New evidence on returns to scale and product mix among U.S. commercial banks

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Abstract

This paper presents new estimates of scale and product mix economies for U.S. commercial banks. We compare estimates derived from fitting a translog function to bank costs with estimates derived from nonparametric methods. We refine measures of scale and product mix economies introduced by Berger et al. (J. Monet. Econ. 20 (1987) 501) to accommodate nonparametric estimation, and estimate confidence intervals to assess the statistical significance of returns to scale. Broadly, we find evidence that potential economies have increased since 1985, with scale economies not exhausted until...
banks have $300–$500 million of assets. We generally fail to reject constant returns for larger banks. © 2001 Elsevier Science B.V. All rights reserved.

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1. **Introduction**

The ongoing merger wave in the U.S. banking industry has helped to reduce the number of American commercial banks by over one-third since 1984 (from 14,419 banks in 1984 to 9103 banks at the end of 1997). A large proportion of those eliminated have been small banks, and the disappearance of many small banks through acquisition and failure suggests that they may not be viable in today’s environment.¹

Bankers often justify mergers as attempts to achieve economies of scale. But conventional wisdom, on the basis of numerous studies, holds that banks exhaust potential scale economies at very modest levels of output, on the order of $100–$200 million of assets (McAllister and McManus, 1993). Moreover, the evidence suggests that “megamergers” among large banks have not produced significant cost savings (e.g., Berger and Humphrey, 1992; Boyd and Graham, 1991).²

Conventional wisdom might, however, be mistaken. Recent studies find potential scale economies for banks at much higher levels of output than previous studies had found. McAllister and McManus (1993), for example, find that banks face increasing returns to scale to about $500 million of assets, and Berger and Mester (1997), who compare banks within size ranges, conclude that in all ranges the mean bank operates at less than efficient scale. McAllister and McManus (1993) attribute earlier findings of minimal scale economies to bias introduced by fitting a single parametric cost function across all banks. Parameter instability, they argue, can bias estimates of scale economies derived from global fitting of parametric cost functions. Using less-than-parametric methods (kernel regression and orthogonal series estimation), McAllister and McManus (1993) estimate that banks exhaust scale economies at a much larger

¹Between 1984 and 1997, the number of banks with less than $300 million of assets fell from 13,676 to 8082, while the number of banks with more than $300 million of assets increased from 739 to 1061.

²Akhavein et al. (1997) find that mergers of large banks tend to enhance profit efficiency, however, because of revenue gains when merged banks adjust their mix of outputs toward higher-value assets, such as loans.
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