THE IMPACT OF BANCASSURANCE ON THE EFFICIENCY OF BANKS:
EVIDENCE FROM THE BANKING SECTOR IN INDIA

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ABSTRACT

The objective of the study is to fill the gap in the literature by examining whether bancassurance business leads to improvements in the efficiency of the banks. The previous literature has shown conflicting results regarding the impact of diversification on the performance. On the one hand, past studies argued that banks engaging in a variety of non-banking activities can enjoy economies of scope, ultimately boosting both their performance and market value. On the opposite, diversification could lead to the intensification of any agency problems existing between corporate insiders and small shareholders, which would ultimately destroy the value of the firm within the market. This study examines the impact of bancassurance on the efficiency of public sector banks and private sector banks for the time period 2011-2017. Data envelopment analysis is used to measure the impact of bancassurance on all public sector banks and private sector banks in India. The results reveal that bancassurance makes impact on the efficiency of banks.

KEYWORDS: Bancassurance, Banking, Efficiency, Technical Efficiency, Scale Efficiency.

Introduction

Bancassurance is a synergy of banks and insurance companies that connotes distribution of insurance products through banking channels. Under the bancassurance model, the bank acts as an intermediary, helping an insurance company to reach its target customers with the aim of increasing its market share, an arrangement which seems to have mutual benefits for both the banks and the insurance companies. The benefit for the banks is that they can use their existing staff to earn fee income (commission) by delivering insurance services in addition to their existing tasks (Gonulal, Goulder, & Lester, 2012), on the other side the insurers can gain access to new customers through this new distribution channel, thereby increasing the income accrued from premiums.

In recent years, research interest concerning the evolution of banking efficiency gained tremendous momentum as the researchers and policy makers seek to evaluate the efficacy of financial deregulation and liberalization programme. The main objective of this study is to examine the impacts of bancassurance on banks' performance. By using the data related to actual commission accrued from insurance sales in the banking sector in India, present study test whether the involvement of banks in bancassurance business enhances their efficiency. Firstly, by using actual revenue data on bancassurance business, we can precisely examine the direct impacts of bancassurance business on the efficiency and profitability of the banks. The prior studies have primarily relied upon mergers with insurance companies as the proxy for involvement in bancassurance activity. Secondly, our study is the first to consider the effects of cooperative bancassurance strategies between banks and insurers. Due to data limitations, the prior studies have been unable to examine whether a cooperative bancassurance strategy by a bank can improve its overall performance. In this study, intend to fill this gap and contribute to the extant literature by providing new evidence on the impacts on bank performance arising from the establishment of cooperative strategies with insurers.

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The remainder of this paper is organized as follows. A review of literature is provided in Section 2, followed by a description of the data, methodology and variables adopted for our study in section 3. Empirical results are explained in Section 4 and finally, the conclusions drawn from this study are presented in Section 5.

Review of Literature

The impact of involvement by banks in insurance activities has attracted the attention of many researchers; Bergendahl (1995) noted that the benefits of bancassurance may be attributable to customers demonstrating greater faith in the banks, essentially as a result of the provision of products satisfying their individual needs. Singhal & Singh (2010) also stated that by getting involved in the sale of insurance products, the banking sector was able to leverage its infrastructure, operational expertise and existing customer services to the fullest extent. These prior studies have, however, consistently failed to provide any empirical evidence in support of their arguments. Amici, Fiordelisi, Masala, Ricci, & Sist (2013) investigated the impact by examining strategic alliances and joint ventures between banks and insurance companies, whilst Slijkerman, Schoenmaker and de Vries (2013) suggested that systemic risk could be lowered through financial conglomeration between banks and insurance companies. Within another strand of the literature, the focus is placed on the impact of operational diversification on bank performance, albeit with mixed results. The empirical studies on bancassurance have tended to focus on the potential wealth or risk effects of mergers between banking and insurance companies; for example, from an examination of the merger between Citicorp and Travelers, Carow (2001) identified increases in the stock prices of both banks and life insurance companies, whilst Fields, Fraser, & Kolari (2007) provided evidence on the potential for bidder wealth gains in bancassurance mergers through an examination of such mergers in the US and other countries.

It is argued in some of the related studies that banks can benefit from bancassurance activities through the synergy and economies of scope; that is, as compared to traditional channels, bancassurance provides banks with the advantage of lower costs (Benoist, 2002). Fiordelisi & Ricci (2011) recently carried out an examination of the efficiency performance of banks involved in bancassurance activities using ownership links as a proxy for bancassurance activities to test the efficiency effects on the banks; however, they could find no evidence in support of the involvement by banks in life insurance business. In contrast to the prior studies, we aim to fill the gap in the literature by examining whether banks selling insurance policies gain any diversification value from their bancassurance activities. By using data on actual commission from insurance sales, we can directly test whether involvement in bancassurance enhances the efficiency and performance of the banks. Our main research question is whether the performance of the banks is affected by their involvement in bancassurance business. Based upon the report from Swiss Re (2007), bancassurance can increase the productivity of banks. When considering economies of both scope and scale, we would expect to find involvement in bancassurance business leading to increased efficiency (Singhal & Singh, 2010). Furthermore, bancassurance can provide additional commission profit for the banks through the use of existing staff and infrastructure (Bergendahl, 1995; Genetay, Molyneux and McGuire, 1998). As a result, Bancassurance business may also increase profitability, such as return on assets and risk adjusted returns. We therefore propose the following 'enhanced-performance hypothesis':

Hypothesis 1: Banks have been Improved their Efficiency through Bancassurance Business

Past studies have failed to present any evidence describing to the cooperative bancassurance strategies of banks and their consequential performance. This study, further examines whether bank performance has been affected by cooperative strategies in bancassurance business. By cooperating with more insurers, banks can provide diversified insurance products, harness more bargaining power and obtain more information from insurers. As a result, banks can select better products from different insurers to meet the needs of their customers. Since a cooperative diversification strategy may improve both the efficiency and profitability of the banks, we propose the following 'diversified-strategy hypothesis':

Hypothesis 2: A Cooperative Diversification Strategy in Bancassurance Business will have Positive Effects on Bank Performance

The survey of available literature confirms the unavailability of the studies, evaluating the impact of bancassurance on technical efficiency of Indian commercial banks. So this study fulfils the gap between the literatures.

Research Methodology

Time period of the study lies between 2011 to 2017 and the scope of the study is classified under public sector banks and private sector banks. The list of banks is provided in table no. 1 and 2. The data source includes the annual reports of banks, corporate database (PROWESS) maintained by Centre for Monitoring the Indian Economy (CMIE) and Index Reports of RBI.

Table 1: List of Public Sector Banks

Sr. No.	Name of Public Sector Banks	Sr. No.	Name of Public Sector Banks
1	Allahabad Bank	14	Punjab & Sind Bank
2	Andhra Bank	15	Punjab National Bank
3	Bank of Baroda	16	State Bank of India
4	Bank of India	17	State Bank of Bikaner and Jaipur
5	Bank of Maharashtra	18	State Bank of Hyderabad
6	Canara Bank	19	State Bank of Mysore
7	Central Bank of India	20	State Bank of Travancore
8	Corporation Bank	21	Syndicate Bank
9	Dena Bank	22	UCO Bank
10	IDBI Bank Limited	23	Union Bank of India
11	Indian Bank	24	United Bank of India
12	Indian Overseas Bank	25	Vijaya Bank
13	Oriental Bank of Commerce		

Source: Official website of RBI

Table 2: List of Private Sector Banks

Sr. No.	Name of Private Banks	Sr. No.	Name of Private Banks
1	AXIS Bank Ltd.	10	Kotak Mahindra Bank Ltd.
2	City Union Bank Ltd.	11	Lakshmi Vilas Bank Ltd.
3	Coastal Local Area Bank Ltd.	12	Subhadra Local Area Bank Ltd
4	DCB Bank Ltd.	13	Tamilnad Mercantile Bank Ltd.
5	Dhanlaxmi Bank Ltd.	14	Catholic Syrian Bank Ltd
6	ICICI Bank Limited	15	Federal Bank Ltd.
7	IndusInd Bank Limited	16	HDFC Bank Ltd.
8	Karnataka Bank Ltd.	17	Jammu & Kashmir Bank Ltd.
9	Karur Vysya Bank Ltd.	18	Yes Bank Limited

Source: Official website of RBI

To measure the efficiency of banks data envelopment method (DEA) is used. It is a data oriented method for evaluating the efficiency of peer entities called decision making units. To measure efficiency with DEA, Deap version 2.1 is used. DEA originally proposed in 1978 by Charness et al. DEA is one of the most population fields in operations research (Charnes, Cooper, Huang, & Sun, 1990; Seiford & Thrall, 1990; Knox Lovell & Pastor, 1995; Coelli, 1996; Trick, 1998; Dyson et al., 2001; Lertworasirkul, Fang, Joines, & Nuttle, 2003; Parker, & Tavares, 2008; Emrouznejad, Fan, Cheng, & Wu, 2009; Cummins et al., 2010; Chen & Tan, 2011; Doyle, Green, Doyle, & Green, 2016)

CCR and BCC Models

To understand CCR and BCC models, considers n DMUs, j= 1, 2 ...n. The units are homogeneous with same type of inputs and outputs. Assume that there are k outputs and m inputs. Let x_j is a (m×1) input column vector and y_j is a (k×1) output column vector for the jth DMU. Moreover X= $(x_1, x_2,\ldots\ldots x_n)$ is a (m×n) input matrix and y= $(y_1, y_2,\ldots\ldots y_n)$ is the (k×n) output matrix. The CCR model assigns weights to each input and output, and then assesses the efficiency of a given DMU by the ratio of the aggregate weighted output to the aggregate weighted input. The weights assigned must be non-negative (Grover, 2014). For evaluation of the efficiency of the DMU "o", following problem will be solved:

Maximize = $\dfrac{\sum u^T y_0}{\sum v^T x_0}$ (1)

Subject to: $\dfrac{\sum u^T y_j}{\sum v^T x_j}$ 1,   (2)

j = 1, 2..........., n

u, v   0

u= k×1 denotes vector of output weights

v= (m×1) input vector of input weights

T= denotes the matrix transpose operator

u and v are chosen to maximize the efficiency measure of the DMU "o" subject to the constraints that the efficiency levels of all units must be less than or equal to 1.

The above problem has an infinite number of solutions. To generate a unique solution, constraint is imposed: $u^T y_o$=1. Then the maximization problem becomes:

Minimize =$\sum v^T y_o$ (3)

Subject to: $\sum u^T y_o$=1,   (4)

$\sum u^T y_j - \sum v^T x_j \leq 0,$ (5)

J= 1, 2........... n,

u, v   0

The duality problem to (3) can be written as follows:

Maximize = $\sum \emptyset_o$ (6)

Subject to: $\sum \emptyset_o y_o \leq \sum \lambda^T Y,$

x_o λ^T X,

$\lambda \geq 0$

λ is a (n ×1) column vector and $\emptyset_o$ is a scalar. Combination of input vectors in current practices can be provided by input vector of the "o" unit. The maximal proportional output vector that can be produced by linear combinations. $\emptyset_o$ denotes the solution to (6). Obviously $\emptyset_o \geq$1. If $\emptyset_o$ = 1, then decision making units o is technically efficient. If $\emptyset_o$>1 it means, DMU is technically inefficient.

Input Variables for the Study

- Physical capital measured in terms of value of fixed assets
- Number of employees
- No. Of branches

Outputs Variables for the Study

- Net interest income: measured as the difference between interest earned and interest expanded.
- Non-interest income: excluding bancassurance income (proxy of other income)
- Bancassurance income

The case and control methodology has been used to evaluate the efficiency gains for banks. In controlled model, banks are supposed not performing insurance activities, whereas, in case model they are providing insurance services and earning bancassurance income. Therefore, in controlled model efficiency scores have been calculated without bancassurance income while in case model, efficiency scores have been calculated by taking bancassurance income as an additional output.

Empirical Results

Table 3 provides overall technical efficiency scores of sampled banks that have been computed without and with bancassurance incomes. The analysis depicts average overall technical efficiency scores 64.9 percent without bancassurance income and 69.4 percent with bancassurance income. Thus, introduction of bancassurance has been observed satisfying the expectations of technical efficiency improvement in Indian banking industry**.**

Table 3: Impact of Bancassurance on the Overall Technical Efficiency of Banks

Years (1)	Technical Efficiency		Efficiency Improvement (4) = $\frac{(3)-(2)}{(2)} \times 100$
	Without Bancassurance (2)	With Bancassurance (3)	
2011	0.491	0.562	14.46029
2012	0.637	0.648	1.726845
2013	0.649	0.658	1.386749
2014	0.685	0.698	1.89781
2015	0.649	0.800	23.26656
2016	0.704	0.698	-0.85227
2017	0.725	0.791	9.103448
Average	**0.649**	**0.694**	**7.284205**

An average deviation of 7.28 percent has been observed between the OTE scores without bancassurance income and with bancassurance income. The observed difference supports the inference of positive impact of bancassurance on technical efficiency of Indian commercial banks. In 2016 overall technical efficiency score has been deteriorated.

Figure 1: Banks in Terms of OTE Scores with and Without Bancassurance Income
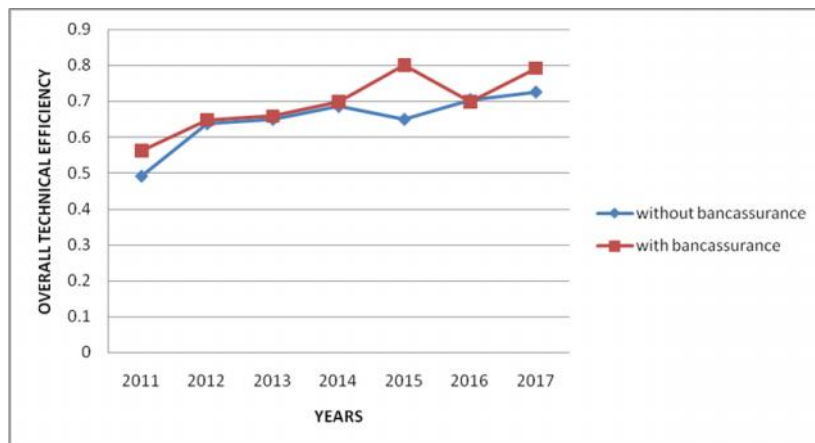

Figure 1 is a graphical presentation of overall technical score of both the models with and without bancassurance income. It shows that with the bancassurance income banking sector improved their overall technical efficiency. In 2015 there is a big difference between the efficiency score of both the models. Pure technical efficiency (PTE) is measured under the assumption of variable returns-to scale VRS. It reflects managerial performance with reference to inputs in production. Ratio of technical efficiency and pure technical efficiency is defined as scale efficiency.

Table 4: Impact of Bancassurance on the Managerial Efficiency

Years (1)	Pure Technical Efficiency		Efficiency Improvement (4) = $\frac{(3)-(2)}{(2)} \times 100$
	Without Bancassurance (2)	With Bancassurance (3)	
2011	0.694	0.736	6.051873
2012	0.765	0.768	0.392157
2013	0.779	0.780	0.12837
2014	0.791	0.794	0.379267
2015	0.805	0.851	5.714286
2016	0.808	0.794	-1.73267
2017	0.822	0.872	6.082725
Average	**0.780571**	**0.799286**	**2.430858**

Table 4 provides the pure technical efficiency score of the banks with and without bancassurance income. It shows 2.43 percent difference of average pure technical efficiency score that is less than average overall technical efficiency. So the commercial banks have to pay attention on their managerial efficiency.

Table 5: Impact of Bancassurance on Scale Efficiency

Years (1)	Scale Efficiency		Efficiency improvement (4) = $\frac{(3)-(2)}{(2)} \times 100$
	Without bancassurance (2)	With bancassurance (3)	
2011	0.707	0.764	8.062235
2012	0.833	0.844	1.320528
2013	0.833	0.843	1.20048
2014	0.866	0.879	1.501155
2015	**0.806**	**0.940**	**16.62531**
2016	0.871	0.879	0.918485
2017	0.882	0.907	2.834467
Average	**0.828286**	**0.865143**	**4.637523**

Table 5 ascertains the fact that scale efficiency increases from 83 percent to 87 percent when bancassurance income is included. In 2016 banking sector has higher efficiency score of 16.6 percent.

Table 5: Comparison of the Nature of Return to Scale with and Without Bancassurance Income

Years	Without Bancassurance			With Bancassurance		
	IRS	CRS	DRS	IRS	CRS	DRS
2011	10	2	26	8	2	28
2012	**14**	**3**	**21**	**14**	**4**	**20**
2013	**14**	**2**	**22**	**14**	**3**	**21**
2014	16	2	20	16	2	20
2015	**18**	**1**	**18**	**18**	**9**	**10**
2016	22	3	13	16	2	20
2017	22	2	11	19	3	13
Average	**16.57143**	**2.14**	**18.71429**	**15**	**3.57**	**18.857**

Note: i)   IRS represents increasing return to scale; ii) CRS represents constant return to scale; iii) DRS represents decreasing return to scale.

Table 5 show that how many banks changed their return to scale after joining bancassurace business. In 2012, 2013 and 2015 condition of banks improved due to bancassurance.

Conclusion

This study has been conducted to test the importance of bancessurance in Indian banking sector. By using the data of all public and private sector banks over seven years, the technical efficiency computed for two different models with and without bancassurance income. Both the hypotheses are accepted. The results show that average technical efficiency scores improved by 7 percent with insurance income. And managerial efficiency needs to be paid more attention to earn more from insurance sale. In sum, the study reveals significant efficiency gains from bancassurance to the Indian banking sector. However, the gains stem from managerial improvements only and banks are lacking scale efficiency improvements. Given the opportunity to enlarge the production scale in the light of increasing returns-to-scale, banks must need to exploit economies of scale by enlarging the bancassurance income through expanding the bancassurance business.

References

✠   Amici, A., Fiordelisi, F., Masala, F., Ricci, O., & Sist, F. (2013). Value creation in banking through strategic alliances and joint ventures. *Journal of Banking and Finance*, *37*(5), 1386–1396. https://doi.org/10.1016/j.jbankfin.2012.03.028

✠   Benoist, G. (2002). Bancassurance : The New Challenges. *The Geneva Papers on Risk and Insurance*, *27*(3), 295–303.

✠   Bergendahl, G. (1995). The profitability of bancassurance for European banks. *International Journal of Bank Marketing*, 17–28. https://doi.org/10.1108/02652329510075427

⌘   Carow, K. A. (2001). Citicorp-Travelers Group merger: Challenging barriers between banking and insurance. *Journal of Banking and Finance*, *25*(8), 1553–1571. https://doi.org/10.1016/S0378-4266(00)00134-5

⌘   Charnes, A., Cooper, W. W., Huang, Z. M., & Sun, D. B. (1990). Polyhedral Cone-Ratio DEA Models with an illustrative application to large commercial banks. *Journal of Econometrics*, *46*(3), 73–91. https://doi.org/10.1016/0304-4076(90)90048-X

⌘   Chen, Z., & Tan, J. (2011). Does bancassurance add value for banks? - Evidence from mergers and acquisitions between European banks and insurance companies. *Research in International Business and Finance*, *25*(1), 104–112. https://doi.org/10.1016/j.ribaf.2010.08.002

⌘   Coelli, T. (1996). *A Guide to DEAP Version 2.1: A Data Envelopment Analysis (Computer) Program. Centre for Efficiency and Productivity Analysis Working Papers, The university of New England.* Retrieved from https://absalon.itslearning.com/data/ku/103018/publications/coelli96.pdf

⌘   Cummins, J. D., Weiss, M. A., Xie, X., & Zi, H. (2010). Economies of scope in financial services: A DEA efficiency analysis of the US insurance industry. *Journal of Banking and Finance*, *34*(7), 1525–1539. https://doi.org/10.1016/j.jbankfin.2010.02.025

⌘   Doyle, J., & Green, R. (1994). Efficiency and Cross-Efficiency in DEA: Derivations , Meanings and Uses. *The Journal of the Operational Research Society*, *45*(5), 567–578.

⌘   Dyson, R. G., Allen, R., Camanho, A. S., Podinovski, V. V., Sarrico, C. S., & Shale, E. A. (2001). Pitfalls and protocols in DEA. *European Journal of Operational Research*, *132*(2), 245–259. https://doi.org/10.1016/S0377-2217(00)00149-1

⌘   Emrouznejad, A., Parker, B. R., & Tavares, G. (2008). Evaluation of research in efficiency and productivity: A survey and analysis of the first 30 years of scholarly literature in DEA. *Socio-Economic Planning Sciences*, *42*(3), 151–157.

⌘   Fan, C. K., Cheng, S. W., & Wu, C. R. (2009). Using GRA and DEA to compare efficiency of bancassurance sales with an insurer's own team. *Journal of Grey System*, *21*(4), 395–406.

⌘   Fields, L. P., Fraser, D. R., & Kolari, J. W. (2007). Bidder returns in bancassurance mergers: Is there evidence of synergy? *Journal of Banking and Finance*, *31*(12), 3646–3662. https://doi.org/10.1016/j.jbankfin.2007.01.014

⌘   Fiordelisi, F., & Ricci, O. (2011). Bancassurance efficiency gains: evidence from the Italian banking and insurance industries. *The European Journal of Finance*, *17*(9–10), 789–810. https://doi.org/10.1080/1351847X.2010.538519

⌘   Gonulal, S. O., Goulder, N., & Lester, R. (2012). Bancassurance--a valuable tool for developing insurance in emerging markets. *Policy Research Working Paper*, (6196), 67. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2145754

⌘   Internet. (2012). LIMDEP's Programs for Two Types of Efficiency Analysis, Stochastic Frontier Analysis (SFA) and Data Envelopment analysis (DEA). *Efficiency Analysis*, 143.

⌘   Knox Lovell, C. A., & Pastor, J. T. (1995). Units invariant and translation invariant DEA models. *Operations Research Letters*, *18*(3), 147–151. https://doi.org/10.1016/0167-6377(95)00044-5

⌘   Lertworasirkul, S., Fang, S. C., Joines, J. a, & Nuttle, H. L. W. (2003). Fuzzy data envelopment analysis (DEA): a possibility approach. *Fuzzy Sets and Systems*, *139*(2), 379–394. https://doi.org/Pii S0165-0114(02)00484-0\rDoi 10.1016/S0165-0114(02)00484-0

⌘   Re, S. (2007). *Bancassurance emerging trends, opportunities and challenges*. *SIgma*.

⌘   Seiford, L. M., & Thrall, R. M. (1990). Recent developments in DEA. The mathematical programming approach to frontier analysis. *Journal of Econometrics*, *46*, 7–38. https://doi.org/10.1016/0304-4076(90)90045-U

⌘   Singhal, A. K., & Singh, R. (2010). Bancassurance: Leveraging on the Synergy Between Banking and Insurance Industry. *IUP Journal of Risk & Insurance*, *7*(1–2), 28–38.

⌘   Trick, M. A. (1998). Data Envelopment Analysis. In *Quantitative Methods for the Management Sciences* (pp. 155–156). https://doi.org/10.1007/978-1-4899-8068-7

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