Measuring Cost Efficiency for Selected Bangladeshi Banks Using Stochastic Frontier Approach (SFA)

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Abstract

Banking industry is said to be most important sector for economic growth for any country. Bangladesh banking sector has been vulnerable due to lack of governance and intervention. Therefore it is important to study factors that influence performance of banking sector. This study employs Stochastic Frontier Approach (SFA) to measure cost efficiency for 35 commercial banks operating in Bangladesh. Balanced panel data were collected for the period of 2016 to 2020. To measure potential correlates to cost inefficiency, two-step and single-step methods are used. Results show, average cost efficiency from two-step model is 86.85% and 88.56% from single-step model. According to two-step model foreign banks are most cost efficient with a score of 90.22% and state owned banks with score 92.34% are most cost efficient in case of single-step model. Results suggest capital positioning has improved but banks should focus more on return o assets when pursuing profitability. To increase efficiency score banks must be free from intervention and technological advancements should be adopted.

Keywords: Cost efficiency, Stochastic Frontier Approach, Bangladesh, Commercial banks.

1. Introduction

Banking operations have been changing due to deregulations, innovation, and technological advancements. These changes force banks to change their activities. Reduced costs of information processing and transmission are a major force that impacts the performance of banking sector (Girardone et al. 2004). However, banking operations in developing country are prone to government intervention and limits banks to efficiently use their resources. Therefore it is important to study factors that affect bank performance as findings of this type of research help regulators and management to take better decision.

There are number of studies available on frontier efficiency (cost, profit, productive) for both developed and developing economies. Frontier efficiency measures the digression in performance from the best practice firm. There are two methods found in literature to measure frontier efficiency. They are parametric and non-parametric approach. The most

common parametric approach is Stochastic Frontier Approach (SFA). This method separates statistical noise from the effect of inefficiency, which results stochastic frontier. This method needs a specific functional form that assumes the shape of the efficient frontier and presupposes specific efficiency distribution level. Major limitation of this approach is that, measured efficiency will be incorrect if assumptions are mis-specified. Most common non-parametric approach is Data Envelopment Analysis (DEA). This approach does not need any assumptions; therefore, it is free from specification error. But problem with this method is that it does not take any random error into account, therefore it may calculate inaccurate inefficiency score. Both parametric and non-parametric approaches have advantages and limitations. That is why some researchers (Bauer *et al*, 1998; Huang and Wang, 2002; Weill, 2004) mention, it is okay to disagree on the best measurement method.

2. Problem Statement

Banking sector of Bangladesh said to be less cost-efficient in comparison to other countries. Researchers' states because of high level of non-performing loans banks spend more fund in processing loan that educes cost efficiency. High Liquidity requirements and lack of adoption of technologies also reduce profit earning ability. If more banks are failed to control cost, it can destabilize banking sector of Bangladesh. Therefore, it is necessary to identify which group of banks is cost efficient and which are not. This study focuses on to identify good performing banks and poor performing banks in regards to cost efficiency.

3. Review of Literatures

Researchers' measure cost efficiency score to provide more specific information to decision makers. A very prominent study by Ferrier and Lovell (1990) measured cost efficiency score for 575 US banks. They applied both SFA and DEA approaches in their study. They found both the approaches provide similar results. Interestingly they found cost efficiency score from DEA approach is higher than score from SFA approach. This findings contradict to the theory that inefficiency score from DEA is generally higher. The authors explained DEA frontier is more flexible than translog cost frontier in enveloping data. When they separated inefficiency into allocative inefficiency and technical inefficiency, SFA and DEA provided different inefficiency scores. They reported correlation coefficients between DEA and SFA for technical and cost efficiency are 0.014 and 0.017, which are not significantly different from zero. Means, scores from these two approached does not lead to consistent rankings. Explanation of this difference

is explain that, structure and implementation differ for linear model and stochastic model.

Ishik and Hassan (2002) employed SFA to measure cost and profit efficiencies of Turkish banks. They found average cost efficiencies is 84% and correlation coefficients between cost efficiency and profit efficiency is 19%. This suggests, high cost efficiency does not ensure higher profitability. They also highlighted that domestic banks are more cost efficient compare to state owned banks and smaller bank are in better position than large banks.

In regards to bank ownership structure, state-owned and private banks have set of objectives, hence their operations are different. Main goal of state-owned bank is to maximize social welfare. Therefore, state-owned banks might be seen as vehicles for raising capital to finance projects with high social returns, possibly low profit returns (Clarke et al.2005). Private banks on the other hand emphasize on cost minimizing strategies. State-owned banks worry less about financial struggle because any loses is covered by government. Therefore they are less concerned to maximize profit.

Fries and Taci (2005) compared cost efficiency scores of state-owned and private banks among European banks. They found private banks are more cost efficient than state-owned banks. Similar results were found by Bonin et al. (2006) when they study on Chinese banks.

In banking sector, it is important to take into account bank size. Casu and Girardone (2006) pointed out larger banks can take advantage of economies of scale and scopes. This enables those banks to be more efficient. Berger et al. (2003) used logarithm of bank assets and office number. They found there is a positive relationship between bank size and efficiency score.

In the context of Bangladesh Robin et al. (2018) employed the single-stage stochastic frontier model to estimate cost efficiency of Bangladeshi period. They took balanced panel data set of dominant commercial banks for the period of 1983-2012. Their result shows financial deregulation contributed in decrease of cost. Another study by Hassan and Hassan (2018) studied cost efficiency for 35 banks for the period of 2011-2015. They employed single stage SFA for their study. They found 88.50% mean cost efficiency for the sample banks.

Another study in the Bangladesh context Khanam and Nghiem (2004) took 48 banks and calculated cost efficiency score using DEA method. The found 84% cost efficiency score.

Limited studies have been done for Bangladeshi banks, however no study employed both two-step and single-step model to study cost efficiency. Therefore this study employs both models in order to get more robust and reliable measurement of cost efficiency.

4. Research Objective

Most cost efficiency studies available are on American and European banks. Very few empirical studies are available on Bangladeshi banking sector. Therefore, main objective of this study is to determine cost efficiency score for selected commercials banks currently operating in Bangladesh using parametric approach (Stochastic Frontier Approach). This study tries to answer the question "to what extent Bangladesh banking sector can be considered as cost efficient?" This study has some objectives through which answer to the main question can be achieved. This study test cost efficiency level for sample banks and subgroups. This study also tries to find out which subgroups are the most cost efficient. This study also aims to measure inefficiency for sample banks.

5. Methodology

Stochastic Frontier Approach (SFA) was proposed by Aigner et al. (1977) and Meeusen (1977) independently. Original specification had two components. One was for technical efficiency and another for random effects. Aigner (1977) presumed inefficiency term has non-negative half normal distribution and random effect has normal distribution. Later many researchers made adjustments and extension to the original SFA model. Greene (1990) mentioned inefficiency term is two parameter gamma and Stevenson (1980) assumed inefficiency term is truncated normal. Another study by Pitt and Lee (1981) accommodated panel data to the original SFA model. Inefficiencies must have truncated distribution because inefficiency cannot be negative. According to Berger and Humphrey (1997) "estimated inefficiency is taken as the conditional mean or mode of the distribution of the inefficiency term, given the observation of the composed error term."

There are three types of efficiency measurements exist in literature: profit efficiency, revenue efficiency and cost efficiency. Cost efficiency measures how well a bank perform relative to 'best practice' bank producing same output operating in same environmental condition (Berger et al. 2009).

Stochastic frontier Model following Coelli et al (2005)

$$\mathbf{lnTC_{it}} = \boldsymbol{c}\ \mathbf{(x_{it};}\ \boldsymbol{\beta}\mathbf{)} + \mathbf{v_{it}} + \mathbf{u_{it}} \text{.....} (1)$$

(TC_{it} denotes observed total costs at the t-th observation (t=1, 2 ...T) for the i-th firm (i=1, 2 ...N), x_{it} is a (1×k) vector of output quantities and input price,

β is a (k×1) vector of unknown parameters to be estimated, C ( ) is a suitable function form, v_{it} is stochastic error capturing the effect of noise and measurement error. $\mathcal{N}$ $(0,\sigma_v^2)$, and independent of theu_{it})

Aigner et al. (1997) specified v_{it} to be normal distribution and u_{it} to be half- normal distribution. Half- normal distribution is also specified as half-normal model. Other researcher Stevenson (1980) mentioned inefficiencies is truncated-normal and Greene (1990) mentioned inefficiencies is two-parameter gamma distribution. No specific or established method is determined the efficiency level. Two widely used approaches are found in literature namely single-step and two-step approach.

In two step approach, first stochastic frontier function is estimated for individual firms and then regress the inefficiencies. The regression involves in two-step is Least-square regression. Several studies including Berger (1998), Allen (1996), Bonin et al. (2005) used two-step approach in their studies. Bonnin et al. (2005) used profit as dependent variable and efficient variable as independent variable to test relationship between probability and efficiencies. Two-step approach has been identified as problematic by some researchers. For this, in the first stage, it is assumed that inefficiencies effects are independent and identically distributed. And in the second stage, it is assumed that inefficiency terms are firm specific means (Coelli, 2005).

Kumbhakar et al. (1991) proposed single-step model to solve inconsistency problem of two-step model. Single step model is called single stage likelihood procedure, where single step function is firm specific factors in stochastic frontier model.

Both single- step and two- step models are used in this paper measure cost efficiency score for selected banks. Possible correlates also measured for both models. This analysis enables to compare results from the both models which provide more realistic findings.

5.1 Model Specification

Cost Efficiency Function:

This paper adopts Coelli et al. (2005) model to measure cost efficiency.

$$\mathbf{CE_{it=}}\ \frac{\mathbf{TC_{IT}^{F}}}{\mathbf{TC_{it}}} = \mathbf{exp}(\hat{u}_{it}) \text{……..(2)}$$

Here, TC_{IT}^{F}= the stochastic frontier of the i-th bank in time t, TC_{it}= observed total cost of i- th bank in time t and $\hat{u}_{it}$= expected value of inefficiency term for i-th banking firm at time t.

Model 1: first model in this study is two-step approach as Aigner et al. (1997) proposed. This model is half normal distribution. First, cost efficiency is estimated and then with potential correlates ordinary least squares regression of inefficiencies is run.

Cost function is:

$$\mathbf{ln}\left(\frac{\mathbf{TC_{it}}}{\omega_{3it}}\right) = \boldsymbol{\alpha_0} + \sum_{\mathbf{j=1}}^{\mathbf{2}} \boldsymbol{\alpha_j} \mathbf{ln}\left(\frac{\omega_{jit}}{\omega_{3it}}\right) + \sum_{\mathbf{k=1}}^{\mathbf{3}} \boldsymbol{\beta_k}\, \mathbf{ln}(\mathbf{y_{kit}}) + \mathbf{yeardummy_t} + \mathbf{v_{it}} + \mathbf{u_{it}} \quad (3)$$

Here, TC_{it} Is total cost at the t-th observation, y_{kit} is the k-th output at the t-th observation, ω_{jit} is the j-th input price at the t-th observation, year dummy_t are the dummies where t=1, 2, 3...T, v_{it}= is the stochastic error and measurement errors and u_{it} is half normal non-negative inefficiency term.

Model 2: This paper follows Battese and Coelli (1995) model. This models estimates cost function and identify correlates of bank inefficiencies in single step. Model 2:

$$\mathbf{ln}\left(\frac{\mathbf{TC_{it}}}{\omega_{3it}}\right) = \boldsymbol{\alpha_0} + \sum_{\mathbf{j=1}}^{\mathbf{2}} \boldsymbol{\alpha_j} \mathbf{ln}\left(\frac{\omega_{jit}}{\omega_{3it}}\right) + \sum_{\mathbf{k=1}}^{\mathbf{3}} \boldsymbol{\beta_k}\, \mathbf{ln}(\mathbf{y_{kit}}) + \mathbf{yeardummy_t} + \mathbf{v_{it}} + \mathbf{u_{it}} \quad (4)$$

Here, $TC_{it}, y_{kit}, \omega_{jit}$, year dummy_t and v_{it} are the same as equation (3)

$$\mathbf{But}\ \mathbf{u_{it}} = \mathbf{Z_{it}}\boldsymbol{\delta} + \mathbf{W_{it}} \text{……..(5)}$$

Here, $\mathbf{W_{it}}$ is random error and $\mathbf{Z_{it}}\boldsymbol{\delta}$ is point of truncation which has normal distribution withzero mean and variance.

By combining equation 4 and 5:

$$\ln\left(\frac{TC_{it}}{w_{3it}}\right) = \alpha_0 + \sum_{j=1}^{2} \alpha_j \ln\left(\frac{w_{jit}}{w_{3it}}\right) + \sum_{k=1}^{3} \beta_k \ln(y_{kit}) + yeardummy_t + v_{it} + Z_{it}\,\delta + W_{it} \quad (6)$$

5.2 Inputs and Outputs

Two approaches can be followed to define inputs and outputs: production approach and intermediation approach. In the intermediation approach it is assumed that banks are intermediary between investors and depositors. In the production approach institutions are considered as primary production services for customers. This approach fails to critically analyze economic and technical aspects of production (Kumbhakar, 2007). Therefore, Intermediation approach is followed in this study where inputs are: labour, borrowed funds and physical capital. Outputs are: investment in securities, loans and other earnings assets. Other earnings assets are calculated as total earning assets minus loans and securities.

Table 1: Definitions of Total cost, Inputs and Outputs

Variable	Symbol	Name	Description
Dependent variable	TC	Total cost	total of interest expenses, personal expenses and other noninterest expenses
output price	y_1	Total loans	Total loans
	y_2	Securities	Total book value of securities
	y_3	Other earning asset	Total earnings assets less loans and securities
Input price	w_1	Price of borrowed funds	Interest expense over total deposits
	w_2	Labour price	Personal expense over total assets
	w_3	Physical capital price	Other non-interest

			expense over fixed assets

Source: Girardone et al. (2004)

5.3 Data

Panel data of 35 commercial banks were collected for this study for the period of 2016 to 2020. These banks are divided into three categories: state-owned (SCB), private banks (PCB) and foreign banks (FCB). There are four state-owned commercial banks, twenty-six private commercial banks and five foreign banks. Those banks have data available for the whole study periods were selected for this study. All financial figures are in millions of Taka except for ratios. Data were collected from Dhaka Stock Exchange (DSE) and financial reports.

6. Result and Discussion

Table 2 presents descriptive statistics of inputs and outputs for full sample and subgroups. Total loans, securities and other earnings assets are expressed in millions of Taka and Price of borrowed funds, labour price and capital price are in percentage.

Table 2: Descriptive Statistics of Inputs and Outputs

Variable	Observations	Mean	Standard error
Full sample			
Total loans	175	125574	504654
Securities	175	58723	465785
Other earnings assets	175	66474	529657
Price of borrowed funds	175	3.29%	0.54%
Price of labour	175	0.39%	0.09%
Price of capital	175	56.7%	30.4%

State owned commercial banks (SCBs)			
Total loans	20	604980	298760
Securities	20	346575	156474
Other earnings assets	20	267856	235660
Price of borrowed funds	20	2.10%	0.34%
Price of labour	20	0.57%	0.14%
Price of capital	20	47.04%	15.62%
Private commercial banks (PCBs)			
Total loans	130	84504	13409
Securities	130	5237	6230
Other earnings assets	130	27431	9210
Price of borrowed funds	130	2.71%	0.66%
Price of labour	130	0.48%	0.16%
Price of capital	130	54.62%	44.45%
Foreign commercial banks (FCBs)			
Total loans	25	876	1340
Securities	25	4124	4765
Other earnings assets	25	4256	6457
Price of borrowed funds	25	1.40%	0.70%
Price of labour	25	0.54%	0.14%
Price of capital	25	66.21%	41.45%

Source: Author's calculation

Table 3 presents descriptive statistics of five firm specific characteristics. ER (equity ratio), NIM (net interest margin). ROA (return on assets), LnTA (logarithm of total assets) and TA (total assets). Total assets ranges from 26004 million Taka to 446,420 million taka. Table 3 also shows for subgroups divided by ownership structure. Other financial characteristics Equity ratio is 6.27%, Net interest margin is 4.42% and Return on assets is 0.92% for sample banks.

Table 3: Descriptive Statistics of Potential Correlates

Variable	Observations	Mean	Std. error	Max	Min
Full sample					
ER	175	6.27 %	3.82%	11.63%	-8.41%
NIM	175	3.42%	0.61%	4.55%	2.30
ROA	175	0.92%	0.29%	3.40%	-0.15%
LnTA	175	17.25	2.71	19.45	14.56
TA	175	446,420.40	209,142.40	954,865	2,6004
State-owned commercial banks (SCBs)					
ER	20	5.14%	3.72%	8.75%	-12.41%
NIM	20	2.24%	0.32%	2.09%	2.09%
ROA	20	1.08%	0.17%	0.72%	0.68%
LnTA	20	19.74	0.80	18.71	11.62
TA	20	467,898	565,458	754,616	265,395
Private commercial banks (PCBs)					

ER	130	5.21%	1.35%	20.12%	1.42%
NIM	130	2.53%	0.69%	8.43%	1.78%
ROA	130	1.23%	0.40%	3.44%	0.24%
LnTA	130	16.70	0.84	15.78	14.60
TA	130	19,374	26,865	182,914	1,671
Foreign commercial banks (FCBs)					
ER	25	4.82%	3.11%	14.34%	1.45%
NIM	25	3.45%	0.71%	6.72%	1.25%
ROA	25	2.45%	0.45%	3.45%	0.27%
LnTA	25	19.02	1.42	19.56	16.65
TA	25	20,366	30,556	188,612	1,652

Source: Author's calculation

Table 4: Parameter Estimation of Cost Frontier Functions and Potential Correlates

	Model (1)				**Model (2)**			
Variables	**Coefficient**	**Std.Error**	**t-ratio**	**P-value**	**Coefficient**	**Std. Error**	**t-ratio**	**P-value**
b_{Y1}	0.5225***	-0.0225	23.22	<.00001	0.5123***	-0.0277	18.5	<.00001
b_{Y2}	0.1112***	-0.0127	8.82	<.00001	0.1267***	-0.0129	9.82	<.00001

b_{Y3}	0.1912***	-0.0138	13.86	<.00001	0.1142***	-0.0190	6.01	<.00001
b_{w1}	0.6032***	-0.0190	31.75	<.00001	0.6744***	-0.0167	40.38	<.00001
b_{w2}	0.1986***	-0.0170	11.78	<.00001	0.2611***	-0.0187	13.96	<.00001
b_{w3}	0.3987***	-0.0224	17.8	<.00001	0.3188***	-0.0241	13.22	<.00001
Potential Correlates	**Secondary regression**				**Single-step estimation**			
ER	-0.0071**	-0.0022	-3.23	.0015	-0.0189**	-0.009	-2.1	.0372
NIM	0.0435***	-0.0110	3.95	.0001	0.0844***	-0.0249	3.34	.0010
ROA	-0.0701***	-0.0198	-3.54	.0005	-0.2575***	-0.0787	-3.27	.0013
LnTA	-0.003	-0.0038	-0.79	.4310	-0.0401	-0.0198	-2.02	.0449
Constant	1.1127***	-0.0789	14.10		0.4106	-0.3156	1.30	

σ_S^2	0.0159	-0.0299			0.0201	-0.0071		
gamma	0.9112				0.8756			
LogL	169.51				204.21			
R^2	0.202							

Source: Author's calculation. **Note:** *, **, *** denotes .10, .05, .01 significance level (two tailed).

Table 4 presents estimation results for both model 1 and model 2. The estimation results reveal important characteristics of the cost function of bank and correlates to inefficiency in banking industry. All coefficients for inputs and outputs prices are positive and significant for both models.

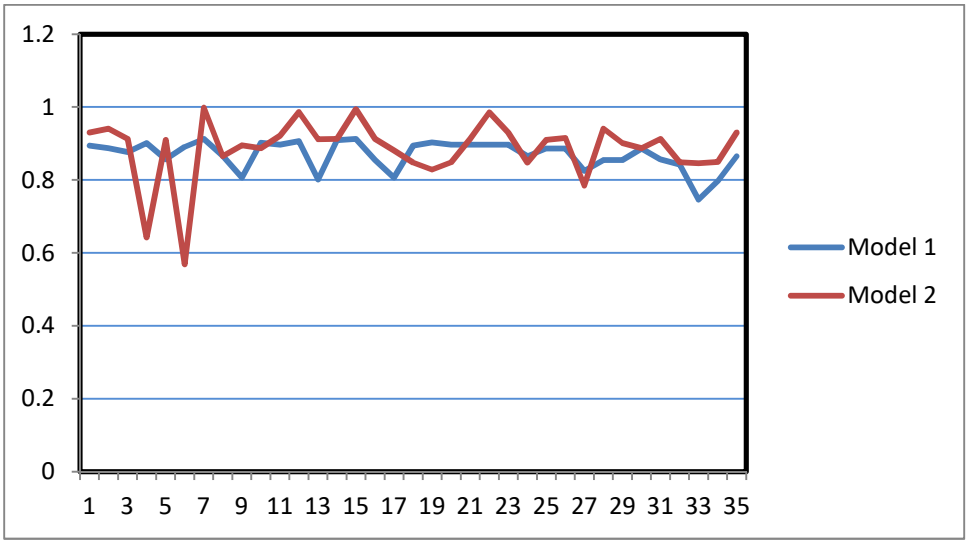

Figure 1: Mean Cost Efficiency Scores for individual banks**Source:** author's estimation

Figure 1 shows mean cost efficiencies for all banks by both model 1 and model 2. List of banks and their cost efficiency can be found in appendix A. Efficiency scores from two models do not deviate from each other to a large extent. Model 2 provides higher cost efficiency with exceptions for some foreign banks.

Table 5: Descriptive statistics of cost efficiencies

	No. of observations	Mean	Std. error	Max	Min
Model 1	175	0.8695	0.0069	0.9124	0.7458
Model 2	175	0.8856	0.0144	0.9989	0.5684

Source: Author's calculation

Table 5 shows mean cost efficiency scores are 86.95% and 88.56%, which means banks waste approximately 13.05% and 11.44% relative to best practice bank.

To understand which subgroups is most cost efficient, independent t-test is done. T-test compares only two groups and here there are three subgroups. For this, every two groups will be compared separately.

Table 6: Results of t-test for Subgroups by Ownership Structure

	Model1		Model 2	
	Mean	Std. Error	Mean	Std. Error
SCB	0.8654	0.0077	0.9234	0.0076
FCB	0.9022	0.0065	0.9210	0.0055
p-value	0.1967		0.7456	
SCB	0.8654	0.0077	0.9234	0.0076
PCB	0.8876	0.0067	0.8765	0.0076
p-value	0.2234		0.0212	
FCB	0.9022	0.0065	0.9210	0.0055
PCB	0.8876	0.0067	0.8765	0.0076
p-value	0.4900		0.0121	

Source: author's estimation

Table 6 shows FCB are most cost efficient according to model 1 and SCB are most cost efficient in model 2. P value of 74.56% means, efficiency scores for FCB and SCB are not significantly different from each other.

Estimations of potential correlation

Table 3 presents consistent sign and (in)significances for all four potential correlates. Coefficients and p-value of ER, NIM and ROA are significant for both models whereas Coefficients and p-value of LnTA are insignificant for both models. P-values of ER (0.0015 & 0.0372), NIM (0.001 & 0.0010), ROA (0.0005 & 0.0013), LnTA (0.0410 & 0.0449).

Negative value of ER means, banks with higher ER are considered as more cost efficient. There is negative relationship between cost inefficiency and profitability. ROA is significantly negative suggests, bank should focus more on cost control. The negative coefficient of LnTA suggests, lager banks are more cost efficient.

7. Conclusion

Cost efficiency scores for entire study period are 86.95% for model 1 and 88.56% for model 2. When testing for potential correlates, both models provide consistent results for all four correlates (ER, NIM, ROA, LnTA). ER and ROA are negatively correlated to cost efficiency level means, higher ER and ROA can bring higher cost efficiency. NIM has positive and significant relationship with inefficiency means lower NIM is an indication of better performance of banks in context of cost efficiency.

Study of subgroups further suggests, FCB are most cost efficient when using model 1 and SCB are most cost efficient for model 2. Capital positioning of Bangladesh banking system has improved in recent years however, some state-owned and private banks are undercapitalized. Return on assets values are significantly negative (-0.0701, -0.2575) suggests, while pursuing profitability, banks should focus on cost control. Bangladesh banking sector is highly influenced by political insolvent, this pressures must be reduced for better stability in the banking sector. Adoption of new technology can reduce cost of banks and improve efficiency score.

This study measure only cost efficiency, however profit efficiency can also be measured to study efficiency in the banking sector. Further study could employ more than one

method to estimate relative efficiency score. This would to cross check results and will provide more reliable estimations. This study only takes into account data of 35 banks. future study can include more banks for more comprehensive result.

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Appendix 1

Table A: Mean cost efficiency scores for sample banks

ID	Bank name	Ownership	Model 1	Model 2
1	Agrani Bank	State-owned	0.8945	0.9301
2	Sonali Bank	State-owned	0.8875	0.9405
3	Rupali Bank	State-owned	0.8768	0.9125
4	Janata Bank	State-owned	0.9012	0.642
5	Standard Chartered Bank	Foreign	0.8568	0.9099
6	HSBC	Foreign	0.8906	0.5684
7	Citi	Foreign	0.9124	0.9989
8	Commercial Bank of Ceylon	Foreign	0.8657	0.8656
9	State Bank of India	Foreign	0.8067	0.8955
10	AB Bank	Private	0.9024	0.8876
11	Bangladesh Commercial Bank	Private	0.8967	0.921
12	Islami Bank Bangladesh	Private	0.9065	0.9867
13	South-East Bank	Private	0.8011	0.912
14	Bank Asia	Private	0.9089	0.9124
15	Standard Bank Ltd.	Private	0.9124	0.9945
16	Dhaka Bank	Private	0.8544	0.9125
17	Al-Arafah Bank	Private	0.8067	0.8809
18	Trust Bank	Private	0.8945	0.8475
19	Jamuna Bank	Private	0.9027	0.8282
20	Brac Bank Ltd.	Private	0.8967	0.8484
21	Basic Bank	Private	0.8967	0.9123
22	ShahjalalIslami Bank	Private	0.8966	0.9856
23	Mutual Trust Bank	Private	0.8966	0.9301
24	Social Islami Bank	Private	0.8655	0.8475
25	National Bank	Private	0.8866	0.9099

26	Prime Bank	Private	0.8865	0.9154
27	City Bank Ltd.	Private	0.8245	0.7845
28	Eastern Bank Ltd.	Private	0.8547	0.9405
29	Premier Bank	Private	0.8544	0.9012
30	Uttara Bank Ltd.	Private	0.8866	0.8875
31	United Commercial Bank	Private	0.8567	0.9124
32	Dutch Bangla Bank Ltd.	Private	0.8423	0.849
33	First Security Bank	Private	0.7458	0.8456
34	EXIM Bank Ltd.	Private	0.7966	0.8492
35	One Bank Ltd	Private	0.8656	0.9301
Average			0.8695	0.8856
In Percentage			86.95%	88.56%

Author:

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