

Why stable fiat money hyperinflates: Results from an experimental economy

Cary A. Deck^{a,*}, Kevin A. McCabe^{b,1}, David P. Porter^{b,1}

^a Department of Economics, 425 WCOB, Sam M. Walton College of Business, University of Arkansas, Fayetteville, AR 72701, USA

^b Interdisciplinary Center for Economic Science, 4400 University Drive, MSN 1B2, George Mason University, Fairfax, VA 22030, USA

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Abstract

Experiments are used to study acceptance of a fiat money as a medium of exchange. In these finite horizon markets, people trade valuable goods for intrinsically worthless money. However, when a public sector capable of printing money is introduced, the private sector is crowded out, producing dramatic hyperinflations and collapses in trading. This economic failure is found to be a consequence of the public sector undermining the market's ability to coordinate trade. The inefficiency associated with the hyperinflation is found not to be a purely monetary phenomenon resulting from an increasing money supply.

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Fiat money is a convention that allows individuals to complete trades without relying on the coincidence of wants or diverting valuable commodities to serve as money. In order for individuals to accept intrinsically worthless fiat money in exchange for valuable goods, the agents must believe that the money can be used to complete subsequent purchases of other goods or services. Thus, standard theory predicts that fiat money will not circulate under a finite horizon.² McCabe (1989)

* Corresponding author. Tel.: +1 479 575 6226; fax: +1 479 575 3241.

E-mail addresses: cdeck@walton.uark.edu (C.A. Deck), kmccabe@gmu.edu (K.A. McCabe), dporter4@gmu.edu (D.P. Porter).

¹ Tel.: +1 703 993 4850, fax: +1 703 993 4851.

² Kovenock and De Vries (2002) develop a finite horizon model of helicopter money. In their model fiat money is accepted in a fixed sequence of transactions because the agents do not know how many subsequent trades remain in the sequence.

demonstrated in a simple environment that a finite trading horizon causes money's acceptance to unravel immediately, but only after subjects have experience with the end of horizon. Lian and Plott (1998) examine money in a more complex circular flow environment, also finding that subjects were in fact able to coordinate trades and achieve a high level of efficiency in a finite horizon.

Many diverse models have been constructed to demonstrate how an intrinsically worthless currency can circulate within an economy. Beginning with Clower (1967), cash-in-advance models have been used to support fiat money's acceptance by placing restrictions on the timing of transactions; see Svensson (1985), Lucas and Stokey (1987), and Hayashi and Matsui (1996). An alternative approach is based on the overlapping generations (OLG) model of Samuelson (1958) in which the young accept fiat money with the expectation that it can be used when the agent is older. Experimental evidence by Marimon and Sunder (1993), Lim et al. (1994), and Camera et al. (2003) demonstrates that within the OLG framework agents are able to conduct trade using a type of fiat money.³ Kiyotaki and Wright (1989) create another type of model where fiat money has a role as a medium of exchange due to its sufficiently low holding cost; see Brown (1996) and Duffy and Ochs (1999) for related experimental work.

In these models, markets serve to coordinate behavior by determining relative prices. With functioning markets generating price information, agents can pursue a series of advantageous trades. While examples of stable fiat monies abound, including national currencies and privately issued Internet monies, an economic collapse can occur when agents lose faith in the money's ability to make future purchases. In fact fiat money can rapidly become unstable as evidenced by observed hyperinflationary episodes.

Multiple explanations for such collapses have been offered. Capie (1986) finds three common elements of hyperinflations: the use of a fiat money, government spending financed through the use of the printing press, and civil unrest. Based upon historic data, Sargent (1982) finds evidence suggesting that it is the government injecting newly created money into the private economy that causes hyperinflation. Government activity of this form actually includes two factors that could cause the hyperinflation. First is the purely monetary phenomenon of too much money chasing too few goods. The second way government spending impacts a fiat money economy is by interfering with the determination of prices in the market. As the government competes for real goods, the market's ability to coordinate behavior through nominal price information is weakened.

The autarky that results from a loss of faith in the currency leaves market participants worse off than if everyone had continued to accept the money. Hence, there are two countervailing forces affecting money's acceptability: a desire to reap the gains from trade and a fear of lost confidence. Through the use of controlled laboratory experiments, this work explores the factors affecting a fiat money's stability as a medium of exchange in the sense of maintaining relative prices, thereby allowing economic agents to coordinate activity and conduct transactions. Unlike studies based on field data, the use of laboratory methods also affords disentanglement of an increase in the money supply with the disruption of markets that occurs when governments finance expenditures by printing money.

³ The money in these OLG experiments is not a pure fiat money as the currency was converted into salient payoffs at the conclusion of the experiment based upon either predicted future prices or previously observed prices. Thus the money had no value of its own, but an agent would always be able to use the money to trade for valuable commodities.

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