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Efficiency and productivity effects of bank mergers: Evidence from the Greek banking industry

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Abstract

The main purpose of this study is to investigate the effect of acquisition activity on the efficiency and total factor productivity of Greek banks. A stochastic output distance function is used to construct a generalized output Malmquist productivity index based on the methodological framework of Orea [Orea, L., 2002. Parametric decomposition of a Generalized Malmquist Productivity Index. Journal of Productivity Analysis 18, 5–22]. The results of the present study indicate that the effects of mergers and acquisition on technical efficiency and total factor productivity growth of Greek banks are rather negative. In particular, the technical efficiency of merger banks decreased in the period after merging, while that of non-merger banks increased over the same period. Furthermore the decrease in total factor productivity for merger banks for the period after merging can be attributed to an increase in technical inefficiency and the disappearance of economies of scale, while technical change remained unchanged compared to the pre-merging level.
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1. Introduction

In the last decade banking systems have displayed very high rates of consolidation via mergers and acquisitions (M&As) among different countries and regulatory environments around the world (see Group of Ten, 2001, pp. 31–42). The main causes for this unprecedented wave of M&As, which are common to most countries, are the deregulation and integration of financial markets as well as technological innovations and the development of new IT systems. These reasons led to sharper competition among banks by cutting costs and expanding size mainly via M&As. Horizontal (in-market) mergers are largely justified on efficiency grounds even though the empirical evidence on the outcomes of mergers is generally ambiguous (e.g. Berger, 1998; Vander Vennet, 1996; Rhoades, 1998, 1993; Berger and Humphrey, 1992).

Until the mid-1980s, the Greek banking industry operated in an environment heavily controlled and regulated by the Bank of Greece. In particular, the Bank of Greece and two major state-owned banks, the National Bank of Greece and

the Commercial Bank of Greece, almost completely dominated the banking industry. As a result, banks abstained from adopting advanced technology due to the absence of competition in the industry. Towards the end of the 1980s, the industry gradually moved towards a more deregulated system due to international developments and the need to participate in the Single European Market and European Monetary Union (EMU). In the 1990s, the Greek banking industry was affected by the harmonization of national regulations within the European Union (EU) and mainly by the enactment of the Second Banking Directive in 1992, which sought to facilitate the liberalization of financial markets and to enable banks and other financial institutions to operate throughout the EU under a single banking license. Thus, among the main factors behind the M&A activity in the Greek banking sector during the second half of the 1990s were the country's forthcoming accession into EMU and the possible decrease in income this would cause, stronger competition in the domestic market and potential competition from foreign banks and the introduction and advancement of new technology.

The purpose of this paper is to examine the impact of M&As on the technical efficiency and total factor productivity of the Greek banking sector during the period 1993–2004. The data set consists of ten individual banks of whome five are engaged in merger activity and the other five, non-merger banks, constitute the *control* group. Thus, comparisons can be made between the groups of merger and non-merger banks as well as within the group of merger banks before and after merging. In other words this paper examines whether merged banks are more or less efficient and productive than non-merged banks and, more importantly, whether merged banks are changing their efficiency and productivity levels after merging. The translog output distance function is used to construct a generalized Malmquist productivity index, based on the methodological framework of Orea (2002), to investigate the impact of M&As on the components of the productivity index. It is worth stating, that the study by Balk (2001) presents the first parametric approach which uses an output-oriented translog distance function with variable returns to scale, and generalizing the results obtained by Ray (1998), extends the traditional Malmquist productivity index (which only captures technical change and technical efficiency change) so that scale economies are taken into account. Balk's (2001) methodology, however, appears to have some problems in the case of either globally increasing, decreasing, or constant returns to scale technologies or of ray-homogeneous technologies. Orea's (2002) methodological procedure, used in the present study, exploits Diewert's (1976) Quadratic Identity Lemma and estimating a translog distance function with variable returns to scale constructs a generalized Malmquist productivity index which takes into account scale economies and overcomes the practical problems that may appear in Balk's (2001) approach.

There are several ways in which M&As can improve bank performance. One of the most important ways is that through M&As banks can attain *operational synergies*. The attainment of these synergies via bank M&As depends on the realization of economies of scale and scope. Economies of scale may arise because consolidated banks may achieve control of cost-saving technologies or spread their fixed cost over a larger volume of output, thus reducing average cost and increasing efficiency. Economies of scope may arise because merging banks enter new markets and cross-sell their products to existing customers. Empirical studies for US banks depict that scale economies are exhausted at fairly low levels of output (Clark, 1988; Peristiani, 1997), and such economies cease to exist or become negative for very large banks (Hunter and Timmer, 1995). Furthermore, the study by Berger and Humphrey (1992) indicates that when scale economies are present their measured effect is small and several studies such as Berger and Humphrey (1992) and Miller and Noulas (1996) argue that X-inefficiency may dominate scale and product mix. In general, the banking production literature seems to argue that while M&As have some limited potential to increase performance through scale and scope economies, whether these gains are captured depends on controlling technical inefficiency (Haynes and Thompson, 1999). For Europe, there is evidence of scale economies both for very small banks and medium-sized banks (Altunbas et al., 2001) and as the studies by Vander Vennet (1996, 1994) indicate there may be potential efficiency gains from mergers between small and medium-sized European credit institutions due to scale economies. In addition to any effects of *operational synergies* per se, as the study by Haynes and Thompson (1999) indicates, bank M&As may have a potential impact on bank performance via one of the three following ways: first, via the *selective redeployment of assets*, i.e. horizontal mergers could generate savings as output is reassigned to more productive capital (Dutz, 1989); second, via the *transfer of asset control to better quality managers* (Thompson, 1997); and third, via the *renegotiation of implicit labor contracts* (Shleifer and Summers, 1988). However, the extent to which the aforementioned gains could be exploited via bank M&As might be elusive in large, complex institutions.

The banking literature (e.g. Vander Vennet, 1996; Resti, 1998; Amel et al., 2004) provides three additional motives for bank M&As which are not justified on efficiency grounds. The first is related to the *management-utility maximization* hypothesis and the other two are related to the *too-big-to fail* (TBTF) and the *market power* arguments.