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# Price level determinacy and monetary policy under a balanced-budget requirement[☆]

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**Abstract**

This paper analyzes the implications of a balanced-budget fiscal policy rule for price-level determination in a cash-in-advance economy under three alternative monetary policy regimes. It shows that the price level is indeterminate under a nominal interest rate peg and determinate under a money growth rate peg. Under a feedback rule that sets the nominal interest rate as a non-negative and non-decreasing function of the inflation rate, the price level is indeterminate for both low and high values of the inflation elasticity of the feedback rule and determinate for intermediate values. We also study balanced-budget rules that allow for bounded secondary surpluses or deficits. Comparing our results to those emphasized in the fiscal theory of the price level, it becomes clear that a key consideration for price-level determination is whether fiscal policy is specified as an exogenous sequence of primary surpluses/deficits or, alternatively, as an exogenous sequence of secondary surpluses/deficits. © 2000 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

In the past decade, the idea of imposing fiscal discipline through a balanced-budget requirement has gained considerable importance in the economic policy debate. This is reflected perhaps most clearly in the proposed balanced-budget amendment that was passed by the United States House of Representatives on 26 January 1995. Yet, little light has been shed on the consequences of balanced-budget rules for business-cycle fluctuations beyond the basic Keynesian insight that balanced-budget rules amplify business cycles by requiring tax increases and expenditure cuts during recessions and the reverse during booms. Even less theoretical work has been devoted to understanding the implications of balanced-budget rules for nominal stability, and, in particular, to understanding the restrictions that such a fiscal policy rule may impose on monetary policy if nominal stability is to be preserved.

This paper is part of a research project that aims to bridge this gap. In Schmitt-Grohé and Uribe (1997), we show in the context of a real economy that a balanced-budget rule can create real instability by making expectations of future income tax increases self-fulfilling. This kind of instability arises for plausible parameter configurations and for income tax structures similar to those observed in the United States and other G7 countries. The present paper embeds a balanced-budget fiscal policy rule into a monetary economy and analyzes its implications for nominal stability, and in particular, for the determinacy of the price level. We model a balanced-budget requirement as a fiscal policy that sets an exogenous path for the secondary surplus, defined as tax revenues net of government expenditures and interest payments on the outstanding public debt. We combine the balanced-budget requirement with three simple monetary policy specifications: a nominal interest rate peg, a money growth rate peg, and a feedback rule whereby the nominal interest rate is set as a non-negative and non-decreasing function of the inflation rate. We conduct the analysis within the cash-in-advance model with cash and credit goods developed by Lucas and Stokey (1987).

We first focus on a specification of the balanced-budget rule in which each period the secondary surplus is required to be zero, that is, the primary surplus (the difference between taxes and government expenditures) is required to be equal to interest payments on the outstanding public debt. We find that under this type of balanced-budget rule, the price level is indeterminate when the monetary authority follows an interest rate peg and is determinate when the monetary authority follows a money growth rate peg. These results are not necessary consequences of the monetary policy specifications alone. For example, Auernheimer and Contreras (1990), Sims (1994), and Woodford (1994) find that if the primary surplus is set exogenously, then an interest rate peg delivers a unique price level. This comparison highlights that given the monetary policy regime the adoption