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The monetary dynamics in the Yugoslav hyperinflation of 1991–1993: The Cagan money demand

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Abstract

The Yugoslav hyperinflation of 1991–93 is one of the highest and the longest episodes ever recorded. The monetary dynamics of the hyperinflation is well characterized by the Cagan model. With revealed cointegration between real money and inflation, the model is accepted irrespective of the underlying expectations formation process and it implies stationary velocity shocks. Employing cointegrated VAR, the exact rational expectations Cagan model is rejected and an informal test within the same framework shows that the Yugoslav public exhibited a lower degree of forward-looking behavior relative to that in other classical hyperinflations. This enabled the government to extract non-decreasing seigniorage by increasing money growth and inflation above expected rates and suggests an explanation for the ever-increasing money growth in spite of the resulting monetary chaos.

JEL classification: E31; E41; E51

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1. Introduction

The 1991–93 hyperinflation in Yugoslavia (Serbia and Montenegro) was one of the most extreme in economic history. It was the second highest after the

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Hungarian inflation of 1946–47 and the second longest to the Russian in 1921–24. The episode belongs to classical hyperinflations. The cause was monetization of the large fiscal deficit (Bogetić et al., 1994). While covering the deficit, the government succeeded in collecting approximately constant seigniorage throughout the hyperinflationary period. This was, however, accompanied by unstable and accelerating inflation and sharply decreasing real money balances, rather than steady-state inflation that maximizes seigniorage.

The dynamics could be explained by the Cagan (1956) model of hyperinflation extended to include a money-financed budget deficit and adaptive expectations (Evans and Yarrow, 1981). Adaptive expectations imply that the government succeeds in fooling the people by increasing the money supply and hence inflation above the expected one, which allows higher seigniorage than a maximum of a steady state. We suggest this as an explanation for the Yugoslav government's pushing inflation beyond the steady state and causing monetary chaos. If the assumption of adaptive expectations seems implausible, one may pose rational expectations and add lagged adjustment in Cagan money demand to obtain hyperinflationary dynamics (see for example Kiguel, 1989).

In this paper, we test whether the monetary dynamics of the Yugoslav hyperinflation can be explained by the Cagan (1956) money demand model. We explore the role of expectations expressed in the extent of forward-looking behavior by the public while deciding on real money holdings, to address the question why the government resorted to ever-increasing inflation, and hence monetary chaos, while collecting seigniorage. We also examine the differences, if any, in money demand schedules for the two consecutive Yugoslav hyperinflations, that of the late 1980s and the early 1990s. Having been successively exposed to two different types of hyperinflations – the slowly building and short lived one in the 1980s and the extremely high and long lasting one in the 1990s – one might expect the public to react differently.

Following Taylor (1991), the validity of the Cagan model can be tested without specifying the expectations formation process. If real money balances and inflation rate are cointegrated, then the forecasting error is stationary, and the model holds for any relevant expectations formation process including adaptive and rational. Thus we test the validity of the Cagan model by investigating whether real money and inflation rate have one unit root each, and whether they cointegrate. This procedure has been used to obtain the results for classical hyperinflations (Taylor, 1991), Latin American (Phylaktis and Taylor, 1993) and for former Yugoslavia's hyperinflation in the 1980s (Frenkel and Taylor, 1993). We compare our results for the new Yugoslav hyperinflation with these studies.

Under rational expectations, the Cagan model implies the existence of an additional cointegrating relation, that between real money balances and money growth (Engsted, 1993). If this relation is revealed, cross-equation parameter restrictions can be tested on the corresponding VAR model implied by exact rational expectations. Engsted (1994) found that in four out of six classical