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Scale economies, X-efficiency, and convergence of productivity among bank holding companies ☆

Michael K. Fung *

School of Accounting and Finance, Hong Kong Polytechnic University, Department of Business Studies, The Hong Kong SAR, Kowloon, Hong Kong

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Abstract

Are the less productive banks catching up to the more productive ones and, if so, how quickly and by what means? The objective of this study is to answer these questions by looking for convergence in productivity among bank holding companies (BHCs) in the US Past research has identified two major factors governing productivity in the banking sector – scale economies and X-efficiency. If the gains from scale economies decline with firm size and if the only difference between BHCs lies in their initial size, then the initially smaller BHCs should eventually catch up to the initially larger ones because the former tend to grow more quickly. However, the findings from this study do not support this hypothesis of ‘‘absolute convergence’’. Indeed, the findings show strong evidence for ‘‘conditional convergence’’, which means that the steady-state productivity to which a BHC is converging is conditional on the BHCs own level of X-efficiency. Conditional convergence implies that initial differences in X-efficiency among BHCs can, between them, create permanent differences in steady-state productivity.

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* Tel.: +852 2766 7102; fax: +852 2653 3947.
E-mail address: afmikef@polyu.edu.hk

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1. Introduction

Comparisons of productivity performance across financial institutions are central to answering many of the questions on factors leading to a growth in the productivity of banks. Are less productive banks catching up to more productive ones and, if so, how quickly and by what means? Groups as disparate as financial economists and business leaders have expressed profound interest in the issue of whether banks that are currently the best performers can maintain their roles as productivity leaders in the future. With special reference to the US banking industry, this study examines the convergence of productivity among bank holding companies (BHCs).

Past research has identified two major factors governing productivity in the banking sector – scale economies and X-efficiency. Scale economies can arise from an improved division of labor and specialization in larger banks. The risk diversification effects of larger loan portfolios also provide a bank-specific reason for an increasing return to scale. The X-efficiency of individual banks refers to all technical and allocative efficiencies, and to the ability of a bank's managers to control costs and maximize revenues. Past research suggests that differences in X-efficiency across banks are large and tend to dominate scale economies (Berger et al., 1993a).

Most early research (before the 1990s) in the US found little evidence for economies of scale in banks beyond those of a relatively modest overall size (see a survey by Humphrey, 1990). For instance, Hunter and Timme (1995) found that such economies cease or even become negative in banks of a very large scale. Similarly, Lang and Welzel (1996) found that all German banks enjoyed a level of growth in total factor productivity that was lower than that experienced by smaller banks. Recent evidence from the 1990s, however, suggests that economies of scale increase with bank size (e.g., Hughes and Mester, 1998; Berger and Mester, 1997). Stiroh (2000) provided the following explanation for this phenomenon: the optimal size and unexploited scale economies of banks have increased from 1991 to 1994 due to deregulation, technological changes, and financial innovations. After 1994, however, banks moved closer to the new minimum efficient scale, leaving fewer potential gains from unrealized scale economies.

If the gains from scale economies decline with bank size and a minimum efficient scale exists that maximizes these gains, then banks will continue to expand in size in order to fully exploit the gains from scale economies until the minimum efficient scale is reached in the steady state. If the only difference between banks lies in their initial size, then the initially smaller and less productive banks should eventually catch up with the initially larger and more productive ones. In other words, the productivity growth paths of banks should exhibit "absolute convergence". If this is the case, all banks should end up being of the same size and have the same level of productivity in the steady state. Mergers and acquisition are possible ways to speed up this absolute convergence in size and productivity. The first objective of this study is to test for this hypothesis of "absolute convergence". A direct implication of this hypothesis is that mergers and acquisitions are the most effective way of achieving productivity growth until the minimum efficient scale is reached.

Another important finding from past research is that banks typically display high (and variable) levels of X-efficiency (Berger and Humphrey, 1991), and that such levels are generally high enough to dominate the scale effect. X-efficiency is determined by the ability of management to control costs and generate revenues. Since the factors determining X-effi-

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