Assessing output and productivity growth in the banking industry

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ABSTRACT

This paper assesses the evolution of output and productivity in the Greek banking industry for the period 1990–2006. Three main categories of bank output were estimated based on modern theoretical approaches, while for the estimation of output and productivity (partial and total factor) we relied on the index number method (Tornqvist index). We also considered the effect of labor quality on banks' productivity and the contribution of total factor productivity to bank output growth. Bank output and labor productivity outpaced considerably the respective GDP growth and labor productivity of the Greek economy during the period under examination. Capital and total factor productivity have also improved remarkably mainly since 1999, due to the structural changes that took place within the industry, capital (mainly IT) investments and improvement in the quality of human capital.

1. Introduction

The financial sector plays a crucial role in the effective allocation of resources, in economic growth and in job creation. In advanced economies, this sector has shown relatively high rates of growth during the last decades. In the European Union (EU), the financial sector represented in 2006 about 5.6% of GDP and 3.4% of employment, while this contribution is expected to increase further. Over the last 20

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years, the financial sector and especially the banking industry underwent important institutional and operational changes both in the EU and in Greece, as a result of the liberalization of financial markets, rapid technological progress and the increasing integration of European financial markets, which was significantly promoted by the introduction of the euro.[1] Consequently, competition was enhanced and the operation and structure of the financial sector changed radically.[2]

Greek banks responded to these new conditions by undertaking mergers and acquisitions, mainly in the second half of the 1990s and early 2000s, with a view to acquiring a size that would afford them economies of scale and scope (Athanasoglou & Brissimis, 2004). In the same period, many state-controlled banks were privatized, while at the beginning of the 2000s a number of new small-sized banks entered the market. Greek banks took advantage of modern technology in order to improve the quality and the range of offered services such as electronic banking, insurance, brokerage and asset management. At the same time, large-sized Greek banks expanded their activities abroad, mainly in countries of Southeastern Europe and Turkey, through the acquisition of existing local banks so as to exploit synergies stemming from the development and modernization of the existing network.

The reliable and unbiased estimation of basic aggregates of banks such as output, inputs and productivity is essential for the performance evaluation of any banking sector and for the Greek one in particular, as it features certain special characteristics. Although small in size compared to other developed European banking sectors, the Greek banking sector operates in the context of a developed economy. In the last decade, the improvement of Greek macroeconomic fundamentals, the robust demand for credit from the private sector and especially households and the strong capital adequacy are among the main factors determining the enhanced performance of Greek banks and their growth potential in the future. The Greek banking sector, which represents over 40% of the Greek stock market capitalization, has attracted the attention of foreign investors who currently own a large part of its equity. Another important feature of Greek banks is the significant market share they have acquired in the countries of Southeastern Europe, reaching in 2008 almost 30% of total assets in Bulgaria and Albania and 25% in FYROM. During the current financial crisis, the key aggregates of the Greek banking sector remained fundamentally sound and provided a satisfactory margin of safety for covering risks and ensuring financial stability.

In general, output measurement in the service sector presents significant problems both conceptually and empirically (Melvin, 1995). In the case of banking, these problems are even more intense because of the multiple and interdependent nature of production (Casu, Girardone, & Molyneux, 2004; Triplett, 1991). In many studies, bank output is proxied by *total revenues* or *total assets*, while labor and capital inputs are proxied by number of employees and total non-labor cost respectively (Athanasoglou & Brissimis, 2004; Athanasoglou, Brissimis, & Delis, 2008). These data do not accurately reflect neither bank output due to its multiple and interdependent nature mentioned above nor bank inputs as they ignore their quality aspect[3] and their use in productivity and efficiency studies may lead to biased results (Triplett & Bosworth, 2000). Studies which apply more elaborate methods for measuring Greek bank output and productivity (Noulas, 1997; Pasiouras & Sifodaskalakis, 2009; Rezitis, 2006; Tsionas, Lolos, & Christopoulos, 2003) often use a small sample of banks or cover a relatively short period.

Against this background, the contribution of the present study to the relevant literature could be summarized as follows:

I. The study measures and evaluates the evolution of output, inputs and productivity (partial and total factor) of a relatively small but dynamic sector as the Greek banking one, by using bank-level data for a number of banks ranging from 20 to 27 per year for a relatively long period of 17 years (1990–2006).

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[1] See European Central Bank (ECB, 2007a).
[2] See ECB (2002).
[3] In Greece, the National Statistical Service (NSSG) publishes data on the output of financial intermediaries, which include, apart from banks, other financial institutions (central bank, insurance companies, pension funds, stock exchanges brokerage and fund transfer companies). These data are subjected to frequent revisions and methodological changes that make them hard to compare over time.