Available online at www.sciencedirect.com
SCIENCE DIRECT®
Journal of Banking & Finance 30 (2006) 2371–2386
Journal of BANKING & FINANCE
www.elsevier.com/locate/jbf

A note on efficiency and productivity growth in the Korean Banking Industry, 1992–2002

Kang H. Park *, William L. Weber

Department of Economics and Finance, Southeast Missouri State University, Cape Girardeau, MO 63701, United States

Received 24 June 2005; accepted 19 September 2005
Available online 1 December 2005

Abstract

In this paper we present estimates of Korean bank inefficiency and productivity change for the period 1992–2002 that are derived from the directional technology distance function. Our method controls for loan losses that are an undesirable by-product arising from the production of loans and allows the aggregation of individual bank inefficiency and productivity growth to the industry level. Our findings indicate that technical progress during the period was more than enough to offset efficiency declines so that the banking industry experienced productivity growth.

JEL classification: G21

Keywords: Bank efficiency; Bank productivity; Korean banks

1. Introduction

In this paper we investigate the effects of Korean financial liberalization and the Asian financial crisis on the efficiency and productivity growth of the Korean Banking Industry for the period of 1992–2002. During this period the industry underwent regulatory reform and restructuring that increased bank concentration. Unlike Japanese banks and other Asian banks, Korean banks wrote off large amounts of non-performing loans after the

* Corresponding author. Tel.: +1 573 651 2942; fax: +1 573 651 2947.
E-mail address: khpark@semo.edu (K.H. Park).

0378-4266/$ - see front matter
doi:10.1016/j.jbankfin.2005.09.013

financial crisis of 1997–1998. In the past, Korea has played an important role in the financial sector of Northeast Asia. Moreover, the Korean government recently implemented an ambitious plan to develop Korea as a financial hub for the region. Therefore, an analysis of the Korean experience should provide insight to other countries considering financial reforms.

We address certain empirical problems that have been encountered in bank efficiency studies. First, measures of technical efficiency estimated using Shephard (1974) output or input distance functions are not additive from the bank to the industry level, rendering minimal insight into industry performance over time. To address this problem, we use the directional technology distance function, which can be aggregated to an industry measure of performance (Färe and Primont, 2003; Färe and Grosskopf, 2004). Second, the fact that some bank loans become non-performing and are eventually written off requires an efficiency measure that can account for these undesirable by-products. Again, the directional technology distance function is capable of modeling efficiency for firms that produce desirable outputs and undesirable outputs (Weber and Domazlicky, 2001; Yu, 2004).

We also measure productivity growth throughout the period. Many studies of firm productivity growth yield estimates of technical regress. The measured technical regress is usually thought to be an artifact of the method that defines the frontier. For example, when data envelopment analysis (DEA) is used to construct the production frontier, firms that exhibit the best-practice output–input combination define the frontier in a given period and are technically efficient. If those same firms produce less output or use more input in a subsequent period but still define the frontier, the inward shift of the frontier is denoted as technical regress, when it could more logically be deemed lower efficiency. In their examination of labor productivity growth across countries, Kumar and Russell (2002) measure technical regress for some countries that have low capital-labor ratios and write that the results:

> should be taken with a grain of salt. For one thing, it is not clear how the world frontier could implode at some capital-labor ratios. Does knowledge decay? Were ''blueprints'' lost? It is perhaps more likely that the ''best-practice'' frontier constructed by the DEA technique is well below the ''true'' but unobservable frontier at very low capital-labor ratios and therefore that the apparent technological degradation at these low levels of capitalization are in fact efficiency declines. (Kumar and Russell, 2002, p. 540)

We address this problem by specifying a sequential reference set where the current period technology depends on current observations of inputs and outputs and the input–output combinations from all preceding periods (Tulkens and Vanden Eeckaut, 1995). As a consequence, the sequential method rules out technical regress as a source of productivity declines and assigns declines in productivity as arising from less efficiency. However, our method does not measure efficiency relative to the true unobservable technology, but instead constructs the frontier technology from the best-practice techniques of observed banks.

In Section 2 we provide a brief history of the Korean banking industry, including the regulations and reforms that occurred prior to the Asian financial crisis and in the post-crisis period. In Section 3 we review previous studies of Korean bank efficiency and outline the method used to estimate efficiency and productivity growth. In Section 4 we describe