International Banking Strategy and Efficiency: issues and directions

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ABSTRACT

This paper reviews measures of banking efficiency and analyses the efficiency construct and its applications. We discuss the issues of data availability and methodological problems that occur when trying to obtain realistic local and global efficiency indicators for banks. We conclude by suggesting directions for future research that both inform theory and have practical application.

Introduction

When plotting their strategy, banks need to take account both of their competitive strength in comparison to existing competitors and potential new entrants, and of the resource drivers that produce their competitive strength (Li, 2001).

As the economy globalizes, banks increasingly find themselves with new competitors. For example, the accession of new countries to the EU will bring a level playing field within Europe and encourage cross-border entry and acquisitions in banking. To develop their strategic positions, banks need to be able to benchmark their own competitiveness against competitors. Therefore a fundamental research question is how to measure banking efficiency and banking capabilities in terms that allow both local and global comparisons.

There is a large and growing literature on the topic of banking efficiency. Berger and Humphrey (1997) surveyed 130 studies within the field of efficiency frontier analysis alone. Berger and Mester (1997) note that variations in data sets and analysis methodologies make it virtually impossible to determine how important such differences are to the outcomes of these studies. Often measures of banking efficiency are presented as good in themselves, with little discussion as to how they might be used and whether they are 'fit for purpose'. This paper therefore takes a step back to place efficiency measures within a context of application, so that research directions can be identified that both inform theory and have practical application.

The banking efficiency concept

According to Porter (2003) nations or regions compete to provide the most productive environment. Productivity depends both on the value of products and services produced, and on the efficiency with which they are produced. This raises the question of whether we should be concerned just with measures of efficiency (cost of production) or with measures of value (product quality and mix) as well. The answer depends on our viewpoint. Berger and Humphrey (1997) suggest that efficiency measures can be used for policy on deregulation and mergers, for research on industry or firm efficiency and for improving managerial performance by identifying best practice. In this paper, we look at applications from the viewpoint of four classes of players: regulators, investors, boards and managers.

Regulatory viewpoint. Regulators and governments are usually concerned with two main points: ensuring a competitive market (often shown as a worry with merger policy and industry concentration) and minimising the risk of bank collapses. Competitive markets

are considered a public good because it is believed that they result in the lowest pricing for goods. The relevant measure for competitive markets is therefore the price that consumers pay for banking products of a given quality. Hence price, quality and risk measures are needed.

Investor viewpoint. Shareholders or other investors are usually concerned with obtaining the most profit from their investment. Accepting that investments in higher risk enterprises require higher returns. The relevant measures for investors are a) ROE or ROI and b) the business and investment risks taken on by a bank.

International strategy viewpoint. Banks need to know whether they will be competing or merging with banks that are inherently of higher or lower efficiency. To understand this they need to benchmark banking efficiency after stripping out effects due to different countries of operation. The relevant measures here are cost-efficiency once efficiency measures have been adjusted for country specific cost factors (such as wage levels) and quality of products.

Best practice viewpoint. Managers need to know if their efficiency is lower than key competitors. An appropriate efficiency measure is ROE or ROA. And they need to understand how overall efficiency is split between cost and value aspects. So both cost efficiency and product quality measures are needed. But more importantly managers need to know how they can improve their bank's efficiency. The relevant measures for this are of the drivers of efficiency. Eg is efficiency related to operational costs, to customer attraction costs, to the product mix , to staff skills or to the level of competition? This concern with the drivers of efficiency means that there is no one efficiency measure. The relevant efficiency measures are multiple driver measures.

Models and Data

A basic criterion in developing efficiency measures is that a) the metrics are both reliable and valid and that b) they inform decision making from at least one of the viewpoints laid out above.

Perhaps the simplest and longest established metrics for bank efficiency are return on equity (ROE) and return on assets (ROA). There is a clear match of ROE with the investor viewpoint and ROA can be seen as a relevant efficiency metric from a regulatory perspective within a market. Further, they may be used as an efficiency benchmark from the manager viewpoint. A problem with these ratios is that differences in inputs such as labour costs distort them. To get at the underlying efficiency of a banking operation we need to factor out differences in aspects of both inputs and outputs that are the result of local markets. This will then allow the residual banking efficiency to be calculated. Recent approaches to calculating inherent banking efficiency include stochastic frontier methods (SFA), and decision envelopment analysis (DEA) (Berger and Humphrey, 1997). SFA cost-efficiency analysis provides one overall cost-efficiency factor showing the relative difference in cost level compared to an 'average' bank cost (obtained by curve fitting costs to levels of bank input and output factors). Profit-efficiency analysis works in the same way but uses profits in place of costs. Since profit reflects quality and product mix, profit-efficiency compounds both operational (cost) efficiency and the value of products produced. DEA efficiency provides a measure of the extent to which the set of outputs is dominated by a combination of other banks that have the same input levels (eg wage costs). The adjustment for different cost conditions makes these techniques

useful for the international strategy viewpoint, effectively normalizing for differences in eg wage rates or the cost of investment capital.
The applicability of the various efficiency measures is summarized in Table 1 below.

Table 1: Applicability of efficiency measures

	ROE	ROA	SFA cost	SFA profit	DEA
Regulatory					
• ***product price***					
• ***quality***					
• ***risk***					
Investor					
• ***ROE***	yes				
• ***Risk***					
International strategy					
• ***cost efficiency***			yes	yes	yes
• ***quality***				yes	
Management best practice					
• ***ROE***	yes	Yes			
• ***Cost efficiency***					
• ***Quality***			yes		yes
• ***Driver metrics***					

It is apparent that this table contains many gaps. A particular gap to highlight is in the driver metrics of bank efficiency. An example to illustrate the sorts of drivers that are important is shown in the performance of Citicorp relative to domestic competitors in Germany and Japan (The Economist, 2003). In retail banking, Citigroup is doing well in both Germany and Japan while its local competitors suffer. It has a small number of branches and relies on phone and internet access to a high degree. It tends to use newspaper advertisements rather than salespeople. It pushes customers to use technology such as money transfer form scanning in Germany. Its business mix includes a higher amount of consumer finance – higher risk and higher reward.
Similarly, a McKinsey study of Eastern European banking (McKinsey Quarterly 2003) notes that while the average cost to income ratio of Czech, Hungarian and Polish retail banks almost matches that of Western banks, these efficiency ratios conceal important differences. The ratio of income to volume is twice as high for Eastern Europe because of higher margins on lending and deposits; and this is due to higher interest rates and lower levels of competition. But the ratio of costs to volumes is also twice as high for Eastern Europe, because Eastern European customers generate less business. Thus, the inter-country parity in this efficiency measure is illusory: the underlying drivers are quite different. Yet none of the factors used to explain the comparative efficiency results in these two examples are included in the banking efficiency models literature.

Data and variable validity
In the majority of studies on banking efficiency, the Bankscope database is used. This database provides researchers with information about banks concerning balance sheets and income statements. However, researchers need to be aware of a number of issues affecting this database if their analyses are to be valid. There are numerous gaps in the data (over banks and over years). For example, of banks in the UK with over 1 billion

USD in total assets, more than 100 do not show fee income or expense data. Further, missing data is not notated consistently. In some cases a 0 is presented in a field instead of 'not applicable', which will disrupt analyses if taken as face value eg Dresdner Kleinwort Wasserstein's Money Market Funding field shows 0 in 1999 and n.a. in 2000. Moreover, balance sheets and income statements are provided at several levels of detail, but the numbers do not always appear consistent between levels.

Researchers have tended to rely on the classification of banks as presented by Bankscope. Yet some concepts are not well defined: no definition is provided for the classification types. Allocation of banks to classes is in some cases questionable; for example the database does not take into account the different areas of business within a bank: a bank which 36% of business is commercial, 34% is savings and 30% comes from investment will be classified as commercial but researchers are not made aware of this important business split.

As a consequence of the lack of data provided, researchers find themselves in a position where they have no option but to use proxies, which in many cases, may compromise the results. For example, only recently did the number of employees start to appear in the database and only for a limited number of banks, and only for the latest year in most cases. Wage costs are an important variable in SFA and DEA models and this requires the number of employees. A proxy of the ratio of personnel expenses to total assets is generally used to estimate wage costs, but this can be misleading because wage rates are not causally linked to assets. A comparison of wage costs as estimated 'correctly' by personnel expenses/number of employees with the proxy estimation using total assets is shown in table 2. There are important differences that dramatically affect efficiency estimates between banks.

Table 2: Measures of wage costs in UK banks.

Bank Name	Total Assets (TA) *	Personnel Expenses (PE) *	Number of Employees (NE)	PE/TA	PE/NE
Barclays Bank	505345903	5389413	78600	0.010665	68.5676
HSBC Bank	288453952	3385062	69548	0.011735	48.67231
Lloyds TSB Bank	278284264	2878898	82952	0.010345	34.70559
NatWest Bank	250168238	3041334	48300	0.012157	62.96758

Another important factor in efficiency models is the price of capital. This is estimated by dividing expenditures on plant and equipment by fixed assets. However, because no direct information is provided in Bankscope on these expenditures, they are proxied by non-interest expense, defined as overheads and loan loss provisions. But this introduces new problems of variable validity: not all non-interest expense is capital, and loan loss provisions are usually missing in Bankscope (and so treated as zero).

Efficiency measure validity

The choice of datasource, model variables, proxy measures for the variables and analysis model makes significant differences to the observed efficiency estimates. Berger and Humphrey (1997) survey the reported levels of efficiency for US banks as studied by nonparametric models (eg DEA) and parametric models (eg SFA). They found mean efficiency of 0.72 from nonparametric compared with 0.84 for parametric models. And they note that while these mean values may be similar the rankings of banks by the

different models are often found to be quite different: in one study the rank correlation coefficients between rankings from parametric and nonparametric models were found to be 0.02 and in another study between 0.44 to 0.59. For illustrative purposes we have taken a sample of 73 UK and 34 Polish commercial banks.

Table 3: Results of different efficiency measurement techniques.

	United Kingdom				Poland			
(%)	**1999**	**2000**	**2001**	**1999-2001**	**1999**	**2000**	**2001**	**1999-2001**
ROA	0.98	1.05	1.00	1.01	1.63	1.15	0.81	1.19
ROE	10.24	10.18	9.50	9.98	12.69	9.55	6.63	9.62
DEA	56.20	49.83	55.04	53.69	78.58	69.52	67.34	71.81
SFA				70.73				71.17

The absolute values from the ROE and ROA analyses are different with ROE suggesting similar efficiency for UK and Polish banks while ROA posits 20% higher efficiency in Poland; but the trends are similar: essentially constant over the three years for UK banks but in marked decline for the Polish banks. DEA also shows a decline for Polish banks but nowhere near as strong (15% decline vs 50% for ROA) while showing Polish banks to be on average a third more efficient than their UK counterparts. SFA disputes this with its estimate that, on average, UK and Polish banks are of equal efficiency. These strong differences in the efficiency results depending on method (and using the same dataset) must give pause as to the validity of at least some of these methods.

The way forward

There are three major directions where we believe further research is called for.

First is the issue of data reliability. Problems with datasources are often glossed over in the literature (eg have missing values been coded as zeros). Added to this, research is required on the reliability of proxies commonly used for variables in efficiency models. Without knowing the validity of data or of proxy measures, it is difficult to know whether efficiency measures reflect reality.

Second is the multiple dimensionality of the efficiency construct. The two main dimensions of cost and quality may be compounded within profit efficiency for some applications, but for other applications we need to separate them out. The issue of measuring bank product quality is in particular need of research. And in order to enable managerial application, we need to develop measures for two ancillary dimensions of efficiency: risk and drivers.

Third, the question of what are the major drivers of bank efficiency is woefully under-researched. This requires research on identifying high impact driver factors, (eg time to process loans, technology use, cost to volume, growth rate) and their measures.

We hope that these suggestions will alert researchers to the importance of not only focussing on the technicalities of their models, but of putting their work in the broader context of uncovering reliable insights of practical application to the various classes of banking decision makers.

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