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A System of Simultaneous Equations (SEM) for the Study of the Effectiveness of the Japanese Monetary Policy

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Abstract

In this paper, the authors study the effectiveness of the Japanese monetary policy set by the Bank of Japan (BOJ) to contrast the three major crises that the country has experienced since the second half of the 90s: that of the lost decade, that of 2008 and that of the Covid-19 pandemic. To this end, they use a particular type of mathematical-statistical model that is widely applied today in the economic field, namely a simultaneous equation model (SEM). This simultaneous equation model is estimated through an Iteratively reweighted least squares (IRLS) using quarterly historical series in the sample period Q1 1994 - Q2 2020. All data are in real terms. The results, appropriately compared with those of other authors, suggest that the monetary policy has a (limited) impact only on the interbank market. The fiscal policy, instead, has a greater ability to influence the money supply, the private consumption and the inflation expectations.

Keywords

Simultaneous Equations Model, Mathematical Methods, Economic Policy, Iteratively, Reweighted Least Square, Abenomics

1. Introduction

The debate regarding the effectiveness of the Japanese monetary policy has developed since the end of the 1990s, together with that relating to the causes of the structural change that the national economy was experiencing in those years. In fact, precisely between the end of the 90s and the early 2000s, the very long period of GDP growth that began after World War II finished and started a new