

Signal Extraction and Hyperinflations with a Responsive Monetary Policy

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ABSTRACT

This paper develops a multi-period extension of the Lucas (1972) overlapping generations “island” model with endogenous monetary policy (based on the minimization of a loss function over inflation and output deviations) and stochastic realization of the “allocation” of the young people across the two islands. These allocation realizations are interpreted as output shocks (since only the young people produce). The paper examines two cases: the certainty case when the exact monetary policy is known to the young, and uncertainty case where the young receive only a mixed signal of the output shock and the monetary policy weights through the price (the signal extraction problem). In the certainty case, the neutrality result holds. In the uncertainty case, even monetary shocks have real effects as a result of the signal extraction problem. After characterizing the resulting price function by its constant elasticity to the signal, we derive values of this elasticity and the monetary policy weights such that hyperinflations will develop. We find that for certain weights, hyperinflations can develop even when the price function is concave in the signal. Finally, we formulate a particular convex case of the price function (making distributional assumptions) to analyze the price and monetary policy examples and statics as functions of the weights on the inflation and output deviation terms.

Keywords: Rational expectations, Neutrality of Money, Signal Extraction Problem, Loss function, Hyperinflations, High inflations