COMPARISON THE FINANCIAL PERFORMANCES OF DEVELOPING COUNTRIES' BANKING SECTORS WITH TOPSIS METHOD

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ABSTRACT

Banking sector is one of the most important leading sectors for each country. Desired level economic growth and development is engaged with an efficient banking sector. Efficient banking sector could lead to better allocation of resources, increasing economic growth by reduction of transaction costs. The purpose of the study is to evaluate and rank the financial performance of seven developing countries' banking sectors by using TOPSIS method cover the period 2009-2013. These countries sectors are examined and assessed in terms of ten financial ratios which found in Financial Soundness Indicators of IMF. Results showed that Turkey and S. Africa banking sectors are the most successful, Argentina's is the least.

Keywords: Developing Countries, Banking Sector, TOPSIS

GELİŞMEKTE OLAN ÜLKELERİN BANKACILIK SEKTÖR FİNANSAL PERFORMANSLARININ TOPSİS YÖNTEMİ İLE KARŞILAŞTIRILMASI

ÖZET

Ekonomik büyümenin temeli etkin bir bankacılık sektörünün varlığına bağlıdır. Bankacılık sektörü her ülke için en önemli sektörlerin başında gelmektedir. Etkin bir bankacılık sektörü kaynakların daha verimli alanlarda kullanılmasına ve işlem maliyetlerinin azalmasına yol açacak böylece ekonomik büyümeye destek sağlayacaktır. Bu çalışmasının amacı 2009-2013 dönemi için TOPSİS yöntemi ile yedi gelişmekte olan ülke bankacılık sektörünün finansal performanslarının karşılaştırılmasıdır. Performans ölçümünde ise IMF Finansal Sağlamlık göstergeleri içerisinde yer alan on finansal rasyodan faydalanılmıştır. Elde edilen sonuçlar en başarılı bankacılık sektörüne sahip ülkelerin Türkiye ve G. Afrika olduğunu göstermiştir. En başarısız performansa sahip bankacılık sektörünün ise Arjantin'de olduğu tespit edilmiştir.

Anahtar Kelimeler: Gelişmekte Olan Ülkeler, Bankacılık Sektörü, TOPSİS

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INTRODUCTION

There is in need of a financial system for transferring the fund surplus, which are formed from economic units' savings, to other units of holder profitable investment opportunities. This system provides a working effectively and regularly of economy with performing the flow optimal way, the most minimum cost and optimum manner to fund demands of fund surplus.

Also there is a strong correlation between economic growth and financial sector development, from both sides. Economic growth builds up demand for financial services and moves financial sector development. In the opposite side, the development in the banking sector jointly and intensely affects the other sectors of the economy, particularly real economy (Subbarao, 2011: 2).

Banking sector is the most important and the biggest actor in the financial system with its financial intermediation function. Any positive or negative events arising in the banking sector affect other sectors through banking activities. Therefore the banking sector is major driving force as a locomotive and plays an active role in economies. When consolidated figures are analyzed in Turkey, it is seen that banking sector is controlling approximately %95 of financial system directly or indirect manner. Therefore banking sectors' operating results has to be observed permanently and carefully in terms of financial system's dynamics (Tiryaki and Yılmaz, 2012: 75). Increasing competitive environment in our age makes banking performance evaluation inevitable which is the most important factor of financial system. Powerful and soundness banking system is one of the prior conditions for economic growth. On the other hand relentless competition environment, which is one of the most important factors in terms of developing country economies' in the banking sector, is compelling the use of banks' sources with optimum way. In this context, it has great importance of banks' evaluations about their own performances and making provisions at adjuvant way at these performances in consideration of this evaluation.

In this regard, the fact that banks have a weak and risky structure makes it inevitable to follow-up their financial structures and their efficiencies continuously

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(Seçme et al., 2009: 11699). Hence the condition of the banking sector is monitored by academicians, investors, regulatory and supervisory authorities interestedly.

There is a comprehensive literature on the performance measurement of banks. Researchers use various performance measurement approaches. In social science literature, multi-criteria decision-making (MCDM) methods are frequently used with selected ratios to measure the financial performance of banks. Researchers were used PROMETHEE, (Kosmidou and Zopounidis, 2008), ELECTRE (Kılıç 2006; Çağıl, 2011), VIKOR, (Wu et al., 2009; Çetin and Çetin, 2010; Dinçer and Görener, 2011), GAA (Chang, 2006; Ho and Wu, 2006; Uçkun and Girginer, 2011; Ecer, 2013), DEA (Mercan et al., 2003; Işık et al., 2003; McEachern and Paradi, 2007; Demir and Astarcıoğlu, 2007; Wang and Huang, 2007; Bergendahl and Lindblom, 2008; Tsolas, 2010; San et al., 2011), AHP (Albayrak and Erkut,2005; Bayrakdaroğlu and Ege 2008; Çetin and Bıtırak, 2010; Akkoç and Vatansever, 2013) and TOPSIS (Abbasi et al., 2008; Seçme et al., 2009; Köse and Bülbül, 2009; Demireli, 2010; Sun, 2010).

In all these studies mentioned above, performance evaluation of banks is analyzed individually. There is an absence sector performance evaluation and the absence of any study on this issue has motivated us to do this study. Unlike other studies in this study, banks' performances are examined as a sector and compared with other developing countries' banking sector performances.

1. BANKING SECTOR IN TURKEY

Turkey has long-established banking tradition trace to 19th Century. In the last years, banking sector has taken a leading part in Turkish finance sector and has shown an important development with making a contribution to structural changes devoted to Turkey economy's financial liberalization. When examined the developing of Turkish economy, state has weighted and leader role at structuring the financial system. After the foundation of republic, within the frame of national banking sector constituting effort, banks were founded which had weighted public capital and these banks formed Turkish banking sector with existing foreign-financed banks and later on established private banks (Yıldırım, 2006: 1).

Between the years of 1923-1932, developing in banking sector came to fruition in accordance with opinions and offers at Izmir Economic Congress, the importance of banking sector was emphasized and worked for developing national banking to ensure economic evolvement. Important development in this era is the foundation of Central Bank of the Turkish Republic. The law no. 2999 Banking Law became valid in 1936. Economic recession with the impact of World War II in 1939-1945 eras influenced the banking sector. 1945-1959 eras were a period in which years private banks were developed in Turkey (Akbulak et al., 2004: 85).

Globalization concept has gained importance with outward looking economic policies from the beginning from 1980s in Turkey and this situation featured profitability and competition facts in Turkish Banking Sector. A decline in profit margin increased the competition with the effect of decline in inflation and interest rates in Turkish banking sector and banks became more sensitive against crisis. Turkish Banking Sector was restructured upon more strong bases after 2001 crisis and performance analysis became importance given subject by Banking Regulation and Supervision Agency. This case is one of the reasons that Turkish Banking Sector has been impressed relatively minor from 2008 global crisis (Çağıl, 2011: 62). Enter the period low inflation developing era from protracted inflationary environment in Turkish economy, banking sector also developed fast concordantly. Growing banking sector has important weight in financial system approximately %88 rate and this situation has not any changing possibility in a short term. Sector has active and productive market structure and effects economy directly (Coşkun et al., 2012: 1-2). As of December 2014 there are 49 banks in total, 32 of them being deposit, 13 of development-investment and 4 of them participation banks. In Table 1, it is shown number of banks in Turkey by years.

Table 1. Number of Banks in Turkey by Years

Banks	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2014
Deposit Banks	51	46	44	40	40	47	56	55	61	34	32	32
State-owned	14	12	12	12	12	12	8	5	4	3	3	3
Private	20	23	22	23	24	20	25	32	28	17	11	10
Foreign	5	5	5	5	4	15	23	18	18	13	17	19
Local	12	6	5	-	-	-	-	-	-	-	-	-
SDIF	-	-	-	-	-	-	-	-	11	1	1	-
Dev. and Invest. Banks	0	2	2	2	3	3	10	13	18	13	13	13
Participation Banks	-	-	-	-	-	-	-	-	-	4	4	4
Total	51	48	46	42	43	50	66	68	79	51	49	49

Source: Banks Association of Turkey

2. METHODOLOGY

Banking sector is critical because of any events arising in the banking sector affect other sectors and all the economy. Therefore evaluating their financial performances play an important role for country's improvement. In this study it is aimed to analyze the financial performances of developing countries' banking sectors[1]. Financial ratios have been grouped as five main criteria capital adequacy, assets quality, liquidity, profitability and **sensitivity to market risk** and ten frequently used financial ratios in the literature selected as sub-criteria for the performance evaluation of the sectors. All ratios which are used in this study (Regulatory Capital/Risk-Weighted Assets, Non-Performing Loans Net of Provisions/Capital, Non-performing Loans/Total Gross Loans, Return on Assets, Return on Equity, Interest Margin to Gross Income, Non-interest Expenses/Gross Income, Non-interest Expenses/Gross Income, Liquid Assets/Total Assets, Liquid Assets/Short Term Liabilities and Net Open Position in Foreign Exchange/Capital) are obtained from IMF Financial Soundness Indicators. The sample of the study is consisting of seven developing countries which are Argentina, Brazil, Indonesia, Poland, Russia, S. Africa and Turkey. TOPSIS is used, which is one of the MCDM methods, to measure performance rank of developing countries' banking sector performances. The weights of the selected ratios are shown in Table 2.

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[1] Only in terms of deposit takers.

Table 2. Selected Financial Ratios and Its Weights

Main Criteria	Weights	Sub-Criteria	Weights
Capital Adequacy	**0,20**	Regulatory Capital/Risk-Weighted Assets	0,10
		Non-Performing Loans Net of Provisions/Capital	0,10
Asset Quality	**0,20**	Non-performing Loans/Total Gross Loans	0,20
Earnings and Profitability	**0,20**	Return on Assets	0,05
		Return on Equity	0,05
		Interest Margin to Gross Income	0,05
		Non-interest Expenses/Gross Income	0,05
Liquidity	**0,20**	Liquid Assets/Total Assets	0,10
		Liquid Assets/ Short Term Liabilities	0,10
Sensitivity to Market Risk	**0,20**	Net Open Position in Foreign Exchange/Capital	0,20

2.1. TOPSIS Method

Among many MCDM methods, TOPSIS is a practical and useful technique for ranking and selecting a number of possible alternatives. TOPSIS (technique for order preference by similarity to an ideal solution) method is extended by Chen and Hwang (1992), with reference to Hwang and Yoon (1981). The basic principle of the method is that the chosen alternative should have the shortest distance from the ideal solution and the farthest distance from the negative-ideal solution (Zhang et al., 2011; Opricovic and Tzeng, 2004). Therefore TOPSIS can be applied to rank alternatives for the decision maker. The TOPSIS method consists of the following steps (Yang and Hung, 2007);

Step 1: Create Decision Matrix (D): In the first step, decision matrix is created by decision-makers.

Step 2: Construct Normalized Decision Matrix: Normalization seeks to obtain comparable scales, which allows attribute comparison. The vector normalization approach divides the rating of each attribute by its norm to calculate the normalized value of x_{ij}.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{kj}^2}}$$

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i= 1,….., m; j= 1,…., n

Step 3: Construct the Weighted Normalized Ratings: The weighted normalized value v_{ij} is calculated by Eq. (2)

$$V_{ij}= w_j r_{ij}, \quad i=1, ….m; j=1,…..,n.$$

Step 4: Identify the Ideal (A^+) and Negative-Ideal (A^-) Solutions: Calculate the A^+ and A^- solutions by using Equations.

$$A^+ = \left\{ (\max_i v_{ij} \,\middle|\, j \in J), (\min_i v_{ij} \,\middle|\, j \in J^{'}) \right\}; \quad A^+= V_1^+, V_2^+,…,V_n^+$$

$$A^- = \left\{ (\min_i v_{ij} \,\middle|\, j \in J), (\max_i v_{ij} \,\middle|\, j \in J^{'}) \right\}; \quad A^- = V_1^-, V_2^-,…,V_n^-$$

Step 5: Calculate the Separation Measures from the Ideal and Negative-Ideal Solution for each alternative: The separation (distance) between alternatives can be measured by the n-dimensional Euclidean distance.

$$S_i^+ = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^+)^2}$$

$$S_i^- = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^-)^2}$$

Step 6: Calculate similarities to ideal solution:

$$C_i^* = \frac{S_i^-}{S_i^* + S_i^-}, \qquad 0 \le C_i^* \le 1$$

Step 7: Rank the preference order.

2.2. Evaluation of Financial Performances with TOPSIS Method

In the first step (7x10) dimensional decision matrixes are formed. Calculations for the years 2009 to 2013 are given in the Tables 3 to 7.

Table 3. Decision Matrixes

Weights	0,10	0,10	0,20	0,05	0,05	0,05	0,05	0,10	0,10	0,20
Country	Regulatory Capital to Risk-Weighted Assets	Non-performing Loans Net of Provisions to	Non-performing Loans to Total Gross Loans	Return on Assets	Return on Equity	Interest Margin to Gross Income	Non-interest Expenses to Gross Income	Liquid Assets to Total Assets	Liquid Assets to Short Term Liabilities	Net Open Position in Foreign Exchange to Capital
2009										
Argenti	18,813	-1,273	3,467	3,594	29,49	33,76	52,92	29,06	47,30	39,490
Brazil	18,654	-	4,215	1,754	15,80	76,26	51,92	17,84	252,0	0,153
Indonesi	17,819	7,092	3,288	2,609	26,75	62,54	47,10	28,67	33,86	3,345
Poland	13,313	13,799	4,288	0,796	11,15	51,85	58,48	20,31	29,79	2,655
Russia	20,865	12,146	9,532	0,720	4,058	45,17	55,35	30,36	102,3	0,944
S.Africa	14,117	47,592	5,936	1,151	18,79	39,49	48,59	15,80	32,78	0,768
Turkey	20,623	3,111	4,970	3,273	26,41	69,24	41,60	57,65	84,42	0,346
2010										
Argenti	17,671	-3,248	2,117	3,979	34,54	33,47	53,59	32,75	51,72	32,149
Brazil	16,886	-	3,108	1,917	16,70	78,31	52,87	11,98	185,3	1,119
Indonesi	16,179	6,081	2,532	2,742	25,87	60,47	49,15	27,22	32,08	3,062
Poland	13,865	11,492	4,912	1,033	13,33	53,00	56,01	20,81	31,21	0,308
Russia	18,087	9,626	8,234	2,037	12,48	47,01	68,05	28,98	94,30	0,603
S.Africa	14,884	40,844	5,792	1,261	18,57	43,94	62,43	16,07	32,67	-0,235
Turkey	18,972	2,355	3,490	3,083	23,91	62,49	46,34	55,44	79,74	-0,120
2011										
Argenti	15,613	-4,260	1,396	3,912	36,45	36,61	53,46	27,66	43,05	42,473
Brazil	16,332	-	3,467	1,728	16,13	77,67	51,90	11,70	178,5	0,161
Indonesi	16,077	4,698	2,144	2,890	25,42	59,77	49,00	26,18	31,21	2,965
Poland	13,113	11,643	4,663	1,251	16,09	55,79	54,67	19,45	28,81	-0,324
Russia	14,659	9,506	6,590	2,469	17,31	43,14	72,99	25,50	81,63	0,576
S.Africa	15,052	31,022	4,681	1,544	21,33	49,11	54,08	16,72	33,43	0,869
Turkey	16,551	2,477	2,576	2,225	19,03	65,17	46,51	49,71	72,02	-1,111
2012										
Argenti	17,12	-3,096	1,733	4,350	38,81	41,56	51,25	29,13	45,18	43,169
Brazil	16,43	-9,852	3,447	1,410	13,13	76,83	52,14	14,93	222,1	-0,624
Indonesi	17,32	4,671	1,773	3,095	25,28	64,97	48,75	25,66	36,44	3,292
Poland	14,76	12,904	5,202	1,170	14,00	55,00	54,45	20,89	31,06	0,159
Russia	13,69	9,504	6,027	2,391	17,88	46,06	69,72	24,64	82,86	2,460
S.Africa	15,87	23,269	4,043	1,524	20,53	41,29	55,01	16,22	33,02	0,592
Turkey	17,88	2,959	2,743	2,353	19,57	64,37	41,65	50,93	76,02	0,002
2013										
Argenti	13,611	-3,518	1,733	5,038	43,65	39,45	47,59	28,84	42,05	71,440
Brazil	16,115	-	2,857	1,385	13,05	75,58	55,29	10,87	182,8	0,431
Indonesi	19,817	4,610	1,687	3,050	24,47	68,84	49,19	23,50	30,53	1,737
Poland	15,681	12,099	4,978	1,087	12,13	56,10	57,23	21,40	31,68	-0,149
Russia	13,463	10,084	6,001	1,865	13,98	49,01	66,26	21,67	78,70	1,736
S.Africa	15,580	19,132	3,641	1,450	18,63	48,07	56,29	16,63	33,01	0,333
Turkey	15,284	3,146	2,636	2,020	17,44	65,37	51,58	47,14	72,08	-3,453

After the decision matrix created, normalized decision matrix calculated by using the formula $r_{ij} = \dfrac{x_{ij}}{\sqrt{\sum\limits_{i=1}^{m} x_{kj}^2}}$ and shown in Table 4.

Table 4. Normalized Decision Matrixes

Country	Regulatory Capital to Risk-Weighted Assets	Non-performing Loans Net of Provisions	Non-performing Loans to Total Gross Loans	Return on Assets	Return on Equity	Interest Margin to Gross Income	Non-interest Expenses to Gross Income	Liquid Assets to Total Assets	Liquid Assets to Short Term Liabilities	Net Open Position in Foreign Exchange to Capital
2009										
Argentina	0,396	-0,024	0,239	0,599	0,536	0,228	0,391	0,350	0,161	0,994
Brazil	0,393	-0,210	0,291	0,292	0,287	0,515	0,384	0,215	0,857	0,004
Indonesia	0,375	0,134	0,227	0,435	0,486	0,422	0,348	0,345	0,115	0,084
Poland	0,280	0,261	0,296	0,133	0,203	0,350	0,432	0,245	0,101	0,067
Russia	0,439	0,230	0,658	0,120	0,074	0,305	0,409	0,366	0,348	0,024
S. Africa	0,297	0,902	0,410	0,192	0,342	0,267	0,359	0,190	0,111	0,019
Turkey	0,434	0,059	0,343	0,546	0,480	0,467	0,308	0,694	0,287	0,009
2010										
Argentina	0,399	-0,071	0,168	0,604	0,593	0,227	0,362	0,404	0,220	0,995
Brazil	0,381	-0,239	0,247	0,291	0,287	0,531	0,357	0,148	0,788	0,035
Indonesia	0,365	0,134	0,201	0,417	0,444	0,410	0,332	0,336	0,136	0,095
Poland	0,313	0,253	0,391	0,157	0,229	0,359	0,379	0,257	0,133	0,010
Russia	0,409	0,212	0,655	0,309	0,214	0,319	0,460	0,358	0,401	0,019
S. Africa	0,336	0,899	0,460	0,191	0,319	0,298	0,422	0,198	0,139	-0,007
Turkey	0,429	0,052	0,277	0,468	0,411	0,424	0,313	0,684	0,339	-0,004
2011										
Argentina	0,384	-0,116	0,132	0,606	0,607	0,244	0,366	0,378	0,195	0,997
Brazil	0,401	-0,278	0,327	0,268	0,268	0,517	0,355	0,160	0,811	0,004
Indonesia	0,395	0,128	0,202	0,448	0,423	0,398	0,335	0,357	0,142	0,070
Poland	0,322	0,318	0,440	0,194	0,268	0,371	0,374	0,265	0,131	-0,008
Russia	0,360	0,260	0,622	0,383	0,288	0,287	0,499	0,348	0,371	0,014
S. Africa	0,370	0,848	0,442	0,239	0,355	0,327	0,370	0,228	0,152	0,020
Turkey	0,407	0,068	0,243	0,345	0,317	0,434	0,318	0,679	0,327	-0,026
2012										
Argentina	0,399	-0,101	0,169	0,645	0,643	0,275	0,360	0,388	0,174	0,995
Brazil	0,383	-0,322	0,336	0,209	0,218	0,508	0,366	0,199	0,856	-0,014
Indonesia	0,404	0,153	0,173	0,459	0,419	0,430	0,342	0,342	0,140	0,076
Poland	0,344	0,422	0,507	0,174	0,232	0,364	0,382	0,278	0,120	0,004
Russia	0,319	0,311	0,587	0,355	0,296	0,305	0,489	0,328	0,319	0,057
S. Africa	0,370	0,761	0,394	0,226	0,340	0,273	0,386	0,216	0,127	0,014
Turkey	0,417	0,097	0,267	0,349	0,325	0,426	0,292	0,679	0,293	0,000
2013										
Argentina	0,326	-0,125	0,178	0,731	0,721	0,254	0,327	0,411	0,189	0,998
Brazil	0,386	-0,408	0,293	0,201	0,215	0,486	0,379	0,155	0,821	0,006
Indonesia	0,475	0,164	0,173	0,443	0,404	0,443	0,338	0,335	0,137	0,024
Poland	0,376	0,431	0,511	0,158	0,200	0,361	0,393	0,305	0,142	-0,002
Russia	0,323	0,359	0,616	0,271	0,231	0,315	0,455	0,309	0,353	0,024
S. Africa	0,373	0,681	0,374	0,211	0,308	0,309	0,386	0,237	0,148	0,005
Turkey	0,366	0,112	0,270	0,293	0,288	0,421	0,354	0,671	0,324	-0,048

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The normalized values are multiplied by weights ($V_{ij}= w_j\, r_{ij}$) are constructed weighted normalized decision matrix is shown in Table 5.

Table 5. Weighted Normalized Decision Matrixes

Country	Regulatory Capital to Risk-Weighted Assets	Non-performing Loans Net of Provisions to ~ . . .	Non-performing Loans to Total Gross Loans	Return on Assets	Return on Equity	Interest Margin to Gross Income	Non-interest Expenses to Gross Income	Liquid Assets to Total Assets	Liquid Assets to Short Term Liabilities	Net Open Position in Foreign Exchange to Capital
2009										
Argentina	0,040	-0,002	0,048	0,030	0,027	0,011	0,020	0,035	0,016	0,199
Brazil	0,039	-0,021	0,058	0,015	0,014	0,026	0,019	0,021	0,086	0,001
Indonesia	0,038	0,013	0,045	0,022	0,024	0,021	0,017	0,035	0,012	0,017
Poland	0,028	0,026	0,059	0,007	0,010	0,018	0,022	0,024	0,010	0,013
Russia	0,044	0,023	0,132	0,006	0,004	0,015	0,020	0,037	0,035	0,005
S. Africa	0,030	0,090	0,082	0,010	0,017	0,013	0,018	0,019	0,011	0,004
Turkey	0,043	0,006	0,069	0,027	0,024	0,023	0,015	0,069	0,029	0,002
2010										
Argentina	0,040	-0,007	0,034	0,030	0,030	0,011	0,018	0,040	0,022	0,199
Brazil	0,038	-0,024	0,049	0,015	0,014	0,027	0,018	0,015	0,079	0,007
Indonesia	0,037	0,013	0,040	0,021	0,022	0,020	0,017	0,034	0,014	0,019
Poland	0,031	0,025	0,078	0,008	0,011	0,018	0,019	0,026	0,013	0,002
Russia	0,041	0,021	0,131	0,015	0,011	0,016	0,023	0,036	0,040	0,004
S. Africa	0,034	0,090	0,092	0,010	0,016	0,015	0,021	0,020	0,014	-0,001
Turkey	0,043	0,005	0,055	0,023	0,021	0,021	0,016	0,068	0,034	-0,001
2011										
Argentina	0,038	-0,012	0,026	0,030	0,030	0,012	0,018	0,038	0,020	0,199
Brazil	0,040	-0,028	0,065	0,013	0,013	0,026	0,018	0,016	0,081	0,001
Indonesia	0,040	0,013	0,040	0,022	0,021	0,020	0,017	0,036	0,014	0,014
Poland	0,032	0,032	0,088	0,010	0,013	0,019	0,019	0,027	0,013	-0,002
Russia	0,036	0,026	0,124	0,019	0,014	0,014	0,025	0,035	0,037	0,003
S. Africa	0,037	0,085	0,088	0,012	0,018	0,016	0,019	0,023	0,015	0,004
Turkey	0,041	0,007	0,049	0,017	0,016	0,022	0,016	0,068	0,033	-0,005
2012										
Argentina	0,040	-0,010	0,034	0,032	0,032	0,014	0,018	0,039	0,017	0,199
Brazil	0,038	-0,032	0,067	0,010	0,011	0,025	0,018	0,020	0,086	-0,003
Indonesia	0,040	0,015	0,035	0,023	0,021	0,021	0,017	0,034	0,014	0,015
Poland	0,034	0,042	0,101	0,009	0,012	0,018	0,019	0,028	0,012	0,001
Russia	0,032	0,031	0,117	0,018	0,015	0,015	0,024	0,033	0,032	0,011
S. Africa	0,037	0,076	0,079	0,011	0,017	0,014	0,019	0,022	0,013	0,003
Turkey	0,042	0,010	0,053	0,017	0,016	0,021	0,015	0,068	0,029	0,000
2013										
Argentina	0,033	-0,013	0,036	0,037	0,036	0,013	0,016	0,041	0,019	0,200
Brazil	0,039	-0,041	0,059	0,010	0,011	0,024	0,019	0,015	0,082	0,001
Indonesia	0,047	0,016	0,035	0,022	0,020	0,022	0,017	0,033	0,014	0,005
Poland	0,038	0,043	0,102	0,008	0,010	0,018	0,020	0,030	0,014	0,000
Russia	0,032	0,036	0,123	0,014	0,012	0,016	0,023	0,031	0,035	0,005
S. Africa	0,037	0,068	0,075	0,011	0,015	0,015	0,019	0,024	0,015	0,001
Turkey	0,037	0,011	0,054	0,015	0,014	0,021	0,018	0,067	0,032	-0,010

Further positive ideal (A⁺) and negative ideal (A⁻) solutions have been calculated. Maximum value in each column of the matrix V is selected for A⁺ set; and

minimum value in each column of the matrix V is selected for A⁻ set. Sets, serve the purpose according to the progress of the criterion is arranged as follows in Table 6.

Table 6. Positive (A⁺) and Negative (A⁻) Ideal Solutions

	Regulatory Capital to Risk-Weighted Assets	Non-performing Loans Net of Provisions to Capital	Non-performing Loans to Total Gross Loans	Return on Assets	Return on Equity	Interest Margin to Gross Income	Non-interest Expenses to Gross Income	Liquid Assets to Total Assets	Liquid Assets to Short Term Liabilities	Net Open Position in Foreign Exchange to Capital
2009										
A⁺	0,044	0,090	0,045	0,030	0,027	0,026	0,015	0,069	0,086	0,001
A⁻	0,028	-0,021	0,132	0,006	0,004	0,011	0,022	0,019	0,010	0,199
2010										
A⁺	0,043	0,090	0,034	0,030	0,030	0,027	0,016	0,068	0,079	-0,001
A⁻	0,031	-0,024	0,131	0,008	0,011	0,011	0,023	0,015	0,013	0,199
2011										
A⁺	0,041	0,085	0,026	0,030	0,030	0,026	0,016	0,068	0,081	-0,005
A⁻	0,032	-0,028	0,124	0,010	0,013	0,012	0,025	0,016	0,013	0,199
2012										
A⁺	0,042	0,076	0,034	0,032	0,032	0,025	0,015	0,068	0,086	-0,003
A⁻	0,032	-0,032	0,117	0,009	0,011	0,014	0,024	0,020	0,012	0,199
2013										
A⁺	0,047	0,068	0,035	0,037	0,036	0,024	0,016	0,067	0,082	-0,010
A⁻	0,032	-0,041	0,123	0,008	0,010	0,013	0,023	0,015	0,014	0,200

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For the each banking sectors the separation measures from the ideal (Si^+) and negative-ideal solution (S_i^-) are constructed. Relative closeness to the ideal solution (C_i^+) is calculated with using the formula in step 6. Performance scores of Turkish banking sector is shown in Graph 1 for the period 2009-2013. As can be seen in Graph 1 the scores follow an increasing trend.

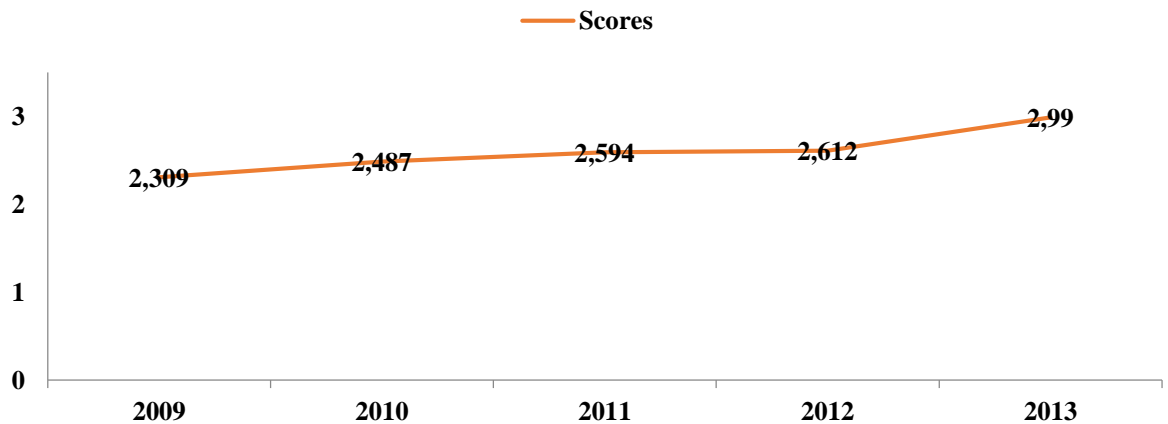**Graph 1. Performance Scores of Turkish Banking Sector**

Table 7 shows the scores and rankings of banking sectors of countries which are used in the study during the period 2009-2013.

Table 7. Scores and Rankings of Developing Countries' Banking Sectors

Country	2009		2010		2011		2012		2013	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Argentina	0,500	7	0,568	7	0,552	7	0,504	7	0,543	7
Brazil	2,052	3	1,920	5	1,872	5	1,965	5	1,925	6
Indonesia	2,021	4	2,096	3	2,168	3	2,247	3	2,562	3
Poland	1,976	5	2,031	4	2,028	4	2,020	4	2,146	4
Russia	1,756	6	1,742	6	1,800	6	1,880	6	1,992	5
S. Africa	2,497	1	2,479	2	2,418	2	2,466	2	2,622	2
Turkey	2,309	2	2,487	1	2,594	1	2,612	1	2,990	1

Table 7 reports the performance rankings have not changed much over the years. The most intensive era by the financial crisis in 2009, the Turkish banking sector's financial performance became the second best-performing country after South Africa's banking sector. In this period, Turkey, South Africa and Indonesia are most successful countries in terms of banking sector performance. Argentina's banking sector has taken in the last place for the 5 years period. The striking point here is the decline in the Brazilian banking sector performance. In 2009 the sector was in the third place but it dropped to 6th place in the year 2013.

One of the most important reasons of limited effect from global crisis in Turkey is rearrangements and strict precautions in Turkish Banking Sector after 2001 crisis. Council of Bank Audit and Regulation has imposed restrictions to liquidity and capital adequacy ratios of banking system and ensured the applying of active risk management. Steady growth environment after the crisis brought along rapid credit growth. But taken precautions have been ensured this process sturdily.

After the 2001 crisis era, rearrangement of public banks, repelling the troubled banks out of system, strengthening the capital adequacy macroeconomic policies of Central Bank of the Turkish Republic as of 2001; Turkish Banking Sector has become more sturdily and soundness against crisis. Other important reasons emerging the Turkish Banking Sector limited effect from 2008 crisis are; banks

orientations to banking fields of institutional, retail with the reason of implementation traditional banking and not forming the risks from generating sub-prime mortgage credits and derivative instruments.

Besides, giving credit is recognized parallel to deposit funding in Turkey and for that reason credit/funding rate has accrued at low-levels with regard to many European countries; with concrete credit policy non-performing loan rates have remained at low levels. Consequently Turkish Banking Sector has shown better performance with regard of its international rivals and maintained its growing and profitability potential at crisis in its massive eras.

CONCLUSION

The basis of the economic growth depends on the existence of an efficient banking sector. An efficient banking sector jointly and deeply affects the other sectors of the economy, particularly real economy.

In the study, financial performances of developing countries' banking sectors are analyzed and compared for the period 2009-2013. Firstly the financial ratios has been identified which is used to evaluate the financial performance of the banking sector. Criteria have been grouped as five main criteria capital adequacy, assets quality, liquidity, profitability and **sensitivity to market risk** and ten frequently used financial ratios in the literature selected as sub-criteria for the performance evaluation of the sector. All ratios which are used in the study are obtained from IMF Financial Soundness Indicators. Further, TOPSIS method is used for the evaluating seven developing countries' banking sector performance; it has been studied for calculating which country has the highest and lowest performance as proportional. The findings show that Turkey's and S. Africa's banking sectors have the highest performance, and the Argentina's has the lowest performance among the countries used in the study.

The study will contribute to literature because it presents the general outlook of banking sectors of developing countries and may be beneficial to institutional and individual investors' decision making process. Besides, study can be a guide for increasing the financial performance of countries' banking regulation and supervision authorities and banking sectors on the subject of which criteria will be held and which country will be taken as an example.

For further studies, more criteria or different MCDM method can be used and hence the study can be improved for other countries.

LIMITATIONS OF THE STUDY

Although this study provides important insights into the financial performances of banking sectors, the study have some limitations. The first limitation is the study may not fully reflect the complexity evaluation of financial performances. Therefore, the results of this study should be viewed as preliminary evidence. The second limitation, the sample is restricted with 7 countries' sectors that have available data cover the period 2009-2013. The replication of the study with adding more developing countries would enable better generalizability of the findings of the study. Lastly it should be noted that the chosen method TOPSIS, gives the practitioner the opportunity to take subjective decisions at some point. Selected criteria and weights given to the selected criteria are subjective. Hence, it can be conclude different results with measurements which are made different weights and different criteria.

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