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ScienceDirect
Journal of Policy Modeling 29 (2007) 489–504
Journal of Policy Modeling
www.elsevier.com/locate/jpm

Are currency crises low-state equilibria? An empirical, three-interest-rate model

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Received 1 February 2006; received in revised form 1 October 2006; accepted 1 January 2007
Available online 30 April 2007

Abstract

Suppose that the dynamics of the macroeconomy were given by (partly) random fluctuations between two equilibria: "good" and "bad." One would interpret currency crises (or recessions) as a shift from the good equilibrium to the bad. In this paper, the authors specify a dynamic investment-savings-aggregate-supply (IS-AS) model, determine its closed-form solution, and examine numerically its comparative statics. The authors estimate the model via maximum likelihood, using data for Argentina, Canada, and Turkey. Since the data show no support for the multiple-equilibrium explanation of fluctuations, the authors cast doubt on the third-generation models of currency crisis.

JEL classification: C62; E59; F41

Keywords: Recession; Currency crisis; Multiple equilibria

1. Introduction

One of the most controversial elements of Keynes' *General Theory* (1936) has been the question of the "underemployment equilibrium." Depending on one's reading of passages in chapters 20 and 21, an economy subject to credit market breakdowns may suffer a temporary fall in output, or move to a second, underemployment equilibrium, from which active government intervention is required to assure growth and prosperity at the standard (full employment) equilibrium. This prompts the question as to whether there are one or two equilibria in the economy. A related

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[1] The views presented here are those of the authors and not necessarily those of the Bank of Canada.

0161-8938/$ – see front matter
doi:10.1016/j.jpolmod.2007.01.002

question emerges from the literature on third-generation currency crises: can a currency crisis, interpreted as a breakdown of domestic credit markets following a devaluation, cause the economy to fall into an underemployment equilibrium in a manner consistent with Keynes's description of many years ago? We propose a general class of investment-savings-aggregate-supply (IS-AS) models consistent with results from the literature on third-generation currency crises and test them against data for Argentina and Turkey (middle-income nations that have faced currency crises in recent years) and for Canada (to guard against the possibility of excessive acceptance of the multiple-equilibrium hypothesis). We conclude that evidence does not exist to support any multiple-equilibrium hypothesis.

This paper develops a simple macroeconomic model of a small open economy subject to international shocks that may induce rapid depreciation in the nation's currency and/or a drop in the nation's income—in short, a currency crisis or a low-output state. This framework allows us to examine the interaction between particular forms of intermediate exchange rate regimes ("dirty floats") and the potential use of that monetary policy to alter the likelihood of a currency crisis or a low-output state. We later discuss both the possible types of currency crises the nation could experience and how a monetary authority's preference for exchange rate stability (as compared with other goals) alters its potential exposure to currency crises and low-output states.

One of the economic phenomena of the 1990s and 2000s has been the increased openness of the world economy, which has permitted nations to take full advantage of the opportunities offered by the free flow of commerce. The freer flow of financial assets has enabled most nations to adopt some form of freely floating or managed exchange rates that are fully convertible. But as these vast markets for assets and currencies have emerged, so has the potential for destabilizing speculation and financial crises. In the last 10 years, major currency crises have plagued Russia, East Asia, Turkey, and Argentina. These crises have led to large economic contractions, even on the scale of an economic depression. A nation experiencing such a crisis may reasonably expect to suffer a loss of 10–20% of real gross domestic product (GDP) in a single year. In comparison, the United States contracted by 45–50% over 4 years between 1929 and 1933. It is difficult to understate the importance of a currency crisis. In the same vein, even if many developed nations do not experience currency crises per se, they may be exposed to prolonged periods of below-average growth that can, in some circumstances, be thought of as a low-output state. Our theoretical model provides for both possibilities in a unified framework.

The theory of exchange rate target zones dates back to Krugman (1991). His original target zone model predicts that the path of the current exchange rate will be smoother (exhibit lower volatility) than it would have been in a free float, because arbitrageurs alter their market behaviour in accordance with the predictable pattern of monetary intervention specified by an announced target zone policy. These target-zone models are called "S-curve" models, for the S-shaped graph of a targeted exchange rate against its hypothetical value if it had not been targeted. Bertola and Caballero (1992) offer a starkly different conclusion in the case of imperfect credibility (imperfect commitment to an announced policy). Exchange rates under a target zone may be more volatile if intervention is not fully credible; that is, if arbitrageurs cannot expect with certainty that the monetary authorities will follow the announced target zone policy. This case of increased volatility is described as an "inverted S-curve" model. This conclusion is modified if the monetary authority either increases the likelihood of defending the current regime or moderates the degree to which it shifts the new central parity upon realignment; Cornell (2003b) offers a detailed analysis. Target zone models are interesting in that they yield outcomes that differ little from freely floating exchange rates, except when exchange rates are near the edges of the band. Cornell (2003a) provides empirical evidence that target zones produce this effect. Target zone models are also