

# Efficiency and economies of scale



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## Cost efficiency

### *Introduction*

Banking sectors around the world have established in very different ways.

[1]However, regardless of the diversity of backgrounds the structure of the modern banking sectors is somehow similar among major countries.

[2]Naturally there only a few of large banks and a large number of medium and small financial institutions.[3]The large banks tend to dominate the market in investment and services provided compared to other financial institutions.[4]The deep involvement in the market will therefore create a strong link between big banks, central banks and national treasuries.[5]

### *Efficiency concept*

Efficiency is a wide-ranging term that suggests an economic in which every single resource is optimally utilized in the best way to minimize waste and inefficiency.[6]Efficiency is the key objective of every banker.[7]A sound and efficient financial sector is essential for macroeconomic stability and sustainable economic growth. Numerous studies have examined the levels of efficiency of banking systems in transition countries both in terms of cross-sectional differences and time dynamics. Cost efficiency measures the performance of a banking firm relative to the best-practice banks that produce the same output bundle under the same exogenous conditions. It is derived from a cost function in which total costs depend on a vector of outputs, a vector of input prices, other bank parameters, random error and inefficiency. Cost efficiency estimates how far the production costs of an individual institution differs from the production costs of a best practice

institution or firm operating under the similar conditions and producing the same outputs. This measure is defined with reference to a cost function constructed from the observations of all institutions considered within the sample set. The cost function assumes the total production costs of individual institutions are dependent on the price of variable inputs, such as capital and labour, the quantity or value of outputs produced, random error and any other additional variables accounting for the environment or particular circumstances of individual institutions. A cost function allows the measurement of the least cost proportions of inputs in terms of input prices. This framework enables the consideration of both productive efficiency and the optimal proportion of inputs in terms of input prices or allocative efficiency. The inefficiency factor incorporates both allocative inefficiencies and technical inefficiencies. Banks are also seeking to increase efficiency of low-margin businesses, either through lower cost income ratios, increasing asset/inventory turnover or regulatory optimisation.

### *Scale Economies*

The concept of economies of scale offers a great deal of practical relevance for the management of business firms. If bigger is better or more precisely if greater scale leads to lower costs and higher profits per unit, then managers have real incentives to grow their organizations so they can reap the advantages of additional scale. Research has established the existence of scale economies, but many of these studies suggest that, in a wide range of industries, minimum efficient scale, or the level of output or production necessary to operate at the lowest point on the average cost curve, occurs at relatively modest levels of output [Scherer, 1980]. This finding is

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consistent with much anecdotal evidence suggesting that bigger is better only up to a point, and that beyond that point, additional scale is not associated with greater profitability. Conceptually, economies of scale permit larger firms to produce their products and provide their services at lower average costs per unit than smaller firms [Shepherd, 1979]. As firms produce more, they spread fixed input costs over a larger quantity of output, lowering per unit average costs. This ability to manufacture products and to provide services at a lower average cost should translate directly into higher profits, while also possibly creating significant barriers to entry into any industry in which economies of scale are present [Bain, 1954]. Advantages associated with increasing scale can be derived from a variety of factors [Scherer, 1980]. At the product or service level, expanding firms can invest in specialized and more efficient equipment, machinery, and technology that lower per unit production costs. Firms also have incentives to further improve the speed and efficiency of these resources, efforts that further enhance the efficiency of their production processes and increase output. At the plant level, economies of scale can be derived from expanding the size of individual processing units so that output can be increased, which spreads fixed costs over increased output and results in lower per unit costs. Increasing output also allows production employees to specialize in their tasks and gain proficiency; as a result, increasing scale also produces experience or learning effects.

Although much empirical evidence concludes that bigger is better, and that economies of scale do exist in a wide array of industries, the concept of scale also assumes that at a certain point firms cannot grow further and continue

to realize decreasing costs. At this point, increasing firm size leads to rising average costs, a concept referred to as diseconomies of scale. Shepherd [1979] provides a comprehensive list of the factors that lead to diseconomies of scale, including fixed factors, administrative and bureaucratic costs, and transportation costs. Fixed factors include limits on managers and managerial ability. Managers are most efficient with small firms where they are able to manage more intensively and to catch and solve problems quickly, but this ability diminishes with increasing firm size. Furthermore, no economics or business scholar would claim that economies of scale are automatic or occur without considerable management coordination and effort. Thus, the quality of managerial ability and skill is a key factor in determining whether or not a firm realizes economies of scale, and managerial talent will also influence how soon a firm begins to encounter diseconomies of scale [Minitier, 1998]. As for bureaucracy, information flows moving from the bottom to the top of an organization (and vice versa) are inefficient, and data and knowledge will become distorted as they move through the bureaucratic chain of command. Thus, bureaucracy adds direct costs to the firm, reduces the quality of decision-making, and therefore tends to make average costs higher as firm size increases. Arrow [1964] notes that a loss of management control is a common occurrence in large business organizations because of the communication challenges associated with moving information and management directives up and down hierarchical levels. He also highlights the incentives that managers have to distort information or to act in their own, as opposed to their organizations, best interests. McAfee and McMillan [1995] expand on these agency concerns by examining their impact on information flows. They theorize that when people

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acquire private information, they also gain significant incentives to exploit these informational advantages for their own gain (and at the expense of organizational efficiency and effectiveness), thus causing information flows to become very inefficient. Finally, transportation costs can also contribute to scale diseconomies. As firm size increases, firms will also often expand their markets geographically, and as this happens, higher transportation costs to reach distant customers can result in higher average costs [Shepherd, 1979]. Nor is this phenomenon limited to manufacturing firms. As retailing and service businesses expand their geographical reach, they may also encounter the need to open additional retail outlets and customer service facilities.

### *Scale Economies in the Banking Industry*

A study of large European banks, specifically large financial conglomerates that offer a wide range of financial services, found that these large firms were more efficient than their more specialized competitors [Vennet, 2002]. Bos and Kolari [2005] found similar results when analysing data from multibillion dollar banks in both the United States and Europe. Their study suggested that large banks exhibit decreasing costs and increasing profits as scale increases, and they concluded that geographic expansion of large banks is also associated with efficiency gains. In a more recent study focusing on the production efficiency of financial firms, Bossone and Lee [2004] confirmed the existence of economies of scale among these firms, but also concluded that a wide array of factors, including institutional culture, a bank's risk profile, and market concentration also significantly influence firm performance. At the same time, many studies have concluded

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that expanding banks will eventually reach a point where average costs stop decreasing and start to increase. Benston, Hanweck, and Humphrey [1982] modeled a translog cost function to estimate U-shaped average cost curves, and their analysis found that the largest banks face significant diseconomies of scale. In a comparable study, Clark [1996] concluded that the average cost curve for banks is relatively flat with diseconomies of scale found only among the smallest and largest banks. Interestingly, he concluded that an emphasis on reducing costs in the largest banks may actually contribute to poor decision making and increased risk taking. Mitchell and Onvural [1996] concluded that increasing levels of production at large banks is usually cost efficient, but they found that there is relatively little to gain by increasing the scale of production. Thus, their study provides additional confirmation that minimum efficient scale can be achieved in relatively modest-sized banks and that the average cost curve for most banking institutions is relatively flat.

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