Global Finance Journal 24 (2013) 153–170

Contents lists available at ScienceDirect

Global Finance Journal

journal homepage: www.elsevier.com/locate/gfj

An empirical study of bank efficiency in China after WTO accession

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ARTICLE INFO

Available online 16 July 2013

JEL classification:
G21
D24
O53

Keywords:
Bank efficiency
China
Bank characteristics
WTO accession

ABSTRACT

This paper documents the technical efficiency of Chinese banks over 1999–2010. With stochastic frontier analysis, we find that Chinese banks are about 18% more efficient in generating lending assets than profits. We also observe an upward trend of bank efficiency after China's entry to WTO in 2001. The improvement of bank efficiency is most prominent for the largest banks with substantial state ownership. We also find that majority state-owned banks are least efficient; well capitalized banks are less efficient; bank efficiency decreases with bank size at the lower end, but banks gain efficiency and realize economies of scale when bank size grows large enough; more fee-generating business reduces efficiency; better management improves efficiency.

1. Introduction

China's banking industry has gone through structural reforms and significant changes in the past two decades.[1] In the mid-1990s, the four specialized state-owned banks (often referred to as the "Big Four" in the banking industry in China) started their transformation from policy banks to commercial banks.[2] China's intent to join the World Trade Organization (WTO) was a major impetus for further reforms in the banking industry. In 1999, the historically accumulated policy-induced non-performing loans from the Big Four were peeled off from their balance sheets. In subsequent years, the Chinese government injected new capital to these banks and took further actions to reduce their non-performing loans. By July 2010, all the previously state-owned commercial banks have gone through

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[1] See Yao, Jiang, Feng, and Willenboackel (2007), Berger, Hasan, and Zhou (2009) and Barth, Zhou, Arner, Hsu, and Wang (2007) for China's banking reform and restructuring.

[2] The Big Four includes the Industrial and Commercial Bank of China (ICBC), China Construction Bank (CCB), Bank of China (BOC), and the Agricultural Bank of China (ABC).

1044-0283/$ – see front matter
http://dx.doi.org/10.1016/j.gfj.2013.07.001

initial public offering (IPO) in various markets and become share-holding commercial banking corporations.[3] With the fifth largest commercial bank – Bank of Communications – included, the five largest commercial banks – the “Top Five” – are still dominating the banking industry in China with about half of industry assets. Non-state-owned national stock-holding commercial banks (referred to as “joint-stock” commercial banks in Chinese publications), and city (regional) commercial banks have become more prevalent and have seen increasing market share. The city commercial banks were formed by consolidating former local urban cooperatives. Same as the joint-stock commercial banks, city commercial banks operate on a pure commercial basis focusing on profit maximization and market share.

China's accession to the WTO has ushered the entry of foreign banks in China as well. As of end-2010, 185 banks from 45 countries and regions had set up 216 representative offices in China and 37 banks from 14 countries and regions had been locally incorporated and maintained 223 branches. In addition, there were 90 foreign bank branches, one wholly foreign-owned finance company and two Sino-foreign joint venture banks. The locally incorporated foreign banks are afforded national treatment for listed banking services and able to provide the same type of services and subject to the same legal restrictions as domestic banks; foreign bank branches are only allowed to conduct foreign currency business and Renminbi (the Chinese currency) business with non-Chinese customers (CBRC, 2010; Martin, 2012). Appendix A shows the market structure of China's banking industry from 2003 to 2010 and Fig. 1 shows the increase in the number of foreign banks in China from 1993 to 2010.

In addition to establishing subsidiaries and/or branches in China, foreign banks can also do business in China indirectly as minority investors in Chinese banks (Leigh & Podpiera, 2006). Almost all major Chinese banks now have a foreign strategic investor. Have the structural reform and the increasing foreign participation improved efficiency in China's banking industry? We address this issue in this study. Existing studies on bank efficiency vary with geographic and time coverage.[4] Research on bank efficiency in China is still rare. Among the limited number of recent studies, Yao et al. (2007) use a panel data of 22 commercial banks in China over 1995 to 2001 to investigate the effects of ownership structure and hard budget constraints on bank efficiency. They find that non-state banks are more efficient than state-owned banks in China, and banks facing a harder budget constraint tend to perform better than those heavily capitalized by the state or regional governments. Berger et al.(2009) examine the efficiency of Chinese banks over 1994–2003 and find that Big Four banks are by far the least efficient; foreign banks are most efficient and minority foreign ownership is associated with significantly improved efficiency. However, a study by Hope, Laurenceson, and Qin (2008) employs data over 2001–2006 and finds that Chinese banks with foreign investment appear to be no more efficient than those without. There is a lack of comprehensive study on China's bank efficiency, especially for the period after 2006 when China were committed to open its financial market completely to foreign competition. Our purpose in this study is twofold. First, we estimate the bank efficiency for different banks in China through the stochastic frontier approach and examine whether Chinese bank efficiency has been improved about a decade after China's accession to the WTO. Second, we analyze the determinants of bank efficiency through specific bank characteristics.

Through a comprehensive dataset covering 171 banks in China for the period 1999–2010, we find that Chinese banks are about 18% more efficient in generating lending assets than profits. We also observe a positive trend of bank efficiency in China, especially after China's WTO accession at the end of 2001. This improvement is most pronounced among the five largest banks in China (Top Five), which were known for low efficiency. Bank efficiency in China is determined by a set of bank characteristics — ownership, risk aversion, size and management effectiveness. Specifically, we find banks with substantial state ownership

[3] CCB went through IPO on the Hong Kong Stock Exchange on October 27, 2005. BOC went through IPO on both the Shanghai Stock Exchange (June 1) and the Hong Kong Stock Exchange (July 5) in 2006. ICBC succeeded in A share (Shanghai Stock Exchange) and H share (Hong Kong Stock Exchange) listing simultaneously on October 27, 2006. ABC was listed on the Shanghai Stock Exchange and the Hong Kong Stock Exchange on July 15, 2010. In addition to the Big Four, the only other formerly nation-wide state-owned bank, Bank of Communications, went public on the Hong Kong Stock Market (H share) on June 23, 2005 and the Shanghai Stock Market (A share) on May 15, 2007.

[4] See Ataullah, Cockerill, and Le (2004) for the effect of financial liberalization on bank efficiency in India and Pakistan during 1988–1998; Gilbert and Wilson (1998), and Hao, Hunter, and Yang (2001) for the relationship between bank efficiency and financial liberalization in Korea; Yildirim (2002) and Isik and Hassan (2003) for whether financial liberalization leads to sustained improvement of technical efficiency of Turkish banks; Sturm and Williams (2004) for the impact of foreign bank entry on banking efficiency in Australia for the period 1988–2001.