



Avoiding hyperinflation: Evidence from a laboratory economy

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Abstract

Hyperinflation results from the creation and injection of fiat money into the economy. Using laboratory methods, this paper examines conditions under which fiat money can serve as a medium of exchange in a finite horizon economy while the government is active in the markets for goods. Consistent with the rational expectations hypothesis, issuing new fiat currency does not stabilize a hyperinflation; however, restricting government spending to the amount of tax revenue or reverting to backed money does. These findings are consistent with previous studies of historical data; thus this work confirms those findings from an alternative data source, the laboratory.

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1. Introduction

There is a clear friction between a government actively printing and spending fiat money and that money's ability to serve as a medium of exchange. The dramatic effects of this incompatibility have repeatedly materialized as hyperinflationary episodes. For example, following WWI, German wholesale prices increased by more than 1.36×10^{14} percent between 1914 and 1924. In Austria the retail price index increased 24,167 percent in the three and a half year span starting in January of 1921. Hungarian prices increased on the order of 3×10^{25} after the end of WWII. Other

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periods of hyperinflation occurred in colonial America during the American Revolution, in France during the French Revolution, in the Confederacy during the US Civil War, and more recently in South America.

Historically, three common elements are associated with hyperinflations. These factors include the use of fiat money as a medium of exchange, government spending financed by the creation of money and high levels of civil unrest (see Capie, 1986). Deck et al. (2001) examine these factors as the impetus for hyperinflation in a controlled laboratory setting. The results of their experiments indicate that when the money supply is fixed, individuals are willing to accept intrinsically worthless money in transactions even when the money's finite horizon is explicit and common knowledge among market participants. However, when the monetary authority purchased goods with newly created money, a hyperinflation was observed. Deck et al. (2001) conclude that the observed unraveling in the acceptance of the money as a medium of exchange is due to the corruption of the price discovery process and not simply the result of an increasing money supply. In their experiments, market transactions were conducted using a double auction. The bids and asks that agents post in such a market convey information about the current willingness to buy and sell of the market participants. Thus the auction provides a mechanism by which agents discover the relative prices of goods. Corruption of the price discovery process occurs when the nominal price information no longer reflects the relative values and costs of the underlying goods. The result that government purchases lead to hyperinflation is consistent with the rational expectations framework expressed by Sargent (1986) who examined hyperinflations in four European countries following WWI and concluded that inflation is a fiscal phenomenon.

This does not imply that fiat money is always unstable. McCabe (1989) demonstrates that agents are willing to accept a pure fiat money in exchange for a valuable good.¹ Currently, such monies circulate in many naturally occurring settings including national economies, Internet markets, and "local currency" economies. Of course, most of these economies can be considered to have an indefinite life. In such cases theoretical models such as overlapping generations can explain why fiat money circulates.² Experimental work has found support for the predictions of OLG models (see Marimon and Sunder, 1993; Lim et al., 1994; Camera et al., 2001). Another approach to modeling fiat money is that of Kiyotaki and Wright (1989) where agents accept a worthless good due to its lower holding cost. However, experimental studies of this model have founded only limited support for its accuracy in predicating behavior (see Brown, 1996; Duffy and Ochs, 1999). In most of these previous laboratory investigations, the money used was actually convertible into cash at some typically endogenously determined rate.

As the rational expectations model predicts, and as historic hyperinflationary episodes and laboratory experiments have verified, without credible restraints on the

¹ The money in McCabe (1989) did slowly unravel as subjects had repeated experience with the end of the trading horizon; however, such unraveling was minimal in Deck et al. (2001).

² Kovenock and de Vries (2002) develop a model in which fiat money circulates under a finite horizon due to uncertainty about where in a fixed sequence of trades the economy began.

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