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Scrutinizing Efficiencies of Participation Banks: Turkey Sample 2005-2013

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Abstract

Today, efficient operation of the banking sector that support the growth and development of the countries has significance in terms of optimal using of resources. In our country, efficiency and productivity has become more important in the restructuring of the banking sector, especially after the Turkish banking crisis in November 2000 and February 2001. An important part of the banking sector is participation banks that apply interest-free banking. This institutions working in the private financial institutions previously have been converted into participation banks after the law numbered 5411 was invoked. While, there are a lot of studies about efficiency and productivity for the deposit banks and development and investment banks, not many studies examining participant banks effectiveness. Several kinds of methods are used in measuring efficiency of banks. Data Envelopment Analysis (DEA), that uses several input and output is a very suitable method to measure efficiency in banking sector. Besides, offering set of references leading to managers on efficiency and productivity of inefficient banks, it is one of the most important specialities of DEA method. The aim of this study is to measure efficiencies of participation banks in Turkish banking sector by using DEA for 2005-2013 period. In this study, it is concluded that all of the participation banks are efficective in 2005-2008 and 2012, but not effective in 2009-2011and 2013.

Keywords: Efficiency, Productivity, Participation Banks, Data Envelopment Analysis

Introduction

Participation banks are institutions that work in principle of interest free banking. These banks transmit the inactive or non economic funds of investors having interest sensivitity. Participation banks are one of three elements of banking sector with deposit banks and development and invesment banks andone of the most developing sectors. Most notable function of participation banking is bringing both the savings of investors having sensitivity to interest and inactive funds to economy. Participation banks directly embody the funds they collect from savers or international markets to real economy. Thus, participation banksare institutions that fund the production, investment, employment and exportation. Efficiency and productivity are significant concepts for participation banks as they are for all sectors. Participation banks should analyse the performance of their competitions and scrutinize their reference banks so as to work efficiently and productively. Efficiency and productivity analyses are significant to determine with which inputs the results are obtained and clarify their conditions. In this scope, total 2005- 2013 activities of four participation banks operating in our country are analysed via VZA method and with three inputs and two outputs.In the first part of the study development of participation banks in Turkey is indicated and literature is expressed in the second part of the study. The content of the study is indicated in the third part by expressing the variables of input and output and findings are assessed and conclusions are indicated in the final part.

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1-Participation Banking

Participation bank is an institution in Islamic finance system and does interest free banking.Islamic finance is a system in which all the financial activities are organized according to Islamic rules. Since interest is forbidden by religion, Islamic finance is regarded as an alternative to modern finance. (Serpam, 2013). Although the banks acting in this financial structure are called as “participation bank”, “Islamic bank”, “profit-loss participation bank” or “interest free bank”, there is not a great difference in terms of function. However, these banks collect the savings and convert them into investment through different modals. (Yanpar,2014, 125) Participation banks – showed up because of religious reasons and work in principle of profit and loss- carry out banking functions via Islamic rules. (TKBB, 2012; 83). Participation banks collect the funds of people not investing in classic banks due to the fact that interest is forbidden in Islam and fulfill the function of converting these funds into investment.

1.1-Participation Banks in the World

Interest free banking modal founded by Ahmet en-Neccar in a town of Egypt between 1963-1966 was the first alternative trial. “Nasr Social Bank” which was founded with state support in Egypt in 1971 is the first commercial interest free banking sample. Islamic development bank was founded in 1974 and started up its business in 1975 and since then the number of islamic banks has been increasing all over the world. Malaysia is one of the outstanding countries in islamic banking sector. Interest free banking, developing with classic banking, reached % 20 of the sector in 2012. Also, banking sector is structured according to Islamic rules in Iran. % 40 of the total islamic finance funds are claimed to be in Iran.Furthermore, seven big banks out of ten are in Iran.(Serpam, 2013, 9) Interest free banking implementations are also seen in Malaysia, Hong Kong, Bahrain, Sudan, Kuwait, England, Russia, Bangladesh, Qatar, Saudi Arabia, United Arab Emirates and Indonesia.(Serpam, 2013, 10; TKBB, 2012, 85-86). Top Islamic Financial Institutions report- published in November 2013 by considering the turnovers of 2012 by The Banker that is accepted as one of the most prestigious banking magazines of the World,- indicates that 5 banks from Iran, 2 banks fromSaudi Arabia 1 bank from the UAE, Indonesia and Qatar are in top 10. Another report published by Thomson Reuters indicates that active asset of world banking system is more than 120 trillion dollars and the potencial of interest free banking is almost 4 trillion dollars.(TKBB, 2013, 37).

1.2-Participation Banks in Turkey

Banking activities in Islamic principles were permitted under the name of “private financial house” with the govermental enactment numbered 83/7506 and dated 16-12-1983 in our country. The objective of this new organization was to transmit the mattress savings into economy. Two private financial institutions were founded in 1985, Albaraka Türk and Faisal Finance. (Aras and Öztürk, 2011, 169-170) Afterwards Kuveyt Türk Evkaf Finance was founded in 1989, Anadolu Finance in 1991, İhlas Finance in 1995 and Asya Finance in 1996. (Özsoy, 2011, 22-23). Private finance institutions were included in the frame of Banks Law in 1999 and their names were changed as “participation banks” with the banking law numbered 5411 and dated 01.11.2005 and they were accepted as complements of Turkish finance system. Accounts in four active participation banks were secured by saving deposit insurance fund and they have developed swiftly since the regulations in 2005. (TKBB, 2012, 88; Serpam, 2013, 7). Transmitting the funds of people that do not want to work with classic banks due to interest sensivity to economy, developing the relations between Turkey and other Islamic countries and transfering the funds of oil rich Islamic countries are targeted with the development of participation banks. (Aras and Öztürk, 2011, 170). According to banking law, participation banks can collects funds through current account or participation account and investors may become partners to both loss and profit. In terms of application of funds three methods are used; profit and loss partnership, providing production support and leasing. (Özsoy, 2011, 120). Participation banks provide financial support according to legal regulations instead of cash loan. Thus, participation banks provide real economic funds to production, trade, industry with these financial tecniques. (TKBB, 2009, 27). Since the funds are used in production and trade, repayment risk of the funds is low. One of the main indicators of the importance of participation banks in Turkish banking sector is the proportional share of them in the financial system. Proportional share of participation banks is increasing and developing perfomance of the banks in all financial services is remarkable. The share of participation banks in terms of total actives was % 5.5, total asset was %4.6 and net profit share was % 4.3 in 2013. These data are clear indicators of swift development of participation banks. (TKBB, 2013, 46-47). This rapid development will be supported with joining of two new public participation banks.

1.3- Funds Collection and Credit Application of Participation Banks

Most important function of participation banks is collecting funds and transferring them to production just like classic banks. Since, there is no interest relation in participation banks, they don't have a debtor creditor relation with both investors and producers. On the contrary, investors and producers are accepted as partners of participation banks.Participation banks make use of a few methods to collect funds. These are private current accounts, profit-loss participation accounts, investment accounts and sukuk. Participation banks do not have direct payment system. Payment is done to the company that sell the necessary equipment to loan customer against invoice. The customer is charged after payment by adding profit share and the debt is collected from the customer by installments. Thus, participation banks make use of institutional finance support, profit-loss partnership, leasing and financing commodity against document methods. (Özsoy, 2011).

2-Lıterature

There are numerous studies organized with different methods on efficiency of banking sector in Turkey. However, participation banks are not included in some of them, only deposit banks or development and investment banks are evaluated. Studies assessing banking sector's efficiency and profitability are mentioned below: Çilli scrutinized the scale and scope of economies in Turkish banking system by using a total cost function for 25 trade banks for 1989-1991 period and indicates that yield decreases in terms of scale and there is not a scale advantage. (Çilli,1993).Zaim examined the effects of financial liberation on Turkish banking system. The study indicates that banks adapt to optimal scale magnitude and public banks are more efficient. (Zaim,1995). Altunbaş and Molyneux analysed the performance ofTurkish banking sector between 1988 and 1993 by using development of 9 ratios. The study indicates that Turkish banking system is more profitable but less efficient compared to E.U banking system and Turkish banks work more labor intensive and their small scales are disadvantage to them. (Altunbaş and Molyneux, 1995). Yıldırım indicates in his study scrutinizing the period of 1988-1996 yield decreases due to scale and efficient banks are more profitable and there is not a relationship between active quality and efficiency. (Yıldırım, 1999). Mercan and Yolalan examined the relation between performance and scale and ownership structure via VZA method. (Mercan and Yolalan, 2000). Çıngı and Tarım scrutinized 21 Turkish banks forthe period of 1989-1996 via TFV approach and their study indicates that performance of private banks are better than public banks and efficiency differ due to in scale efficiency. (Yıldırım, 1999).Denizer organized a two step VZA examining banks' production and agency business and this study indicates that average efficiency of the sector displays great changes between 1970 and 1984. Deposits of public banks increase after crisis and production efficiency of sector before 1980 is more than liberation afterwards. (Denizer et al., 2000). İnan compiled the studies analysing the efficiency of Turkish banking system between 1990 and 2000 evaluated the total results. (İnan, 2000).The study organized by Kaya for the years 1997- 2000 through panel data analysis interprets the profit variables of the sector in both micro and macro forms. (Kaya, 2002). Işık and Hassan display that average efficiency of sector decreases in their study organized via VZA and Malmquist TVF index. (Işık and Hassan, 2003).Kaya and Doğan assess the efficiency of sector between 2002 and 2004 that they describe as period of deflation. Efficiency of the sector is observed to be positive and there is an increase in banks' total factor productivity due to technologic development. (Kaya and Doğan, 2005).

Güngör searched factors effecting profits of banks via panel data analysis in his study in 2007. The reseacher analysed 29 banks of Turkey for the period of 1990-2005 so as to determine the factors of profitability. The study indicates that both micro and macro factors effect the local and foreign banks. (Güngör, 2007).Variables effecting profitability performance of Turkish banking system for the years 1990- 2005 were searched by Atasoy in 2007 via panel data regression analysis and net interest margin, industrial and macro variables were examined. (Atasoy, 2007). Aysan and Ceyhan searched performance determiners of Turkish banking system forthe years 1990- 2006 via panel data analysis. According to results, there is a negative relation between the number of banks' branch and efficiency. (Aysan and Ceyhan, 2008). Kırkık and Pehlivan evaluated the productivity of the sector via data envelopment analysisby using data of September 2007 and indicate that % 65 of the banks are inefficient. (Kırkık and Pehlivan, 2009). Pehlivan evaluated 2009 data via canonical correlation and VZA methods and efficiency is assessed through VZA by using non linear relations of variables. (Pehlivan, 2011). Aras and Öztürk analysed the funds participation banks organized and their contribution to country's economy is assessed by examining the efficiency of banks. (Aras and Öztürk, 2011).

Çetintaş evaluated the productivity of deposit banks for the period of 2005-2010 via VZA and Malmquist TVF index. (Çetintaş, 2012). Çelik also evaluated the same period via VZA and stocastic analysis. (Çelik, 2012). Küçükaksoy and Önal assessed the efficiency of private and foreign financed banks via VZA and made some proposals. (Küçükaksoy and Önal, 2013).Özgür assessed the efficiency of banks for years 2001- 2005 and indicates in his study that participation banks work more efficiently than deposit banks. (Özgür, 2007). Dağ assessed the efficiency of deposit and participation banks for the years 2006- 2009 and compared them. In this study he indicates that participation banks are not exactly efficient interms of variable return to scale but they are as efficient as private financed banks in terms of constant return to scale. (Dağ, 2011).Baykara analysed the efficiency and productivity of participation banks forthe years 2005- 2011 via Topsis method. (Baykara, 2012). Another study scrutinizes productivity of all banks including participation banks through ratio analysis and indicates that productivity increases except for crisis years. (Pehlivan, 2013).Yayar and Baykara searched sourcing of participation banks for the years 2005- 2011 by using Topsis method and indicate an increase. (Yayar and Baykara, 2012). Doğan compared financial performance of participation and traditional banks by using different ratios and indicates that solvency of trade banks is higher but there is no difference in terms of profitability. (Doğan, 2013). Other studies on efficiency and profitability of Turkish banking sector are mentioned below: Yolalan (1996), Mahmut ve Zaim (1998), Ural (1999), Günay and Özkan (1998), Bozdağ at all (2001), Yıldırım (2002), Işık and Hassan (2002), Çukur (2005), Canbaş at all (2005), Tufan at all (2006), Ünsal and Duman(2005), Atan and Çatalbaş (2005), Kırkık and Pehlivan (2009), Pehlivan (2010) and Parlakkaya and Çürük (2011).

In reference to world literature, a study comparing the performances of traditional banks and Islamic banks that were active for the years 1990-1998 in nine countries indicates that Islamic banks are more efficient in terms of liquidity and profitability. (Iqbal, 2001). Samad compared traditional banks and Islamic banks that were active in Bahrain for the years 1991- 2001 and determined that there is not an important difference in terms of liquidity and profitability. (Samad, 2004). Another study comparing traditional banks and Islamic banks for the years 2006-2007 argues that liquidity and profitability of Islamic banks are higher. (Kader and Asarpota, 2007). Safiullah compared performance of 4 traditional and 4 active participation banks for the years 2004- 2008 in Bangladesh and indicates that traditional banks are more efficient than Islamic banks.(Safiullah, 2010). Similarly, Ashraf and Rehman compared traditional banks and Islamic banks for the years 2007- 2010 in terms of profitability, liquidity, credit risk and assests structure and indicate that traditional banks are more efficient. (Ashraf and Rehman, 2011). Lughod compared the performances of traditional and Islamic banks that were active in Bahrain, Kuwait, Qatar, Saudi Arabia and the U.A.E. for the years 2000- 2005 and points out that there is not an important difference. (Lughod, 2010). Viverita found out that the revenue and the profitability of Islamic banks were higher in his study comparing Islamic and traditional banks. (Viverita, 2011). Jaffar and Manavri analysed Islamic and traditional banks via Camel method with the data of 2005- 2009 years and indicates that the performance of Islamic banks is better in terms of liquidity and capital adequacy. (Jaffar ve Manavri, 2011). Usman and Khan indicate that liquidity and profitability of Islamic banks are higher in Pakistan while Hanif indicates the vice versa for the years 2005- 2009. (Usman and Khan, 2012; Hanif et al., 2012). Siraj and Pillai compared active Islamic and traditional banks in Arab states of the gulf for the years 2005- 2010 and indicate that liquidity and profitability of Islamic banks are higher. (Siraj and Pillai, 2012). Ansari and Rehman point out that Islamic banks are less risky for the years 2000-2009 in Malaysia. (Ansari and Rehman, 2010).Ryu indicates in his study that he organized with the data of 2006- 2010 that while the risk of Islamic banks is less, profitability is more than traditional banks. (Ryu et al., 2012).

3-Method

In this study VZA- a commenly used method, is used to assess the efficiency of participation banks that are key actors of banking sector for the years 2005- 2013.

3.1 Data Envelopment Aanalysis (DEA)

Efficiency is described as producing the most output with the in stock input or producing a definite output with minimum input. Efficiency is not squandering the input, producing definite product with minimum cost and using the input in the determined standarts.Efficiency displays inputs' and outputs' ratio of current value to optimal value which is expected to be %100, that is 1. Decision making units with %100 ratio are accepted to be more efficient than the others. If the ratio is under or over this value decision making units are indicated as not efficient. (Yavuz, 2003, 13-32, Tarım, 2001, 11). One of the most common used methods used to assess the efficiency in the sector is VZA.

Data envelopment analysis – a non parametric method- enables more than one inputs and outputs to assess the level of efficiency by using linear programming tecniques. (Ekren and Emiral, 2002). Data envelopment analysis is a non parametric assessment method developed by Charnes, Cooper and Rhodes to evaluate relative efficiency of decision making units that are similar in terms of production and service. (Charnes, Cooper ve Rhodes, 1978, 1979, 1981). VZA is a linear programming origined method assessing the relative performance of decision making units with more than one input and output. (Tarım, 2001, 48-49). VZA is a static analysis method that makes horizontal section analysis by using the data of decision making units. (Kılıçkaplan and Karpat, 2004:4). VZA is a non parametric method developed to assess the efficiency of similar economic decision making units that use same kind of input and produce same kind of output. (Yolalan, 1993:27). In VZA, production units, accepted as homogenous, are compared. The method assumes the best observation as the efficiency level and evaluates other observations according to the best one. This method enables using a great number of inputs and outputs. The most important characteristic of this method is that it can describe inefficiency amount and source of every decision making unit. By using this characteristic the method may guide the administration about the input and output. (İnan, 2000, 5-7, Tarım, 2001, 176). Comparative assessment of decision units having the same input and output may be done by using VZA modals. If the result of objective function analysis is equal to 1, this decision making unit is considered as efficient. Decision making units whose objective function analyses are not equal to 1 are tried to be resembled to efficient ones. Thus inactive ones are activated. (Kılıçkaplan and Baştürk, 2005, 3). VZA method may be used in bilaretal form about input and output. VZA modals that are aimed at input focus on the optimal input combination so as to produce the most efficient output.VZAmodals that are aimed at output search for the most efficient output with definite input. (Yolalan, 1993, 46). Two different modals, CCR and BCC, are used for VZA method. CCR modal assesses the total efficiency under the assumption of constant returns to scale. Banker, Charles and Cooper added variable return to scale in 1984. BCC modal assesses the tecnique efficiency by using variable return to scale perception by comparing the similar units. Total efficiency is composed of multiplication of CCR and BCC. (Banker, Charnes, Cooper, 1984, 1078-1092; Banker, 1984, 38).

4- Data and Indıcators

In this study VZA is used to analyse the efficiency of four participation banks which were active between 2005 and 2013 and analyse is done by considering variable return to scale with the help of EMS package software. Commonly accepted ratios are used to determine the input and output and 3 inputs and 2 outputs are used for analyse. Inputs and outputs which are accepted as efficiency indicators in the study are mentioned in Table 1 below.

Table 1: Inputs and Outputs

Inputs	Outputs
Equity Capital / Total Asset	Net Profit of the Year / Total Asset
Funds Collected / Total Asset	Net Profit Share Earnings / Total Asset
Total Credit / Total Asset	

Thedata used in the study are compiled from the website of Participation Banks Association of Turkey and annual data of the included banks are used.

5- Fındıngs and Dıscussıon

The efficiency scores mentioned below are concluded as a result of the efficiency analyses of four participation banks in business in Turkish banking system between 2005 and 2013.

Table 2: Efficiency Score of Participation Banks (2005-2013)

Year	Efficiency Scores	Reference Set
2005	1,00 (%100)	-
2006	1,00 (%100)	-
2007	1,00 (%100)	-
2008	1,00 (%100)	-
2009	0,891 (%89,1)	2006 (0,053), 2008 (0,243), 2007 (0,487), 2012 (0,217)
2010	0,790 (%79,0)	2006 (0,083), 2012 (0,600), 2007 (0,157), 2008 (0,160)
2011	0,797 (%79,7)	2007 (0,207), 2012 (0,793)
2012	1,00 (%100)	-
2013	0,843 (%84,3)	2012 (0,993), 2005 (0,007)

As it can be seen in Table 2, since efficiency score is calculated as 1, participation banks in Turkey are efficient in years 2005, 2006, 2007, 2008 and 2012. However, they are not efficient in the years 2009, 2010, 2011 and 2013 since their efficiency scores are lower than 1. Also at what rate participation banks decreased their input and increased their output for their inefficient years was searched so as to increase efficiency. Table 3 includes potencial improvement proposals for inefficient years. Potencial improvement proposals are mentioned below:

Table 3: Potencial Improvement Proposals for Inefficient Decision Making Units

		Variables	Annual	Objective	Potencial Improvement (%)
2009	Input	Equity Capital / Total Asset	13,140	11,710	-10,88
		Funds Collected / Total Asset	79,820	71,131	-10,66
		Total Credit / Total Asset	74,210	66,132	-10,88
	Output	Net Profit of the Year / Total Asset	2,090	2,323	11,15
		Net Profit Share Earnings / Total Asset	5,230	5,230	0
2010	Input	Equity Capital / Total Asset	12,393	9,793	-20,98
		Funds Collected / Total Asset	78,302	61,875	-20,98
		Total Credit / Total Asset	74,082	58,540	-20,98
	Output	Net Profit of the Year / Total Asset	1,735	1,735	0
		Net Profit Share Earnings / Total Asset	3,560	4,423	24,48
2011	Input	Equity Capital / Total Asset	10,900	8,632	-20,80
		Funds Collected / Total Asset	71,468	56,985	-20,26
		Total Credit / Total Asset	72,823	56,662	-22,19
	Output	Net Profit of the Year / Total Asset	1,448	1,448	0
		Net Profit Share Earnings / Total Asset	3,355	4,035	20,26
2013	Input	Equity Capital / Total Asset	9,160	7,723	-15,68
		Funds Collected / Total Asset	66,350	52,017	-21,60
		Total Credit / Total Asset	69,065	52,048	-24,63
	Output	Net Profit of the Year / Total Asset	1,127	1,127	0
		Net Profit Share Earnings / Total Asset	2,245	3,600	60,35

Efficiency score of participation banks is %89.1 for the year 2009. They should decrease their Total Credit / Total Asset and Equity Capital / Total Assests inputs%10.88 and also decrease Funds Collected / Total Assetinput %10,66 and increase Net Profit of the Year/ Total Assetoutput %11,15 so as to reach %100 efficiency. Efficiency score of participation banks is %79 for the year 2010 and they should decrease whole input %20,98 and increase Net Profit Share Earnings / Total Assetoutput %24,48 so as to reach %100 efficiency.Participation banks which are inefficient with the score of %79,7 for the year 2011 should decrease Equity Capital / Total Asset input %20,80, Funds Collected / Total Assetinput %20,26 and Total Credit / Total Assetinput %22,19 and increase Net Profit Share Earnings/ Total Assetoutput %20,26 to increase efficiency. Efficiency score of participation banks is %84,3 for the year 2013 and they should decrease whole input respectively %15,68, %21,60 and%24,63 and increase Net Profit Share Earnings/ Total Asset output %60,35 so as to increase relative efficiency.

7-Conclusıon

Participation banks that have been existing in finance system since 1985 and doing interest free banking collect funds through private current and participation accounts and transmit these funds to economy through profit-loss partnership, leasing and production support. Their being an alternative to trade banks, property of completing the existing system, contributions to economy- especially to real sector-,bringing variability to financial system, depth and trustworthiness cause the participation banks to be popular both in the world and in Turkey. Participation banks whose role has increased in Turkish finance system day by day have reached a rapid development trend for the recent years and have developed more than the avarage banking system. Participation banks that can organize the needed financial services and countrywide service net not only contribute to development of financial system but also support the development of real sector. In this study total efficiencies of four active participation banks in Turkish banking system are analysed via VZA method for the years 2005-2013. As a result of analyses, it is determined that participation banks are efficient for the 2005-2008 and 2012 and inefficient for the years 2009,2010,2011 and 2013. The most important reason for this situation may be expressed as the shrinkage of economy due to 2008 crisis. Also potential improvement proposals are presented for the inefficient periods. It is clear that participation banks should increase their return on asset. It is thought that participation banks that are experiencing a rapid development period in the world and in Turkey will increase their share in the sector, consolidate their place in the banking system and succeed in national and international competition if they continue modern and efficient administration. It is also clear that with the starting up of two new public participation banks, the share of participation banks in the banking sector will increase remarkably.

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