41; O42

1. Introduction

It is needless to say that high confidence of fiat money is indispensable for efficient exchange in the market economy. Does this mean that higher confidence of it is desirable for all the agents of the economy? The purpose of this paper is to examine this problem and clarify the social cost of fiat money with high confidence.

Weil (1987) is the first to investigate the role of the confidence of fiat money under the framework of the neoclassical growth model with overlapping generations.[1] He defined the degree of confidence as the exogenous probability with which fiat money is still valued in the next period, and demonstrated that fiat money is positively valued in equilibrium only when the probability is large enough. In his paper,

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[1] The famous previous works of Samuelson (1958), Wallace (1980), and Tirole (1985) and so on did not consider the concept of the degree of confidence, while the concept itself had been introduced by Blanchard (1979).

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however, it is not discussed what effect a change in the degree of confidence has on the economy. In this paper we investigate the effects of such a change using a simpler framework presented by Grossman and Yanagawa (1993)[2], and demonstrate in particular that higher confidence of fiat money depresses economic growth and harms the welfare of future generations born sufficiently later. This implies that higher confidence of fiat money is not necessarily desirable from the viewpoint of dynamic resource allocation.

2. The model

We consider a one-sector production economy with overlapping generations in which agents live for two periods. The population of each generation is assumed to be L and constant, so the population growth rate is zero. The formulation of a representative household is basically the same as that of Weil (1987), so we mention it only briefly. In this economy there are two methods of savings: physical capital and fiat money. We suppose that fiat money is a risky asset in that it is valued in the next period with exogenous probability q and is not valued with probability $1-q$, and also that if fiat money is not valued in some period it will never be valued in the following future periods. So the probability q represents the degree of confidence of fiat money, and higher q means higher confidence. At period t a representative household of generation t solves the following problem:

$$\text{Max} \quad U_t = \log c_t^y + \beta[q\log c_{t+1}^o(1) + (1-q)\log c_{t+1}^o(2)]$$

$$\text{s.t.} \quad c_t^y + s_t + p_t m_t \le w_t, \quad c_{t+1}^o(1) \le (1+r_{t+1})s_t + p_{t+1}m_t, \quad c_{t+1}^o(2) \le (1+r_{t+1})s_t$$

where β, c_t^y, $c_{t+1}^o(1)$, $c_{t+1}^o(2)$, s_t, w_t, r_{t+1}, p_t, m_t denote, respectively, subjective discount factor, young period consumption, old period consumption when money is still valued, old period consumption when money is not valued, quantity of investment in physical capital, labor income, return rate of physical capital, price of one unit of money in terms of goods, and quantity of money purchased. After some calculations we can derive the optimal plans for consumptions and savings as follows.

$$c_t^y = \frac{1}{1+\beta} w_t \tag{1}$$

$$c_{t+1}^o(1) = \frac{q}{\phi_t}(1+r_{t+1}) \times \frac{\beta}{1+\beta} w_t \quad \left(\text{where } \phi_t \equiv \frac{p_t(1+r_{t+1})}{p_{t+1}}\right) \tag{2}$$

$$c_{t+1}^o(2) = \frac{1-q}{1-\phi_t}(1+r_{t+1}) \times \frac{\beta}{1+\beta} w_t \tag{3}$$

[2] The paper of Grossman and Yanagawa (1993) is an extension of the work of Tirole (1985) to the framework of endogenous growth theory. The reason why we use their framework is that their framework is simple enough to investigate fully what effect a change in the degree of confidence has on the welfare of all the current and future generations in the steady state. A similar investigation under the framework of the neoclassical growth model will be an important question for future research.