Comments on 'Efficiency of Islamic Banks in Malaysia'

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Comment

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Islamic banking and finance is poised to make rapid progress in Malaysia. From 8 per cent of the assets of the local banking industry at present, it is expected to capture 20 per cent by 2010. This is not a tall order considering the increasing state support that Islamic banking has received over more than two decades of its existence in the country. An important feature of this growth has been the success of Islamic banks despite competition from the interest-based institutions. The envisaged expansion would require an orderly development of financial services. The country has plans for the erection of a sound structure of governance, product diversification, and marketing.

In view of the imminent takeoff of Islamic banking in Malaysia, the work of the authors of this chapter on the efficiency of Islamic banking in Malaysia is timely and welcome. The authors rightly foresee an increasingly competitive challenge which the Islamic banks will have to counter in years ahead because of the recently concluded Free Trade Agreement of the ASEAN countries, and the unabated march of globalization. Of course, improving the operational performance of Islamic banks is imperative if they are to meet this challenge.

On the basis of the results they obtained, the authors claim that 'the efficiency level of Islamic banks is not statistically different from conventional banks'. Likewise, they find 'no evidence to suggest that bank efficiency is a function of ownership status'. These conclusions are important, and have serious policy implications. It is difficult to accept them at their face value as some recent studies in the area provide evidence to the contrary. The work calls for a closer examination.

Measuring technological change and efficiency

Technological change and improvements in efficiency are important elements of production growth in any country. Technological change is measured as a shift in the frontier production function, while efficiency improvement has two components, technical and allocative. Both are generally defined as a relative distance (or inefficiency) from a norm, designated as the frontier. Technical inefficiency, for example, exists when the actual or observed output of a firm from a given input mix is less than the maximum possible. In the same way, allocative inefficiency arises when the input mix is not consistent with cost minimization (i.e., when a firm does not equate marginal returns of inputs with true factor prices in the market).

The two concepts of technological change and efficiency are illustrated in Figure 5.1, assuming that a firm i produces a single product Y, using two inputs X_1 and X_2. The two equal-product curves Q_1 and Q_2 represent production frontiers for the same physical output at two points of time, T_1 and T_2.

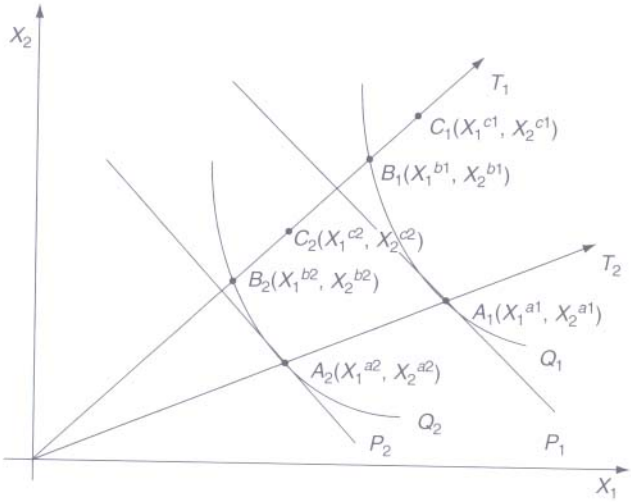

Figure 5.1 Impact of technological change and efficiency improvement on output

The functions are based on the best technologies used by the firms in the industry. However, firm i may not reach the frontier because of technical inefficiencies. Of the points shown in the figure A_1, B_1, A_2 and B_2 are *technically efficient*, but C_1 and C_2, being off the frontiers, are not.

In the cost function framework, we can measure technological change, technical efficiency, allocative efficiency, and economic efficiency respectively under:

$$\text{Technological change} = [C(X_1^{a2}, X_2^{a2}) - C(X_1^{a1}, X_2^{a1})] / [C(X_1^{a1}, X_2^{a1})] \tag{5.6}$$

$$\text{Technical efficiency at time } T_1 = C(X_1^{b1}, X_2^{b1}) / C(X_1^{c1} X_2^{c1}) \tag{5.7}$$

$$\text{Technical efficiency at time } T_2 = C(X_1^{b2}, X_2^{b2}) / C(X_1^{c2} X_2^{c2}) \tag{5.8}$$

$$\text{Allocative efficiency at time } T_1 = C(X_1^{a1}, X_2^{a1}) / C(X_1^{b1}, X_2^{b1}) \tag{5.9}$$

$$\text{Allocative efficiency at time } T_2 = C(X_1^{a2}, X_2^{a2}) / C(X_1^{b2}, X_2^{b2}) \tag{5.10}$$

$$\text{Economic efficiency} = \text{Technical Efficiency} \times \text{Allocative Efficiency} \tag{5.11}$$

Solving equation (5.11), we get the following measures of economic efficiency:

$$\text{Economic efficiency at time } T_1 = C(X_1^{a1}, X_2^{a1}) / C(X_1^{c1}, X_2^{c1}) \tag{5.12}$$

$$\text{Economic efficiency at time } T_2 = C(X_1^{a2}, X_2^{a2}) / C(X_1^{c2}, X_2^{c2}) \tag{5.13}$$

These ratios give in each case the level of efficiency reached. We have to deduct each from one to measure the degree of inefficiency or deviation from the norm of efficient performance. Table 5.1 provides an illustration.

The measurement of efficiency in its various versions has become increasingly commonplace with the development of the frontier production function approach. The approach is deterministic in the sense that all deviations from the frontier attributable to inefficiency are stochastic and it is possible to alienate from the error term the purely random disturbance factor. The applications of the approach have been numerous and extremely varied. The literature on the subject is voluminous and growing. Even in the area of banking, where the study under review falls, there is no dearth of academic writings on this subject. In view of that, the authors' review of the literature may appear scanty in coverage and comment.

Model and data

Estimation of any sort of efficiency from the above list requires the specification of a functional form. The trans-log form of cost frontier is usually considered appropriate for studying the efficiency issues related in the area of commercial banking. This is a very general and flexible functional form that encompasses other approaches such as those based on the Cobb–Douglas production function. It imposes on the frontier the conditions of linear homogeneity and symmetry (i.e., the assumption of constant returns to scale). It looks at the question of efficiency in terms of cost minimization for a given output rather than output maximization from given inputs. These conditions can be varied to suit the purpose of the model.

The authors adopt this approach focusing on technical efficiency. They express the general form of the model in equation (5.1) as follows: the inefficiency term U_i is made an explicit function of k variables z_k ($k = 1 \ldots 5$ in the present case). The U_is are independently, but not identically, distributed as non-negative transactions of the normal distribution of the form:

$$U_{it} \sim N\left[\delta_0 + \sum_{k=1}^{M} \delta_0 z_{k,it}, \sigma^2\right] \tag{5.14}$$

The specification of the model for the inefficiency effects, given the level of output, is:

$$U_{it} = \delta_0 \sum_{j=1}^{m} \delta_0 D_{jit} + \sum_{j=1}^{m} \delta_j z_{jit} \tag{5.15}$$

Here m is the number of bank categories identified for the model. Instead of using m and n as superscripts in their equivalent equation (5.2), it might have been better if the authors had given the specific numbers – probably 4 as in their Table 5.1 – for reasons of clarity.

As noted earlier, the technical efficiency of a firm, *i*, is defined as the ratio of the frontier input cost to the corresponding observed cost of the inputs given the level of output the firm produces. The technical efficiency of the firm *i* at time *t* in the context of the stochastic production function can be expressed in terms of the errors as under:

$$TE_{it} = E[\exp(-U_{it})/(V_{it} + U_{it})] \tag{5.16}$$

which is the expectation of the exponential technical inefficiencies dependent on the error term $\in_{it}$. Since U_{it} is a non-negative random variable these technical efficiencies lie between zero and unity where unity indicates that the firm is technically efficient. The authors employ the usual maximum likelihood method in their work. The method estimates the unknown parameters of the stochastic frontier and the inefficiency effects from the data simultaneously. Tables 5.2 and 5.3 present the results of the exercise. Table 5.2 contains 28 parameters including the constant, but no explanation is provided.

The real issue in any application of the trans-log cost frontier function is the selection of variables included in the set of inputs and outputs of a firm, and specifying the constraints imposed on the model to isolate the unwanted influences affecting the results. Here the authors' work in this chapter is quite murky.

In the first place, one finds no background discussion of the development, present structure, and policies concerning banking institutions in Malaysia. Some crucial changes affecting the efficiency of banks (such as their enlargement in size and the reduction in their number in a restructuring exercise) took place after the 1997–98 financial turmoil. The banks are also very different from other production units in the economy, manufacturing in particular, in terms of explaining the input–output concept or measurement.

The study covers a fairly long period, 1993–2000, but the results have no time dimension: obviously the authors have used panel modelling for their work. Since the total number of banks they cover (34) is quite large, one wonders if the post-crisis data, with their greater homogeneity and ease of handling, would not have served the authors' purpose better. Or the data could have been used for a dynamic study of inefficiency (i.e., changes over time).

Again, only two Islamic banks appear in the sample and the results do not highlight their comparison with mainstream banks as planned. This makes the title of the chapter somewhat misleading. Also, what about the Islamic windows operating in the conventional banks? How have the authors dealt with the impact of this phenomenon on the efficiency of banking in the country, Islamic or otherwise? This is a difficult question, yet those measuring efficiency of banks in Malaysia can hardly afford to bypass it. One should at least discuss it as a limitation of the study.

The data set for 34 banks – 24 local and 10 foreign – is created using the banks' annual reports and the ABM Bankers' Directory to fill gaps in information on the number of employees in some cases. The banks have been identified for purposes of analysis as local and foreign, Islamic and conventional, private and public, and as large and small. Of course, the categorization used in the study is not unique as many categories overlap.

The study does not reveal the component details of the outputs or inputs selected for modelling. One finds a somewhat general discussion on the issue in the chapter. It is hinted that total cost (*C*) includes all labour and capital expenses plus interest. In the case of Islamic banks, interest is replaced with income distributed to the depositors. What is included in labour expense, or how capital expense is estimated, is not clear. The authors refer to a paper by Habshi al- (1999) for details. The paper is not readily available, and neither does it contain the needed explanations. Ideally, an explanation of this crucial point should have been included in the chapter. The authors mention three outputs: loans, advances, and financing. Again no details on their nature or content are provided, and inter-bank differences, at least with respect to mainstream interest-based banks and Islamic banks, should have been discussed. Financing in particular is a dubious category unless clearly explained.

The corresponding input prices include (i) staff expenses per employee, (ii) expenses on land, building and equipment per Ringgit of assets, and (iii) expenses on interest or income distributed per Ringgit of deposits. Here also the chapter has no explanatory discussion. For example, in (i) for averaging expenses of labour, all employees cannot be treated on the same footing; the proportion of officers to support staff is not the same in all banks. In foreign banks particularly, it is found to be generally loaded in favour of officers as opposed to support staff. Also, foreign banks earn a significantly larger share of their revenue from non-interest sources, through activities such as derivatives trading, consumer credit and merchant banking. Such matters are not given weight in the condensed data the work uses. Likewise, in (ii) historical and current costs differences between items and banks may have considerably distorted the aggregation.

Even the number of inputs and outputs used is not explicitly mentioned in the chapter. One way to know the number of outputs and inputs underlying a model is to look at the superscripts used in the specification.

The authors use in their model (equation 5.3) general superscripts n and m, not the numerals. I think the authors should have tested the appropriateness of the trans-log model form they have used compared to the linear construct as in Turati (2001). Possibly, the results would have been different.

Results and their discussion

Let us have a closer look at the details of the results obtained by the study. It may be recalled that the authors promised to provide the ranking of the

banks in their sample on an efficiency ladder. Surprisingly, the section does not contain any such list. The results are based on three tables. Table 5.1 provides descriptive statistics for inefficiency measures for various bank *categories*. As the sample size helps in interpreting the results, it would have been better if the table had also provided the number of banks in each category.

The first conclusion of the authors is that Islamic banks have a slight edge over the conventional banks in matters of efficiency. The difference is not statistically significant, the authors admit, but it does lead them to conclude that Islamic banks in Malaysia are at least no less efficient than the conventional ones. The conclusion needs caution. The number of Islamic banks operating in Malaysia and included in the study is no more than two. In the aggregate, their transactions' value is not more than a drop in the ocean. And to reiterate, the authors do not mention how they have treated the Islamic windows operating in the conventional banks.

This, in fact, reopens the issue of defining the variables alluded to earlier. For example, how have dividends paid on equity capital been treated? Is the money included in the cost of capital? Likewise, what about retained earnings? Do they appear in the cost of capital calculations for Islamic banks? They cannot be treated at par with interest paid in the case of conventional banks. Interest payments are obligatory, but the amount distributed in Islamic banks is discretionary: retained earnings *ipso facto* belong to the depositors. Failure to recognize the distinction may have led *inter alia* to an underestimation of capital costs for Islamic banks, thus showing them to be more efficient than they in fact might be. Again, the authors have taken absolute amount of loans as a variable, but in the context of measuring bank efficiency, the *ratio* of loans to deposits has been found more appropriate.

Tables 5.2 and 5.3 provide the maximum likelihood method and Ordinary Least Squares results. The addition of relevant correlation coefficients to them might have been enlightening.