ELSEVIER

Firm investment, monetary transmission and balance-sheet problems in Japan: an investigation using micro data

Takashi Nagahata[a], Toshitaka Sekine[b],*

[a]*London School of Economics and Bank of Japan, Tokyo, Japan*
[b]*Research and Statistics Department, Bank of Japan, 2-1-1 Nihonbashi-Hongokucho,
Chuo-ku, Tokyo 103-8660, Japan*

Abstract

This paper investigates what can be learned about the effects of monetary policy on firm investment after the collapse of the asset price bubble in Japan. By estimating firm investment functions based on corporate panel data, the paper reveals that the monetary easing worked through the interest rate channel, but its effect through the credit channel was blocked because of a deterioration in balance-sheet conditions. The paper finds that this deterioration in balance-sheet conditions, especially in bank balance-sheet conditions, hampered investment by smaller non-bond-issuing firms more severely than that by larger bond-issuing firms.
© 2004 Elsevier B.V. All rights reserved.

JEL classification: E22; E50

Keywords: Investment; Monetary transmission channels; User cost of capital

1. Introduction

This paper investigates what can be learned about the effects of monetary policy on firm investment after the collapse of the asset price bubble in Japan.

For this purpose, based on corporate panel data, the paper estimates accelerator-type firm investment functions augmented with variables relating the balance-sheet conditions both of firm themselves and of their main banks. This approach relates the paper to the existing literature as follows:

- Our paper is one of few examples that estimate accelerator-type investment functions using Japanese data. Most of the previous studies employing Japanese corporate panel data estimate Q-type investment functions. These include Asako et al. (1989), Hoshi and Kashyap (1990), Hayashi and Inoue (1991). More recently, Ogawa and Kitasaka (1998), Suzuki (2001) follow this tradition.
- Our results are comparable with findings in other industrial countries. Outside Japan, there are several studies that estimate accelerator-type investment functions to gauge the effects of monetary policy. For instance, a series of studies organized by the European Central Bank (ECB) adopt the same type of functional forms to model firm investment behavior in their countries.[1]Chirinko et al. (1999) also estimate accelerator-type investment functions, using U.S. corporate panel data.
- Our paper follows Sekine (1999) in that balance-sheet conditions of both firm themselves and of their main banks are controlled simultaneously. In order to observe the impact of asset price fluctuations, some researchers augment their investment functions either with variables reflecting balance-sheet conditions of firms themselves (Ogawa et al., 1996) or those of their main banks (Gibson, 1997). Sekine (1999) combines these two approaches by examining the balance-sheet conditions of both at the same time.

The paper finds that the monetary easing after the bubble burst worked through the interest rate channel, but its effect through the credit channel was blocked because financial constraints became tighter following the deterioration in balance-sheet conditions. The paper demonstrates this by showing that the deterioration in balance-sheet conditions, especially in bank balance-sheet conditions, hampered investment by smaller non-bond-issuing firms more severely than that by larger bond-issuing firms.

The rest of the paper is organized as follows: Section 2 introduces the reduced-form investment functions used to examine monetary transmission channels. Section 3 outlines our micro data set. Section 4 presents our estimation results. Section 5 concludes the paper by discussing some policy implications of the research, which is followed by a data appendix (Appendix A).

2. Models

2.1. The interest rate and credit channels

The interest rate channel and the credit channel are often regarded as essential for monetary transmission.

Through the interest rate channel, a change in monetary policy translates into a change in the risk-free interest rate, which affects economic activities such as firm investment. Behind this channel lies the conventional investment theory that a firm adjusts the level of

---

[1] The studies cover investment functions in six Euro countries including Germany (von Kalckreuth, 2001); France (Chatelain and Tiomo, 2001); Italy (Gaiotti and Generale, 2001); Austria (Valderrama, 2001); Belgium (Butzen et al., 2001); and Luxembourg (Lünnemann and Methä, 2001). Chatelain et al. (2001) and Angeloni et al. (2002) provide overviews of these papers.