Chapter 5
Evaluation of Branch-Based Efficiency in Turkish Deposit Banks: Evidence from Privately-Owned Banks

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ABSTRACT
The aim of the chapter is to measure the non-interest income based branch efficiency among privately-owned banks in the Turkish banking sector between 2008 and 2012. The chapter is built on the three inputs and three outputs model of bank branch efficiency and empirical results are constructed with the data envelopment analysis (DEA) in the limitation of input-orientated constant returns to scale model. The results demonstrate that all privately-owned banks improve non-interest based efficiency performance by the years and mean efficiency in the sector regularly rises due to the increasing overall competitive factors.

INTRODUCTION
Banking sector has one of the greatest influences to effectiveness of financial system with the new product and service availabilities that have capabilities of the non-interest income. While most of the studies concentrate on competitive financial markets and profits in the context of financial intermediation, the least of them mention that the driving force of new global financial system is non-interest incomes and services. The awareness of this issue by banks might be the most creative topic in their strategic planning of non-interest income as well as interest-based factors.

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Nowadays, the focal point of banks in the sector has become catching up performance results of their competitors by building a dynamic assessment and strategic positioning in a competitive financial environment. This comparative approach raises the issue of effectiveness and strengths to be discussed on other operating inputs and interest incomes as well. Banks in a competitive financial market have become a part of minimizing the causes of inefficiencies. For this reason, they have started to look for new challenging strategies to their rivals. As traditional banking services and products serve the classical efficiency theories of banking, the modern competitive banking operations also include new non-interest activities to evaluate efficiency results. We propose that demand of customers, easiness to reach information and increasing competitive financial products might be the best prominent pillars to identify variables of bank efficiency.

The structure of this chapter is as follows. Bank efficiency and the DEA model are emphasized to clarify the theoretical background and contributions to bank-branch efficiency literature are discussed in the following sections. Following, non-interest based efficiency parameters of bank branches are presented to evaluate the efficiency of privately-owned banks in the Turkish banking sector. In the final section, an application on the privately-owned banks is constructed and the evaluation results are discussed to generate further discussions on the non-interest based banking efficiency followed by conclusions.

**LITERATURE REVIEW ON BANK BRANCH EFFICIENCY**

The bank branch efficiency is a wide measurement that might include different kinds of financial and economic parameters. Efficiency measurement is based on determining the relationship between banks with selected inputs and outputs in the scope of non-linear problems. Increasing efficiency to the highest limits is sometimes difficult with the basic banking variables such as decreasing employee expenses. The sustained improvement on efficiency could be possible if firms increase their multi-faceted outputs.

The initial contributions to banking efficiency problems were in the 1980s (Kinsella, 1980; Sherman and Gold, 1985; Parkan, 1987). The first study applying DEA in the bank branch efficiency literature was conducted by Sherman and Gold (1985). The authors demonstrate that bank management finds DEA results providing meaningful insights which are not available from other techniques to improve productivity. The empirical findings present that DEA is a beneficial complement to other techniques for improving bank branch efficiency.

The growing number of studies in the 1990s have brought different perspectives to the discussions on banking efficiency (Pavlopoulos and Kouzelis, 1989; Vassiloglou and Giokas, 1990; Giokas, 1991; Doukas and Switzer, 1991; Al-Faraj et al., 1993; Tulkens, 1993; Berger et al., 1993; Barr and Siems, 1994; Drake and Howcroft, 1994; Berger et al., 1997; Lovell and Pastor, 1997; Ayadi et al., 1998; Golany and Storbeck, 1999; Kantor and Maital, 1999). Oral and Yolalan (1990) firstly discuss the relation between efficiency and profits and investigate operating efficiencies of a set of 20 commercial bank branches in Turkey with relatively homogeneous banking products. The study presents that service-efficient branches achieve the most profitable results and suggests existence of a relationship between service efficiency and profitability. Moreover, there are widespread applications of bank efficiency over the last decade. The studies mainly illustrate the evaluation of bank efficiency at the aggregate and branch level using comparative methods. Some selected studies are introduced in the following paragraphs.