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The Risk Level of Viet Nam Construction Industry under the Impacts of a Two Factors Model during and after the Global Crisis 2007-2011

By Dinh Tran Ngoc Huy
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Abstract - Using a two (2) factors model, this research paper analyzes the impacts of both financial leverage and the size of firms' competitors in the construction industry on the market risk level of 104 listed companies in this category. This paper founds out that the risk dispersion level in this sample study could be minimized in case financial leverage decreases down to 20% and the competitor size doubles (measured by equity beta var of 0,253). Beside, the empirical research findings show us that the risk level could be reduced when financial leverage increases up to 30% and the size of competitor doubles (measured by equity beta value of 0,934). Last but not least, this paper illustrates calculated results that might give proper recommendations to relevant governments and institutions in re-evaluating their policies during and after the financial crisis 2007-2011.

Keywords : risk management, competitive firm size, market risk, asset and equity beta, construction industry.

GJMBR-C Classification : JEL Code: G00, G3, G30

THERISKLEVELOFVIETNAMCONSTRUCTIONINDUSTRYUNDERTHEIMPACTSOFATWOFACTORSMODELDURINGANDAFTERTHEGLOBALCRISIS2007-2011

Strictly as per the compliance and regulations of:

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This paper founds out that the risk dispersion level in this sample study could be minimized in case financial leverage decreases down to 20% and the competitor size doubles (measured by equity beta var of 0,253).

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Last but not least, this paper illustrates calculated results that might give proper recommendations to relevant governments and institutions in re-evaluating their policies during and after the financial crisis 2007-2011.

Keywords : risk management, competitive firm size, market risk, asset and equity beta, construction industry.

I. Introduction

The global crisis 2007-2009 has some certain impacts on the whole Viet nam economy, and specifically, the Viet Nam construction industry. However, together with financial system development and the economic growth, throughout many recent years, Viet Nam construction industry is considered as one of active economic sectors, which has some positive effects for the economy. Hence, this research paper analyzes market risk under a two factor model of these listed construction firms during this period.

This paper is organized as follow. The research issues and literature review will be covered in next sessions 2 and 3, for a short summary. Then, methodology and conceptual theories are introduced in session 4 and 5. Session 6 describes the data in empirical analysis. Session 7 presents empirical results and findings. Next, session 8 covers the analytical results. Then, session 9 presents analysis of risk. Lastly, session 10 will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

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II. Research Issues

For the estimating of impacts of a two factor model: external financing and the size of competitor on beta for listed construction industry companies in Viet Nam stock exchange, research issues will be mentioned as following:

Issue 1 : Whether the risk level of construction industry firms under the different changing scenarios of leverage and the size of competitor increase or decrease so much.

Issue 2 : Whether the disperse distribution of beta values become large in the different changing scenarios of leverage and the size of competitor estimated in the construction industry.

III. Literature Review

Goldsmith (1969), Mc Kinnon (1973) and Shaw (1973) pointed a large and active theoretical and empirical literature has related dfinancial development to the economic growth process.

Black (1976) proposes the leverage effect to explain the negative correlation between equity returns and return volatilities. Diamond and Dybvig (1983) said banks can also help reduce liquidity risk and therefore enable long-term investment. Aghion et all (1999) stated debt instruments can reduce the amount of free cash available to firms and thus managerial slack.

Peter and Liuren (2007) mentions equity volatility increases proportionally with the level of financial leverage, the variation of which is dictated by managerial decisions on a company's capital structure based on economic conditions. And for a company with a fixed amount of debt, its financial leverage increases when the market price of its stock declines.

Reinhart and Rogoff (2009) pointed the history of finance is full of boom-and-bust cycles, bank failures, and systemic bank and currency crises. Adrian and Shin (2010) stated a company can also proactively vary its financial leverage based on variations on market conditions.

Then, Thorsten (2011) found that there reasing the likelihood of a financial crisis rather than reducing it.

arginal rates in corporate and top personal income declined has stopped.

Last but not least, Ana and John (2013) Binomial Leverage – Volatility theorem provides a precise link between leverage and volatility. Chen et all (2013) supports suspicions that over-reliance on short-term funding and insufficient collateral compounded the effects of dangerously high leverage and resulted in undercapitalization and excessive risk exposure for Lehman Brothers.

IV. Conceptual Theories

The impact of financial leverage and the size of competitor on the economy and business

In a specific industry such as construction industry, on the one hand, using leverage with a decrease or increase in certain periods could affect tax obligations, revenues, profit after tax and technology innovation and compensation and jobs of the industry. Next, in a competitive market, there raises an issue of choosing a competitive firm as a competitor. There are many firms offering the similar products and services and this helps customers select a variety of qualified goods that meet their demand. Competitors could affect price and customer service policies; hence, affect revenues and profits of a typical company. So, a company needs a risk management policy to reduce risks coming from competitors, both current and potential.

V. Methodology

In this research, analytical research method is used, philosophical method is used and specially, scenario analysis method is used. Analytical data is from the situation of listed construction industry firms in VN stock exchange and applied current tax rate is 25%.

Finally, we use the results to suggest policy for both these enterprises, relevant organizations and government.

VI. General Data Analysis

The research sample has total 104 listed firms in the construction industry market with the live data from the stock exchange.

Firstly, we estimate equity beta values of these firms and use financial leverage to estimate asset beta values of them. Secondly, we change the leverage from what reported in F.S 2011 to increasing 30% and reducing 20% to see the sensitivity of beta values. We found out that in 3 cases, asset beta mean values are estimated at 0,471, 0,389 and 0,539 which are negatively correlated with the leverage. Also in 3 scenarios, we find out equity beta mean values (0,602, 0,512 and 0,664) are also negatively correlated with the leverage. Leverage degree changes definitely has certain effects on asset and equity beta values.

VII. Empirical Research Findings and Discussion

In the below section, data used are from total 104 listed construction industry companies on VN stock exchange (HOSE and HNX mainly). In the scenario 1, current financial leverage degree is kept as in the 2011 financial statements which is used to calculate market risk (beta) whereas competitor size is kept as current, then changed from double size to slightly smaller size. Then, two (2) FL scenarios are changed up to 30% and down to 20%, compared to the current FL degree. In short, the below table 1 shows three scenarios used for analyzing the risk level of these listed firms.

Market risk (beta) under the impact of tax rate, includes: 1) equity beta; and 2) asset beta.

Table 1 : Analyzing market risk under three (3) scenarios

	FL as current	FL up 30%	FL down 20%
Competitor size as current	Scenario 1	Scenario 2	Scenario 3
Competitor size slightly smaller			
Competitor size double			

a) 7.1 Scenario 1

Current financial leverage (FL) as in financial reports 2011 and competitor size kept as current, slightly smaller and double.

In this case, all beta values of 104 listed firms on VN construction industry market as following:

Table 2 : Market risk of listed companies on VN construction industry market under a two factors model (case 1)

Order No.	Company stock code	Competitor size as current		Competitor size twice smaller		Competitor size double	
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
1	CNT	1,062	0,134	1,062	0,134	1,062	0,134
2	DCC	1,299	0,578	1,299	0,578	1,299	0,578
3	DIG	1,772	0,964	1,772	0,964	1,772	0,964
4	FPC	0,484	0,229	0,484	0,229	0,484	0,229
5	HBC	1,030	0,277	1,030	0,277	1,030	0,277
6	L10	0,909	0,193	0,909	0,193	0,909	0,193
7	MCG	1,595	0,543	1,595	0,543	1,595	0,543
8	VNE	1,700	0,606	1,700	0,606	1,700	0,606
9	L35	0,116	0,037	0,293	0,094	0,289	0,093
10	LM3	0,337	0,040	0,337	0,040	0,337	0,040
11	LO5	0,745	0,179	0,745	0,179	0,745	0,179
12	L62	0,606	0,171	0,606	0,171	0,606	0,171
13	L61	0,856	0,261	0,856	0,261	0,856	0,261
14	L43	0,709	0,217	0,709	0,217	0,709	0,217
15	L44	1,277	0,252	1,277	0,252	1,277	0,252
16	B82	0,860	0,146	0,860	0,146	0,860	0,146
17	BCE	0,739	0,398	0,955	0,515	0,231	0,125
18	C92	0,800	0,121	0,800	0,121	0,800	0,121
19	CIC	0,919	0,248	0,919	0,248	0,919	0,248
20	CID	0,891	0,423	0,891	0,423	0,891	0,423
21	CSC	1,023	0,217	1,023	0,217	1,023	0,217
22	CT6	0,105	0,029	0,241	0,067	0,568	0,159
23	CTD	0,950	0,574	0,950	0,574	0,950	0,574
24	CTM	2,869	1,458	2,869	1,458	2,869	1,458
25	CVN	0,829	0,504	0,636	0,387	0,474	0,289
26	CX8	-0,054	-0,010	0,180	0,034	0,180	0,034
27	DC2	0,160	0,057	1,228	0,442	0,285	0,103
28	DLR	0,041	0,011	0,003	0,001	0,536	0,141
29	HUT	1,084	0,143	1,084	0,143	1,084	0,143
30	L18	1,069	0,156	1,069	0,156	1,069	0,156
31	LCS	0,006	0,002	0,406	0,108	0,509	0,135
32	LHC	0,755	0,358	0,755	0,358	0,755	0,358
33	LIG	-0,063	-0,013	0,027	0,006	0,380	0,079
34	LUT	1,433	0,730	1,433	0,730	1,433	0,730
35	MCO	0,755	0,127	0,755	0,127	0,755	0,127
36	NSN	-0,155	-0,018	0,011	0,001	0,206	0,024

37	PHC	1,667	0,409	1,667	0,409	1,667	0,409
38	QTC	0,259	0,110	0,259	0,110	0,259	0,110
39	TV2	0,822	0,207	0,822	0,207	0,822	0,207
40	TV4	0,666	0,241	0,666	0,241	0,666	0,241
41	VE1	1,475	0,776	1,475	0,776	1,475	0,776
42	VE2	0,493	0,297	0,595	0,358	0,718	0,432
43	VE3	0,525	0,354	0,500	0,337	0,526	0,354
44	VE9	0,704	0,430	0,704	0,430	0,704	0,430
45	VHH	0,328	0,168	0,708	0,363	0,836	0,428
46	SNG	1,264	0,484	1,264	0,484	1,264	0,484
47	SSS	1,074	0,385	1,074	0,385	1,074	0,385
48	STL	1,634	0,066	1,634	0,066	1,634	0,066
49	SJM	1,030	0,389	1,030	0,389	1,030	0,389
50	SJE	1,399	0,324	1,399	0,324	1,399	0,324
51	SJC	1,103	0,266	1,103	0,266	1,103	0,266
52	SIC	1,568	0,365	1,568	0,365	1,568	0,365
53	SEL	0,044	0,012	0,269	0,072	0,364	0,098
54	SDT	1,406	0,435	1,406	0,435	1,406	0,435
55	SDS	0,929	0,071	0,929	0,071	0,929	0,071
56	SDJ	1,257	0,249	1,257	0,249	1,257	0,249
57	SDH	2,884	1,290	2,884	1,290	2,884	1,290
58	SDB	-0,046	-0,009	0,427	0,085	0,135	0,027
59	SD9	1,456	0,415	1,456	0,415	1,456	0,415
60	SD8	1,210	0,103	1,210	0,103	1,210	0,103
61	SD7	1,461	0,243	1,461	0,243	1,461	0,243
62	SD6	1,670	0,479	1,670	0,479	1,670	0,479
63	SD5	1,332	0,503	1,332	0,503	1,332	0,503
64	SD4	1,114	0,233	1,114	0,233	1,114	0,233
65	SD3	1,361	0,695	1,361	0,695	1,361	0,695
66	SD2	1,386	0,450	1,386	0,450	1,386	0,450
67	SD1	-0,102	-0,017	0,334	0,057	0,108	0,018
68	S99	1,286	0,800	1,286	0,800	1,286	0,800
69	S96	1,706	0,480	1,706	0,480	1,706	0,480
70	S91	1,213	0,386	1,213	0,386	1,213	0,386
71	S74	1,250	0,443	1,250	0,443	1,250	0,443
72	S64	1,099	0,358	1,099	0,358	1,099	0,358
73	S55	1,251	0,476	1,251	0,476	1,251	0,476
74	S27	-0,366	-0,025	0,064	0,004	0,113	0,008
75	S12	1,180	0,202	1,180	0,202	1,180	0,202
76	MEC	-0,208	-0,031	0,266	0,040	0,077	0,011
77	ICG	1,634	0,795	1,634	0,795	1,634	0,795
78	PHH	0,105	0,030	0,189	0,055	0,143	0,041

79	PIV	0,361	0,256	0,682	0,484	0,493	0,350
80	PVA	1,932	0,209	1,932	0,209	1,932	0,209
81	PVE	1,580	0,499	1,580	0,499	1,580	0,499
82	PVR	0,648	0,310	0,104	0,050	0,322	0,154
83	PVV	-0,147	-0,025	0,112	0,019	0,251	0,042
84	PVX	1,304	0,311	1,304	0,311	1,304	0,311
85	PXI	-0,014	-0,004	0,527	0,152	0,677	0,195
86	PXS	0,205	0,065	0,482	0,153	0,395	0,126
87	PXT	0,266	0,090	0,511	0,172	0,506	0,170
88	SDP	1,410	0,271	1,410	0,271	1,410	0,271
89	CTN	0,922	0,160	0,922	0,160	0,922	0,160
90	V11	1,148	0,161	1,148	0,161	1,148	0,161
91	V12	1,521	0,181	1,521	0,181	1,521	0,181
92	V15	1,566	0,582	1,566	0,582	1,566	0,582
93	V21	-0,241	-0,023	0,194	0,019	0,175	0,017
94	VC1	1,815	0,525	1,815	0,525	1,815	0,525
95	VC2	1,240	0,220	1,240	0,220	1,240	0,220
96	VC3	1,256	0,195	1,256	0,195	1,256	0,195
97	VC5	1,266	0,181	1,266	0,181	1,266	0,181
98	VC6	1,123	0,287	1,123	0,287	1,123	0,287
99	VC7	1,106	0,252	1,106	0,252	1,106	0,252
100	VC9	1,140	0,124	1,140	0,124	1,140	0,124
101	VCC	0,971	0,188	0,971	0,188	0,971	0,188
102	VCG	1,505	0,186	1,505	0,186	1,505	0,186
103	VCH	-0,296	-0,031	0,095	0,010	0,150	0,016
104	VMC	1,503	0,292	1,503	0,292	1,503	0,292

(Source : VN stock exchange 2012)

b) 7.2. Scenario 2

Financial leverage increases up to 30% and competitor size kept as current, slightly smaller and double.

If leverage increases up to 30%, all beta values of total 104 listed firms on VN construction industry market as below:

Table 3 : Market risks of listed construction industry firms under a two factors model (case 2)

Order No.	Company stock code	Competitor size as current		Competitor size slightly smaller		Competitor size double	
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
1	CNT	1,062	0,134	1,062	0,134	1,062	0,134
2	DCC	1,299	0,578	1,299	0,578	1,299	0,578
3	DIG	1,772	0,964	1,772	0,964	1,772	0,964
4	FPC	0,484	0,229	0,484	0,229	0,484	0,229
5	HBC	1,030	0,277	1,030	0,277	1,030	0,277
6	L10	0,909	0,193	0,909	0,193	0,909	0,193

7	MCG	1,595	0,543	1,595	0,543	1,595	0,543
8	VNE	1,700	0,606	1,700	0,606	1,700	0,606
9	L35	0,116	0,037	0,115	0,037	0,114	0,037
10	LM3	0,337	0,040	0,337	0,040	0,337	0,040
11	LO5	0,745	0,179	0,745	0,179	0,745	0,179
12	L62	0,606	0,171	0,606	0,171	0,606	0,171
13	L61	0,856	0,261	0,856	0,261	0,856	0,261
14	L43	0,709	0,217	0,709	0,217	0,709	0,217
15	L44	1,277	0,252	1,277	0,252	1,277	0,252
16	B82	0,860	0,146	0,860	0,146	0,860	0,146
17	BCE	0,739	0,398	0,739	0,398	-0,026	-0,014
18	C92	0,800	0,121	0,800	0,121	0,800	0,121
19	CIC	0,919	0,248	0,919	0,248	0,919	0,248
20	CID	0,891	0,423	0,891	0,423	0,891	0,423
21	CSC	1,023	0,217	1,023	0,217	1,023	0,217
22	CT6	0,105	0,029	0,058	0,016	0,137	0,038
23	CTD	0,950	0,574	0,950	0,574	0,950	0,574
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32	LHC	0,755	0,358	0,755	0,358	0,755	0,358
33	LIG	-0,063	-0,013	-0,001	0,000	-0,055	-0,011
34	LUT	1,433	0,730	1,433	0,730	1,433	0,730
35	MCO	0,755	0,127	0,755	0,127	0,755	0,127
36	NSN	-0,155	-0,018	0,019	0,002	-0,279	-0,033
37	PHC	1,667	0,409	1,667	0,409	1,667	0,409
38	QTC	0,259	0,110	0,259	0,110	0,259	0,110
39	TV2	0,822	0,207	0,822	0,207	0,822	0,207
40	TV4	0,666	0,241	0,666	0,241	0,666	0,241
41	VE1	1,475	0,776	1,475	0,776	1,475	0,776
42	VE2	0,493	0,297	0,493	0,297	0,595	0,358
43	VE3	0,525	0,354	0,394	0,266	0,461	0,311
44	VE9	0,704	0,430	0,704	0,430	0,704	0,430
45	VHH	0,328	0,168	0,528	0,270	0,623	0,319
46	SNG	1,264	0,484	1,264	0,484	1,264	0,484
47	SSS	1,074	0,385	1,074	0,385	1,074	0,385

48	STL	1,634	0,066	1,634	0,066	1,634	0,066
49	SJM	1,030	0,389	1,030	0,389	1,030	0,389
50	SJE	1,399	0,324	1,399	0,324	1,399	0,324
51	SJC	1,103	0,266	1,103	0,266	1,103	0,266
52	SIC	1,568	0,365	1,568	0,365	1,568	0,365
53	SEL	0,044	0,012	0,054	0,014	0,073	0,020
54	SDT	1,406	0,435	1,406	0,435	1,406	0,435
55	SDS	0,929	0,071	0,929	0,071	0,929	0,071
56	SDJ	1,257	0,249	1,257	0,249	1,257	0,249
57	SDH	2,884	1,290	2,884	1,290	2,884	1,290
58	SDB	-0,046	-0,009	-0,092	-0,018	-0,029	-0,006
59	SD9	1,456	0,415	1,456	0,415	1,456	0,415
60	SD8	1,210	0,103	1,210	0,103	1,210	0,103
61	SD7	1,461	0,243	1,461	0,243	1,461	0,243
62	SD6	1,670	0,479	1,670	0,479	1,670	0,479
63	SD5	1,332	0,503	1,332	0,503	1,332	0,503
64	SD4	1,114	0,233	1,114	0,233	1,114	0,233
65	SD3	1,361	0,695	1,361	0,695	1,361	0,695
66	SD2	1,386	0,450	1,386	0,450	1,386	0,450
67	SD1	-0,102	-0,017	-0,172	-0,029	-0,024	-0,004
68	S99	1,286	0,800	1,286	0,800	1,286	0,800
69	S96	1,706	0,480	1,706	0,480	1,706	0,480
70	S91	1,213	0,386	1,213	0,386	1,213	0,386
71	S74	1,250	0,443	1,250	0,443	1,250	0,443
72	S64	1,099	0,358	1,099	0,358	1,099	0,358
73	S55	1,251	0,476	1,251	0,476	1,251	0,476
74	S27	-0,366	-0,025	-0,159	-0,011	-0,379	-0,026
75	S12	1,180	0,202	1,180	0,202	1,180	0,202
76	MEC	-0,208	-0,031	-0,208	-0,031	-0,060	-0,009
77	ICG	1,634	0,795	1,634	0,795	1,634	0,795
78	PHH	0,105	0,030	0,053	0,015	0,040	0,012
79	PIV	0,361	0,256	0,612	0,435	0,337	0,239
80	PVA	1,932	0,209	1,932	0,209	1,932	0,209
81	PVE	1,580	0,499	1,580	0,499	1,580	0,499
82	PVR	0,648	0,310	0,020	0,010	0,227	0,109
83	PVV	-0,147	-0,025	-0,016	-0,003	-0,130	-0,022
84	PVX	1,304	0,311	1,304	0,311	1,304	0,311
85	PXI	-0,014	-0,004	0,145	0,042	0,187	0,054
86	PXS	0,205	0,065	0,183	0,058	0,205	0,065
87	PXT	0,266	0,090	0,222	0,075	0,220	0,074
88	SDP	1,410	0,271	1,410	0,271	1,410	0,271
89	CTN	0,922	0,160	0,922	0,160	0,922	0,160

90	V11	1,148	0,161	1,148	0,161	1,148	0,161
91	V12	1,521	0,181	1,521	0,181	1,521	0,181
92	V15	1,566	0,582	1,566	0,582	1,566	0,582
93	V21	-0,241	-0,023	-0,388	-0,037	-0,350	-0,034
94	VC1	1,815	0,525	1,815	0,525	1,815	0,525
95	VC2	1,240	0,220	1,240	0,220	1,240	0,220
96	VC3	1,256	0,195	1,256	0,195	1,256	0,195
97	VC5	1,266	0,181	1,266	0,181	1,266	0,181
98	VC6	1,123	0,287	1,123	0,287	1,123	0,287
99	VC7	1,106	0,252	1,106	0,252	1,106	0,252
100	VC9	1,140	0,124	1,140	0,124	1,140	0,124
101	VCC	0,971	0,188	0,971	0,188	0,971	0,188
102	VCG	1,505	0,186	1,505	0,186	1,505	0,186
103	VCH	-0,296	-0,031	-0,135	-0,014	-0,255	-0,027
104	VMC	1,503	0,292	1,503	0,292	1,503	0,292

(Source : VN stock exchange 2012)

c) 7.3. Scenario 3

Leverage decreases down to 20% and competitor size kept as current, slightly smaller and double.

If leverage decreases down to 20%, all beta values of total 104 listed firms on the construction industry market in VN as following:

Table 4 : Market risk of listed construction industry firms under a two factors model (case 3)

Order No.	Company stock code	Competitor size as current		Competitor size slightly smaller		Competitor size double	
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
1	CNT	1,062	0,134	1,062	0,134	1,062	0,134
2	DCC	1,299	0,578	1,299	0,578	1,299	0,578
3	DIG	1,772	0,964	1,772	0,964	1,772	0,964
4	FPC	0,484	0,229	0,484	0,229	0,484	0,229
5	HBC	1,030	0,277	1,030	0,277	1,030	0,277
6	L10	0,909	0,193	0,909	0,193	0,909	0,193
7	MCG	1,595	0,543	1,595	0,543	1,595	0,543
8	VNE	1,700	0,606	1,700	0,606	1,700	0,606
9	L35	0,116	0,037	0,400	0,129	0,395	0,127
10	LM3	0,337	0,040	0,337	0,040	0,337	0,040
11	LO5	0,745	0,179	0,745	0,179	0,745	0,179
12	L62	0,606	0,171	0,606	0,171	0,606	0,171
13	L61	0,856	0,261	0,856	0,261	0,856	0,261
14	L43	0,709	0,217	0,709	0,217	0,709	0,217
15	L44	1,277	0,252	1,277	0,252	1,277	0,252
16	B82	0,860	0,146	0,860	0,146	0,860	0,146

17	BCE	0,739	0,398	0,053	0,029	0,442	0,238
18	C92	0,800	0,121	0,800	0,121	0,800	0,121
19	CIC	0,919	0,248	0,919	0,248	0,919	0,248
20	CID	0,891	0,423	0,891	0,423	0,891	0,423
21	CSC	1,023	0,217	1,023	0,217	1,023	0,217
22	CT6	0,105	0,029	0,351	0,098	0,825	0,230
23	CTD	0,950	0,574	0,950	0,574	0,950	0,574
24	CTM	2,869	1,458	2,869	1,458	2,869	1,458
25	CVN	0,829	0,504	0,702	0,427	0,524	0,319
26	CX8	-0,054	-0,010	0,317	0,060	0,317	0,060
27	DC2	0,160	0,057	1,605	0,577	0,372	0,134
28	DLR	0,041	0,011	0,153	0,040	0,802	0,210
29	HUT	1,084	0,143	1,084	0,143	1,084	0,143
30	L18	1,069	0,156	1,069	0,156	1,069	0,156
31	LCS	0,006	0,002	0,604	0,160	0,757	0,201
32	LHC	0,755	0,358	0,755	0,358	0,755	0,358
33	LIG	-0,063	-0,013	0,077	0,016	0,635	0,133
34	LUT	1,433	0,730	1,433	0,730	1,433	0,730
35	MCO	0,755	0,127	0,755	0,127	0,755	0,127
36	NSN	-0,155	-0,018	0,318	0,038	0,487	0,058
37	PHC	1,667	0,409	1,667	0,409	1,667	0,409
38	QTC	0,259	0,110	0,259	0,110	0,259	0,110
39	TV2	0,822	0,207	0,822	0,207	0,822	0,207
40	TV4	0,666	0,241	0,666	0,241	0,666	0,241
41	VE1	1,475	0,776	1,475	0,776	1,475	0,776
42	VE2	0,493	0,297	0,660	0,397	0,795	0,478
43	VE3	0,525	0,354	0,574	0,387	0,567	0,382
44	VE9	0,704	0,430	0,704	0,430	0,704	0,430
45	VHH	0,328	0,168	0,820	0,420	0,968	0,496
46	SNG	1,264	0,484	1,264	0,484	1,264	0,484
47	SSS	1,074	0,385	1,074	0,385	1,074	0,385
48	STL	1,634	0,066	1,634	0,066	1,634	0,066
49	SJM	1,030	0,389	1,030	0,389	1,030	0,389
50	SJE	1,399	0,324	1,399	0,324	1,399	0,324
51	SJC	1,103	0,266	1,103	0,266	1,103	0,266
52	SIC	1,568	0,365	1,568	0,365	1,568	0,365
53	SEL	0,044	0,012	0,397	0,107	0,538	0,145
54	SDT	1,406	0,435	1,406	0,435	1,406	0,435
55	SDS	0,929	0,071	0,929	0,071	0,929	0,071
56	SDJ	1,257	0,249	1,257	0,249	1,257	0,249
57	SDH	2,884	1,290	2,884	1,290	2,884	1,290
58	SDB	-0,046	-0,009	0,731	0,146	0,231	0,046

59	SD9	1,456	0,415	1,456	0,415	1,456	0,415
60	SD8	1,210	0,103	1,210	0,103	1,210	0,103
61	SD7	1,461	0,243	1,461	0,243	1,461	0,243
62	SD6	1,670	0,479	1,670	0,479	1,670	0,479
63	SD5	1,332	0,503	1,332	0,503	1,332	0,503
64	SD4	1,114	0,233	1,114	0,233	1,114	0,233
65	SD3	1,361	0,695	1,361	0,695	1,361	0,695
66	SD2	1,386	0,450	1,386	0,450	1,386	0,450
67	SD1	-0,102	-0,017	0,630	0,107	0,273	0,046
68	S99	1,286	0,800	1,286	0,800	1,286	0,800
69	S96	1,706	0,480	1,706	0,480	1,706	0,480
70	S91	1,213	0,386	1,213	0,386	1,213	0,386
71	S74	1,250	0,443	1,250	0,443	1,250	0,443
72	S64	1,099	0,358	1,099	0,358	1,099	0,358
73	S55	1,251	0,476	1,251	0,476	1,251	0,476
74	S27	-0,366	-0,025	0,257	0,018	0,394	0,027
75	S12	1,180	0,202	1,180	0,202	1,180	0,202
76	MEC	-0,208	-0,031	0,542	0,080	0,156	0,023
77	ICG	1,634	0,795	1,634	0,795	1,634	0,795
78	PHH	0,105	0,030	0,270	0,078	0,205	0,059
79	PIV	0,361	0,256	0,726	0,515	0,401	0,284
80	PVA	1,932	0,209	1,932	0,209	1,932	0,209
81	PVE	1,580	0,499	1,580	0,499	1,580	0,499
82	PVR	0,648	0,310	0,176	0,084	0,381	0,182
83	PVV	-0,147	-0,025	0,303	0,051	0,473	0,080
84	PVX	1,304	0,311	1,304	0,311	1,304	0,311
85	PXI	-0,014	-0,004	0,754	0,217	0,969	0,279
86	PXS	0,205	0,065	0,661	0,210	0,542	0,173
87	PXT	0,266	0,090	0,685	0,230	0,679	0,229
88	SDP	1,410	0,271	1,410	0,271	1,410	0,271
89	CTN	0,922	0,160	0,922	0,160	0,922	0,160
90	V11	1,148	0,161	1,148	0,161	1,148	0,161
91	V12	1,521	0,181	1,521	0,181	1,521	0,181
92	V15	1,566	0,582	1,566	0,582	1,566	0,582
93	V21	-0,241	-0,023	0,529	0,051	0,476	0,046
94	VC1	1,815	0,525	1,815	0,525	1,815	0,525
95	VC2	1,240	0,220	1,240	0,220	1,240	0,220
96	VC3	1,256	0,195	1,256	0,195	1,256	0,195
97	VC5	1,266	0,181	1,266	0,181	1,266	0,181
98	VC6	1,123	0,287	1,123	0,287	1,123	0,287
99	VC7	1,106	0,252	1,106	0,252	1,106	0,252
100	VC9	1,140	0,124	1,140	0,124	1,140	0,124

101	VCC	0,971	0,188	0,971	0,188	0,971	0,188
102	VCG	1,505	0,186	1,505	0,186	1,505	0,186
103	VCH	-0,296	-0,031	0,268	0,028	0,383	0,040
104	VMC	1,503	0,292	1,503	0,292	1,503	0,292

(Source : VN stock exchange 2012)

All three above tables and data show that values of equity and asset beta in the case of increasing leverage up to 30% or decreasing leverage degree down to 20% have certain fluctuation.

VIII. Comparing Statistical Results in 3 Scenarios of Changing Leverage

Table 5 : Statistical results (FL in case 1)

	Competitor size as current			Competitor size slightly smaller			Competitor size double		
Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference	Equity beta	Asset beta (assume debt beta = 0)	Difference	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,884	1,458	1,427	2,884	1,458	1,427	2,884	1,458	1,427
MIN	-0,366	-0,031	-0,335	0,003	0,001	0,003	0,077	0,008	0,069
MEAN	0,944	0,290	0,654	1,008	0,310	0,698	1,005	0,306	0,699
VAR	0,4063	0,0689	0,337	0,3041	0,0650	0,239	0,3012	0,0625	0,239
Note: Sample size : 104 firms									

(Source : VN stock exchange 2012)

Table 6 : Statistical results (FL in case 2)

	Competitor size as current			Competitor size slightly smaller			Competitor size double		
Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference	Equity beta	Asset beta (assume debt beta = 0)	Difference	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,884	1,458	1,427	2,884	1,458	1,427	2,884	1,458	1,427
MIN	-0,366	-0,031	-0,335	-0,388	-0,037	-0,351	-0,379	-0,034	-0,346
MEAN	0,944	0,290	0,654	0,947	0,293	0,653	0,934	0,289	0,645
VAR	0,4063	0,0689	0,337	0,3909	0,0694	0,322	0,4139	0,0689	0,345
Note: Sample size : 104 firms									

(Source : VN stock exchange 2012)

Table 7 : Statistical results (FL in case 3)

	Competitor size as current			Competitor size slightly smaller			Competitor size double		
Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference	Equity beta	Asset beta (assume debt beta = 0)	Difference	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,884	1,458	1,427	2,884	1,458	1,427	2,884	1,458	1,427
MIN	-0,366	-0,031	-0,335	0,053	0,016	0,037	0,156	0,023	0,133
MEAN	0,944	0,290	0,654	1,041	0,316	0,725	1,046	0,312	0,735
VAR	0,4063	0,0689	0,337	0,2681	0,0632	0,205	0,2533	0,0597	0,194
Note: Sample size : 104 firms									

(Source : VN stock exchange 2012)

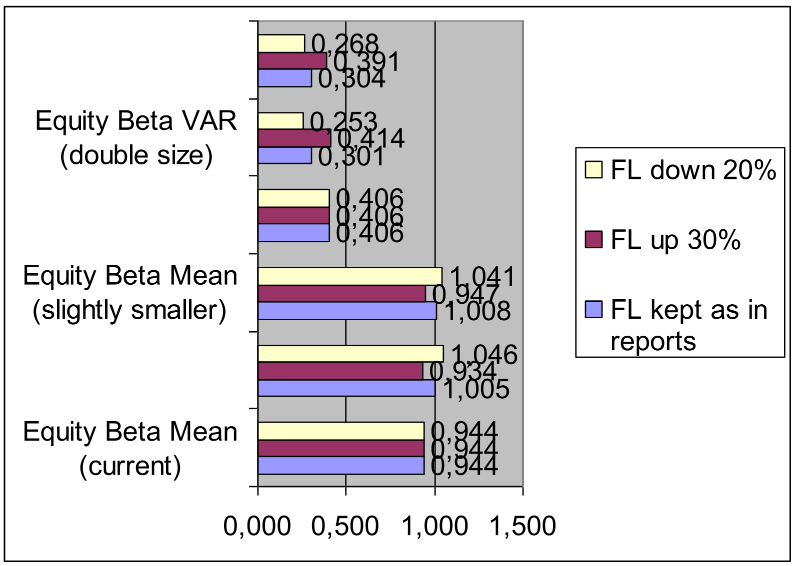
- Based on the calculated results, we find out

First of all, Equity beta mean values in all 3 scenarios are acceptable (< 1,1) and asset beta mean values are also small (< 0,4). In the case of reported leverage in 2011, equity and asset beta min values increase when the competitor size changed from current to slightly smaller and to double size (0,077 and 0,008). If leverage increases to 30%, equity and asset beta min values are the highest when competitor size kept as current (-0,366 and -0,031). Finally, when leverage decreases down to 20%, equity and asset beta min values reach maximum values in case compmetitor size doubles (0,156 and 0,023).

- The below chart 1 shows us

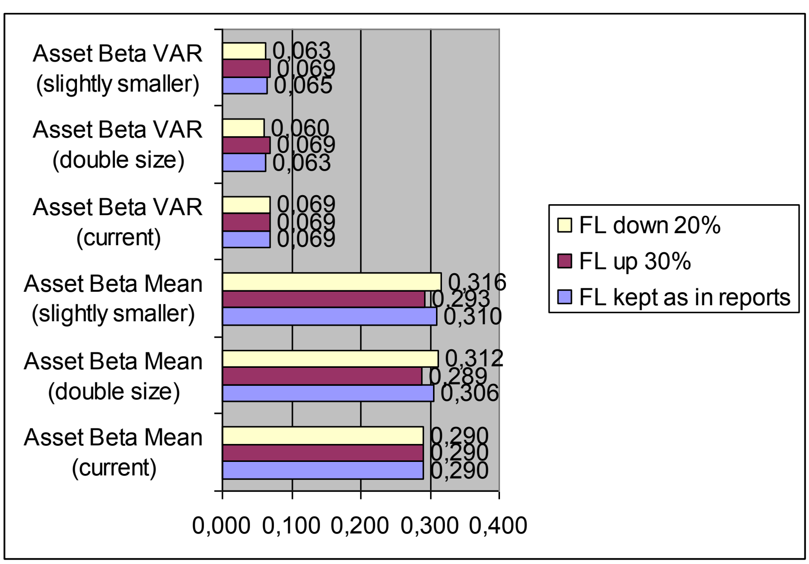
When leverage degree decreases down to 20%, average equity beta values increase slightly (1,046 and 1,041) compared to those at the initial reported leverage (0,944). Then, when leverage degree increases up to 30%, average equity beta decreases little more (to 0,934 and 0,947). However, in case the competitor size doubles, the risk level of the selected firm is higher. Next, the fluctuation of equity beta value (0,150) in the case of 30% leverage up is higher than (>) the results in the rest 2 leverage cases. And we could note that in the case competitor size doubles, the risk is more dispersed. Last but not least, from chart 2, under financial leverage, in case competitor size doubles, asset beta mean (0,312) is lower than the rest 2 cases whereas the risk dispersion is almost the same (0,069).

Chart 1 : Comparing statistical results of equity beta var and mean in three (3) scenarios of changing FL and competitor size



(Source : VN stock exchange 2012)

Chart 2 : Comparing statistical results of asset beta var and mean in three (3) scenarios of changing FL and competitor size



(Source : VN stock exchange 2012)

IX. Risk Analysis

During and after financial crises such as the 2007-2009 crisis, there raises concerns about the role of financial leverage of many countries, in both developed and developing markets. On the one hand, lending programs and packages might support the business sectors. On the other hand, it might create more risks for the business and economy.

X. Conclusion and Policy Suggestion

In general, the government has to consider the impacts on the mobility of capital in the markets when it changes the macro policies and the legal system and regulation for developing the construction market. The Ministry of Finance continues to increase the effectiveness of fiscal policies and tax policies which are needed to combine with other macro policies at the same time. The State Bank of Viet Nam continues to increase the effectiveness of capital providing channels for construction companies as we could note that in this study when leverage is going to increase up to 30%, the risk level decreases much (asset beta mean values are the smallest: 0,293 and 0,289), and the asset beta var values are the same in changing competitor size cases, compared to the case it is going to decrease down to 20%.

Furthermore, the entire efforts among many different government bodies need to be coordinated.

Finally, this paper suggests implications for further research and policy suggestion for the Viet Nam government and relevant organizations, economists and investors from current market conditions.

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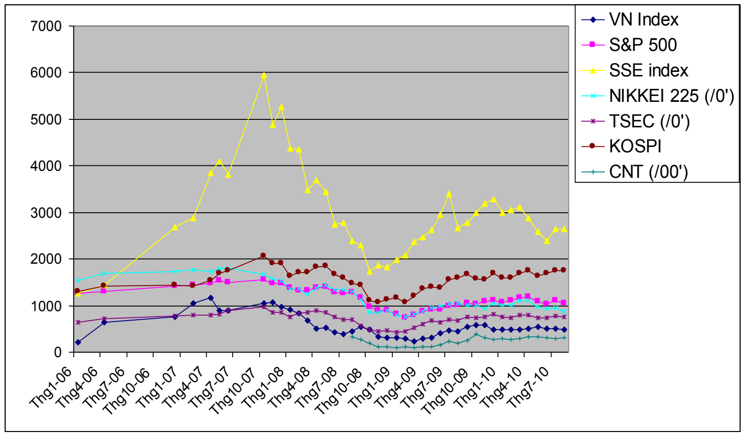
Exhibit

Exhibit 1 : VNI Index and other stock market index during crisis 2006-2010



(Source : global stock exchange 2012)

Exhibit 2 : Inflation, GDP growth and macroeconomics factors

Year	Inflation	GDP	USD/VND rate
2011	18%	5,89%	20.670
2010	11,75% (Estimated at Dec 2010)	6,5% (expected)	19.495
2009	6,88%	5,2%	17.000
2008	22%	6,23%	17.700
2007	12,63%	8,44%	16.132
2006	6,6%	8,17%	
2005	8,4%		
Note		approximately	

(Source : Viet Nam commercial banks and economic statistical bureau)

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Financial Viability and Environmental Benefits of Solar Photovoltaic System in Rural Bangladesh

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Abstract - In Bangladesh major group of population (73% of total population) live in rural areas. Without changing their living status Millennium Development Goals (MDG) will not be achieved and to do so it is necessary to ensure the use of electricity in those areas. The concern of this paper is about the role of rural electrification with the help of Solar Photovoltaic (PV) System, in respect of its financial viability and environmental benefits. Relevant information has been collected from 4 households and 2 microenterprises that make use of Solar PV System in various purposes from a village and a rural market-place nearby the village of Sunamganj district in Bangladesh. Use of the Solar PV System, both in microenterprises and other income generating purposes, alongside regular household usage, indicate relatively higher level of financial viability in favor of this investment. However, substitution of the use of only little quantity of kerosene by a Solar PV System indicates relatively lower level of financial viability against the investment. In this paper the term 'financial viability' has been used to mean high levels of Net Present Value (NPV) and Internal Rate of Return (IRR) and low level of Pay Back Period (PBP).

Keywords : financial viability, solar home system (SHS), microenterprise, net present value (NPV), internal rate of return (IRR), photovoltaic (PV) system.

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FINANCIALVIABILITYANDENVIRONMENTALBENEFITSOFSOLARPHOTOVOLTAICSYSTEMINRURALBANGLADESH

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Abstract - In Bangladesh major group of population (73% of total population) live in rural areas. Without changing their living status Millennium Development Goals (MDG) will not be achieved and to do so it is necessary to ensure the use of electricity in those areas. The concern of this paper is about the role of rural electrification with the help of Solar Photovoltaic (PV) System, in respect of its financial viability and environmental benefits. Relevant information has been collected from 4 households and 2 microenterprises that make use of Solar PV System in various purposes from a village and a rural market-place nearby the village of Sunamganj district in Bangladesh. Use of the Solar PV System, both in microenterprises and other income generating purposes, alongside regular household usage, indicate relatively higher level of financial viability in favor of this investment. However, substitution of the use of only little quantity of kerosene by a Solar PV System indicates relatively lower level of financial viability against the investment. In this paper the term 'financial viability' has been used to mean high levels of Net Present Value (NPV) and Internal Rate of Return (IRR) and low level of Pay Back Period (PBP). At 6 percent discount rate all the cases reveal that the investment (to buy a solar panel) is financially viable. However two cases out of six cases (1st and 2nd cases) show negative NPV at 9 and 12 percent discount rate without considering the environmental benefit and the quality and safety of the solar lamps.

Keywords : financial viability, solar home system (SHS), microenterprise, net present value (NPV), internal rate of return (IRR), photovoltaic (PV) system.

I. Introduction

Electricity is essential for rural economic development as well to achieve the millennium development goals. Now about 1.6-2.0 billion people mostly in rural areas of developing countries have no access to electricity and further 2.0 billion are severely undersupplied. In Bangladesh about 94.9 million out of 162.22 millions (around 59%) living mostly in rural areas have no access to grid electricity. Per capita electricity consumption of Bangladesh is 136.94 KWh on the other hand world's per capita electricity consumption is 2574.4 KWh.

So, in terms of electricity consumption Bangladesh is one of the poorest countries of the world. However, the government of Bangladesh has a vision to provide electricity for all citizens by the year 2020.

At present, power development board (PDB) in Bangladesh generates around 3,500-4,000MW of electricity against the demand for 5,500-6,000MW every day. Renewable energy sources contribute less than 1.0 percent of the total electricity generation of Bangladesh. The government of Bangladesh has targeted to increase the contribution of the renewable energy sources to 5 percent by the year 2015 and 10 percent by the year 2020 of the total energy consumption. It has targeted to generate around 100 MW of electricity from solar power projects by the year 2013.

Bangladesh has good solar radiation resources, its average daily solar radiation ranges from 4 to 6.5 KWh/m2-day. Solar radiation levels reach maximum at March-April and falls minimum at December- January. Even during the monsoon season, due to the long day hours the daily solar radiation level remains close to the average level. Three major challenges are associated with the providing of grid connected electricity are the shortage of the production of conventional electricity, the remoteness of the rural area and the density of the population. So, small Solar Home System (SHS) has a great potentiality in Bangladesh especially for the off gridded area.

Solar Home Systems (SHSs) has brought lighting facilities and related utilities such as charging mobile phones, watching TV, using computers and internet connection to remote areas in Bangladesh, where people are far from grid electricity. Solar home system has brought significant improvements in the standard of livings of the people by reducing in-door air pollution as well as increase income generating opportunities for women.

In the environmental aspect, a study found that the total CO_2 emission would increase more than 10-fold during 2005-2035 in Bangladesh. Solar Home System (SHS) reduces CO_2 by displacing hydrocarbon-based lighting devices such as kerosene lamps and candles. According to Nieuwlaar and Alsema the use of PV system as a replacement for fossil fuel-based electricity has significant environmental benefits.

This paper would examine the financial viability of solar home systems in Bangladesh with and without environmental benefits in terms of Taka. Section 2 describes SHS and its payment system under NGO provision, section 3 discusses about objectives and

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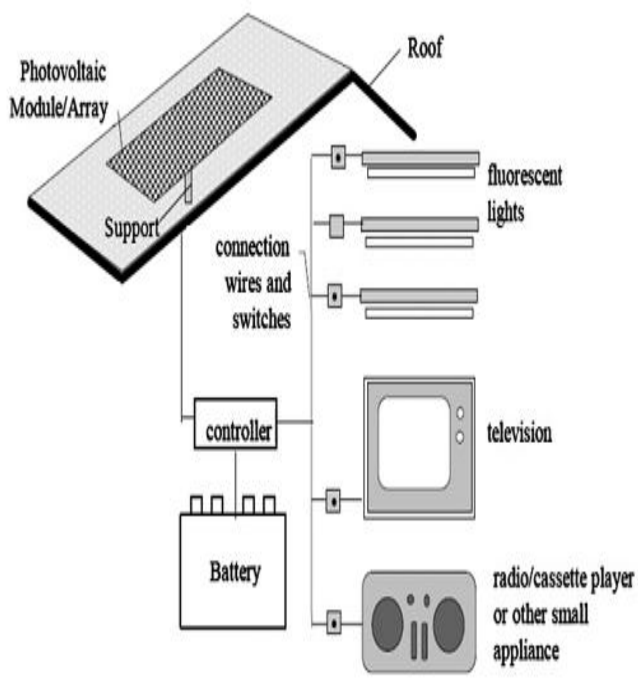
study area, section 4 explains the research methodology, section 5 presents the case studies, section 6 describes precisely all findings from the case studies and at last section 7 illustrates concluding remarks and policy recommendations.

II. Solar Home System (SHS)



Source : World Bank, Technical paper, 1997

Figure 1 : Typical Solar PV System

A typical SHS generally has a 20 to 130 Wp (Watt-peak) photovoltaic module used in this country, a battery charge controller, a rechargeable battery for energy storage and one or more lights (generally fluorescent), an outlet for a television (TV), radio/cassette player, mobile charger or other low power-consuming appliances, switches, interconnecting wires, and mounting hardware (support) just like as figure 01.

Both the panel size and the sunlight accessibility will determine the available amount of electricity produced by a SHS. The highest cost of a solar PV System is the Modules or panel cost and the 2nd highest cost is the battery cost. How long the panel lasts the system also lasts. Generally panel warranty is given for 20 years. So by changing battery (5 years warranty) and others component especially lights, a Solar PV system serves at least for 20 years.

a) Payment System of Solar Home System (SHS) Under NGO Provision

There are three approaches of payment systems are offered by Grameen Shakti (sister concern of Grameen Bank that provides solar photovoltaic system in rural Bangladesh). One can take a connection of solar panel by giving 25% of total cost as down payment and remaining 75% of total cost will be paid in 24 installments in 2 years with 4% flat service rate (Option-1). Another way of having a solar panel connection is given 15% of total cost as down payment and remaining 85% of total cost will be paid in 36 installments in 3 years with 6% flat service rate (Option-2). One can enjoy 4% reduction of total cost in case of cash payment (Option-3).

Monthly installment process is very helpful for rural poor households to have a SHS, for the smallest 20 W solar panel the installment rate is 345 Tk./month (36 installments) and down payment is 1170 Tk.

III. Objective and Study Area

a) Objective

The objectives of the study are to conduct a technical review of some existing solar panels in Sunamganj district. The main objective is to measure financial viability of solar panel system (with and without environmental benefits) in rural area and suggest some policy recommendations for the further dissemination of the system.

b) Study Area

One village named Jhamak and a market place nearby the village are selected for this study. The village is taken from the Chhatak Upazila near Jawar bazaar bus stoppage under the district of Sunamganj. Jawar bazaar bus stoppage is situated about 40 kilometers west from the district head quarter of Sylhet and almost 34 Km south-east from the district head quarter of Sunamganj. Jhamak is about 3 km away from the Jawar Bazaar bus stoppage. The case studies were collected from this village due to its location, number of user of solar home systems and for the socio economic condition of the villagers. Three organizations GS (Grameen Shakti), BRAC (Bangladesh Rural Advancement Committee) and RSF (Rural Service Foundation) provide solar panel in this region.

IV. Methodology

In this paper the information of six Solar PV Systems have been collected from a village named Jhamok; where 52 HHs use SHS among 120 HHs. Information has also been gathered from a market palace nearby the village under the district of Sunamganj.

Among the users (who were interviewed) one micro-enterprises and one HHs use solar lamps for income-generating activities beside daily household usage and the rest four HHs use SHS only for daily household activities.

Standard methods of financial analysis have been followed to analyze the data. Different financial indicators such as Net Present Value (NPV), Simple Pay Back Period (PBP) and Internal Rate of Return (IRR) with and without considering environmental benefit have been calculated to determine the financial viability of Solar PV System in this paper for the selected cases.

a) Net Present Value (NPV)

NPV is defined as the difference of the present values (PVs) of the total cash inflows (benefits) and the cash outflows (costs). In the case when all future cash flows are incoming and the only outflow of cash is the purchase price, the NPV is simply the present value of future cash inflows minus the purchase price.

NPVs are calculated here at the discount rates of 6%, 9% and 12%, which symbolize typical bank interest rates. Thus we can compare the gains between buying a solar photovoltaic system for some amount of money and saving the same amount in a schedule bank.

b) NPV Calculation in Excel Sheet

- PV(RATE, NPER, PMT, FV,TYPE)

There are five parameters to the present value (PV) function. RATE is the interest rate per period (here year) NPER is the total number of periods, and FV is the future value. PMT (Payment of an annuity) and TYPE are included to handle annuities (a series of equal payments, equally spaced over time). For problems of the type that we are currently solving here, we will set both PMT and TYPE to 0 to find out the present value of 20 years cash flow separately.

- NPV (RATE, VALUE1, VALUE2 …)

Where RATE is per period rate of return (i.e., the discount rate), and VALUE1 is the first cash flow (or range of cash flows), VALUE2 is the second cash flow, and so on. Finally by subtracting cash out flow in initial period (period 0) from the NPV of 20 years one can find out net cash flow in 20 years.

c) Internal Rate of Return (IRR)

The internal rate of return (IRR) on an investment or potential investment is the annualized effective compounded return rate that can be earned on the invested capital. IRR is the discount rate of interest that makes net present value equal to zero. If the IRR becomes 10 percent suppose for buying a SHS with life time 20 years means that to buy a SHS brings enough revenue in 20 years to pay its cost and also grant a return of 10 percent on the invested capital. So, in this case borrowing the required capital at less than 10% and finance it for buying the SHS will be a profitable investment.

d) IRR Calculation in Excel Sheet

- IRR(VALUES,GUESS)

Here, where VALUES is a range of cash flows (including the cost), and GUESS is the optional first guess at the correct interest rate. If the result comes 16%, which means that owner of SHS will earn a compound annual rate of 16% from this investment.

e) Payback Period (PBP)

Payback period in capital budgeting refers to the period of time required for the return on an investment to "repay" the sum of the original investment. For example, a $2000 investment which returned $500 per year would have a four years payback period.

f) PBP in Excel Sheet

- Pay Back Period = I/(R-E)

Where, I= Net investment/Net cash flow at period 0.

R= Return/Average net inflow

E= Expenses/Average net outflow.

R-E= Average net cash flow/year

IRR shows us the actual gain (rate of return) of buying a solar PV system and PBP shows the returning period of the invested capital form the investment in a solar PV system. Here the financial analysis is hold for 20 years because the solar PV System serves at least for 20 years and also the warranty is given for the panel is 20 years.

g) Process of Environmental Benefit analysis:

Environmental benefit was calculated in terms of Taka by using the following information -

1 L Kerosene produces 3.15 Kg CO_2[1] and price of per ton CO_2 is 20 USD[3].

Here, 1ton CO_2 = 1000Kg CO_2 & 1 USD = 69Tk.Environmental benefit (in 20 yrs) for Kerosene=

$$\frac{\text{Monthlyused kerosene} \times 12 \times 20 \times 3.15 \times 20 \times 69}{1000} \text{ Tk.}$$

Here, in numerator -- Monthly used Kerosene (in liter) ×12 month ×20 years ×3.15 kg ×20 USD × 69 Tk.

And this numerator is divided by 1000kg to convert into ton (because price of per ton CO_2 is 20 USD) thus the environmental benefit is counted in terms of Taka.

h) And for Burning Candle

1 Candle produces 30g CO_2[2] and price of per ton CO_2 is 20 USD[3].

Here, 1ton CO_2 = 1000Kg CO_2 ; 1 USD = 69Tk. Environmental benefit (in 20 yrs) for Candle=

$$\frac{\text{Monthlyused candles} \quad 12 \quad 20 \quad 30\text{g} \quad 20 \quad 69}{1000 \times 1000} \text{ Tk.}$$

[1] 1 L kerosene emits 3.15 kg CO2 (See, for example, p 67athttp://www.dft.gov.uk/pgr/aviation/environmentalissues/ukairdemandandco2forecasts/airpassdemandfullreport.pdf).

[2] "Burning Candles" by Stubborn Mule on 27 March 2009.

[3] Mondal, M. A. H., 2010. Economic viability of solar home systems.

V. Case Studies

Case 1 : In this HH only 2 hurricanes (4L Kerosene / month) is replaced by a 2 lamps Solar panel (20W)

Table 1.1 : Basic Information of case 1

Name of panel Owner: Mosabbir Ali	Name of the respondent: Amena Begum
Age of HH head: 33 years	House hold members: 4
Education of the HH head : Class 5	Occupation: Service at abroad
Purpose: Lighting and Charging mobile	Add: Jhamok, Chhatak, Sunamganj.
Panel Size & Battery capacity: 20W & 30AH	Offers: Provide 2 lamps and a charge connection for mobile
Installed by: GS	Installation Date: Feb. 2010
Amount of first payment: 2205 Tk.	Purchasing pattern: 15% down payment & 85% in 36 installments.
Monthly amount of installment: 345Tk	Increased Income: 0Tk./month
Monthly Previous income: 5000 Tk/ month	Monthly new income: 5000 Tk/ month.
No. of mobile (Before installation): 1	No. of mobile (After installation) : 1
No. of TV(Before installation): 0	No. of TV (After installation): 0

Source : Author

This house hold (HH) just replaced 2 hurricanes by 2 lamps of the smallest 20W solar panel. So, only 4 Liter kerosene saved after the panel installation. Before solar panel installation the HH charged mobile in neighbor's home free of any cost. Thus this HH saves only kerosene cost by the installation of solar home system (SHS).

The findings of the financial analysis (of 20 years) are as follows:

Table 1.2 : Output of Financial Analysis for Case 1

Indicators	Values
Simple Payback Periods(years)	19.27 years
Simple payback period without Environmental benefit (yr)	27.36 years
NPV (6%)	3047.19881Tk
NPV (9%)	57.9443303Tk
NPV (12%)	-2056.7738Tk
IRR (%)	9

Source : Author

So, in this case PBP shows very high and NPVs remains positive till 9% interest rate. So, at 9% bank interest rate, this money (13600 Tk.) becomes indifferent to keep in a bank or to invest for buying a panel. But if we compare the light quality of SHS with hurricane and other daily life comfortableness such as charging mobile at home then it should be more viable and profitable to buy a solar home system.

Case 2 : Two Hurricanes and a wick replaced by a 40W panel and saved 75Tk. for charging mobile & 5 L kerosene cost/month

Table 2.1 : Basic Information of case 2

Name of panel Owner: Ashik Mia	Age of HH head: 32 years
Education: Class 6	Occupation: Service at middle east
House hold members: 5	Add: Jhamok, Chhatak, Sunamganj.
Panel Size & Battery capacity:40W & 60AH	Offers: 3 lights, connection for charging mobile and TV.
Installed by: GS	Installation Date: Sep. 2008
Amount of first payment: 5000 Tk.	Purchasing pattern: 15% down payment & 85% in 36 installments.
Monthly amount of installment: 600Tk	Increased Income: 0Tk./month
Monthly Previous income: 7000Tk	Monthly new income: 7000Tk.
No. of mobile (Before installation): 1	No. of mobile (After installation) : 1
No. of TV(Before installation): 0	No. of TV (After installation): 0

Source : Author

This HH replaced 2 Hurricanes and 1 wick by a 40W solar panel. The HH saves 5L kerosene and 75Tk. charging cost for mobile per month by the help of SHS.

Financial analysis of solar panel for this HH is as follows (considering 20 years cash flows):

Table 2.2 : output of financial analysis for case 2

Indicators	Values
Simple Payback Periods(years)	22.77 years
Simple payback period without Environmental benefit (yr)	30 years
NPV (6%)	3066.97 Tk
NPV (9%)	-1956.59 Tk
NPV (12%)	-5510.19 Tk
IRR (%)	8

Source : Author

This HH replaced little amount of kerosene and a minimum charging cost for mobile by a comparatively larger size solar panel (40W). And also has no impact on income level from the panel installation. On the other hand this HH never has any expenditure for enjoying TV. For these reasons NPV comes negative at 9% and 12% interest rate, IRR is 8% and payback period shows very high (more than 20 years). In spite of under use of the panel the investment still shows positive NPV at 6% interest rate. If we consider the environmental benefit, comfortableness under brighter light, safety and future chance of enjoying a black and white TV, the viability in favor of this investment goes up.

Case 3 : HH's Panel capacity is 75 W and provides 6 lamps, a TV connection & a charging facility for mobile. Thus simultaneously saves cost for lighting, entertainment and charging mobile

Table 3.1 : Basic information of case 3

Name of panel Owner: Rahamat Ali	Name of the respondent: Mrs. Rahamat Ali
Age of HH head: 35 years	Occupation: Earning from abroad.
Education: class 5	Add.: Jhamok, Chhatak, Sunamganj
House hold members: 7	Offers: 6 tube lights, Connection for mobile & TV.
Panel Size & Battery capacity: 75W & 100AH	Installation Date: may,2003
Installed by: RSF	Purchasing pattern: Cash payment
Cash price of the panel: 36000	Purpose: lighting in home, Charging mobile & watching TV.
Monthly Previous income: 55000Tk.	Monthly new income: 55000Tk.
No. of mobile (Before installation): 1	No. of mobile (After installation) : 2
No. of TV(Before installation): 1	No. of TV (After installation): 1

Source : Author

This HH replaced 2 hurricanes and 1 wick, a TV battery and charging cost for mobile by 75W solar panel. The HH also saved 7.5 L kerosene cost/month by 5 solar tube lights. These all are the components of cash inflows and the cash outflows are the purchasing price and maintenance cost of the solar home system.The financial analysis of SHS for this HH is as follows:

Table 3.2 : Output of 20 years financial analysis for case 3

Indicators	Values
Simple Payback Periods(years)	9.67 years
Simple payback period without Environmental benefit (yr)	10.85 years
NPV (6%)	28304.3602
NPV (9%)	16364.895
NPV (12%)	7918.9903
IRR (%)	16

Source : Author

The HH bought SHS in cash payment of 36000 Tk. in 2003. They bought a comparatively larger panel considering the number of their family members. The household does not involve any income generating activities by using solar lamps. After all the results show that the investment decision was financially feasible because NPV come positive at all three interest rates.

Case 4 : This HH Shares only one lamp of three lamps and bears ⅓ cost of the 40w solar panel. By placing the only tube middle of the two rooms saves considerable amount of kerosene. (Save only kerosene).

Table 4.1 : Basic Information of case 4

Name of panel Owner: Shekh kalam Ali	Age: 45 years
Education: illiterate	Occupation: Agriculture.
House hold members: 5	Add.: Jhamok, Chhatak, Sunamganj.
Panel Size & Battery capacity: 40W,60AH	Offers: 1 tube light.(⅓ share of 40W panel)
Installed by: GS	Installation Date: August. 2008
Amount of first payment: 1700 Tk.	Purchasing pattern: 15% down payment & 85% in 36 installments.
Monthly amount of installment: 200Tk	Purpose: lighting, Charging mobile.
Monthly Previous income: 3000Tk.	Monthly new income: 3000Tk.
No. of mobile (Before installation): 0	No. of mobile (After installation) : 1
No. of TV(Before installation): 0	No. of TV (After installation): 0

Source : Author

Mr. Ali just uses one light and bears ⅓ cost of a 40W panel. Before installation of solar panel his family used 1 hurricane and 1 wick. He meets up this necessity by setting the only solar tube in the middle of his two rooms. Thus he replaced 7 liters kerosene (per month) only by a tube light. So, his cash inflow rises dramatically and cash outflow remains smaller.

The findings of the financial analysis are as follows:

Table 4.2 : Output of 20 years financial analysis for case 4

Indicators	Values
Simple Payback Periods(years)	2.31 years
Simple payback period without Environmental benefit (yr)	2.59 years
NPV (6%)	36788.55Tk.
NPV (9%)	27832.6Tk.
NPV (12%)	21488.83Tk.
IRR (%)	52

Source : Author

Here PBP remains around two and half years. And also NPVs and IRR come high. His monthly installment is 230 Tk. And his Monthly kerosene cost was 360 Tk. (price of 7 Liters Kerosene). The financial analysis becomes financially viable for Mr. Ali mainly because he uses ⅓ capacity and shares ⅓ cost of a 40 W Panel with his neighbor.

Case 5 : 20w panel is used by a mobile servicing shop. Before the dissemination of solar panel a car battery was used to charge mobile in business purpose

Table 5.1 : Basic Information of case 5

Name of panel Owner: Sujon Mia	Age: 30
Education: class 8	Occupation: Mainly mobile technician
Shop pattern: Mobile servicing	Add.: Jhamok, Chhatak, Sunamganj.
Panel Size & Battery capacity: 20W & 30AH	Offers: 2 CFLs and a connection for charging mobile.
Installed by: BRAC	Installation Date: May,2009.
Amount of first payment: 2205 Tk.	Purchasing pattern: 15% down payment & 85% in 36 installments.
Monthly amount of installment: 345Tk.	Purpose: Lighting for shop, Charging mobile.
Monthly Previous income: 4000Tk.	Monthly new income: 4000Tk.
Extended duration of business: 0 hr/day	Increased Income: 00Tk./month
No. of mobile (Before installation): 1	No. of mobile (After installation) : 1

Source : Author

Before solar panel installation Mr. Sujon burned two candles daily in his shop. He also used a big car battery (7500 Tk.) to charge mobile in business purposes. This was a monopoly business before the solar panel dissemination. He earned almost 2400 Tk. per month from charging mobile at the rate of 5 Tk per hour charging and every day charged 16-18 mobiles. After dissemination of solar panel his income from this sector almost becomes zero but income from mobile servicing as a technician rises as the number of mobile user rises rapidly. Under the brighter light he also introduces shoe business in a small scale. So, his monthly income remains unchanged approximately equal to 4000Tk. Now he replaced candle cost (10Tk. /day), battery cost (7500 Tk/3years) and charging cost of the battery (320Tk. /month) by 20w solar panel.

The financial analysis for him becomes as follows:

Table 5.2 : Output of 20 years financial analysis for case 5

Indicators	Values
Simple Payback Periods(years)	0.80 years
Simple payback period without Environmental benefit (yr)	0.81years
NPV (6%)	87786.5Tk.
NPV (9%)	68265.8Tk.
NPV (12%)	54472.62Tk.
IRR (%)	119

Source : Author

His monthly cost was 620 Tk. (300 for candle and 320 for charging battery) for the lighting & battery charging purposes. Now it becomes zero. And monthly installment rate for 3 years is 333Tk for SHS. Thus he saves 287 Tk. per month even in the installment period after 3 years he will save almost 620 Tk. per month.

Under these circumstances, though his income remains unchanged his NPVs and IRR come very high and payback period (PBP) remains less than 1 year in the analysis of 20 years cash flows.

Case 6 : Husband & wife of this HH run a grocery shop at their home. And besides the saving of kerosene, HH income rises significantly

Table 6.1 : Basic Information of case 06

Name of panel Owner: Shah Alam	**Age of HH head**: 35 years
Education: class 1	**Occupation**: Grocery shop
House hold members: 7	**Add.**: Jhamok, Chhatak, Sunamganj
Panel Size & Battery capacity: 50W & 80AH	**Offers**: 4 tube lights, Connection for mobile & TV .
Installed by: GS	**Installation Date**: Dec.2007
Amount of first payment: 6260 Tk.	**Purchasing pattern:** 15% down payment & 85% in 36 installments.
Monthly amount of installment: 747Tk	**Purpose:** lighting in home & shop, Charging mobile.
Monthly Previous income: 5500Tk.	**Monthly new income**: 7500-8000Tk.
Number of increased daily customer: 30	**Amount of increased income**: 2400 Tk/month
No. of mobile (Before installation): 0	**No. of mobile (After installation)** : 1
No. of TV(Before installation): 0	**No. of TV (After installation):** 0

Source : Author

Before installation 50W panel Shah Alam's family used 2 hurricanes and 2 wicks by burning 15 liter kerosene per month for lighting their grocery shop and home. Now this necessity is replaced by the solar panel.

On the other hand the HH's income rises by 2400Tk. /month for the extension of business hours (from 10 pm to 12 pm). After 10 pm Mr. Alam uses dim light as business purposes. This ensures his battery's long life time.

Financial analysis for Solar panel of this HH is as follows (considering 20 years cash flow):

Table 6.2 : Output of 20 years financial analysis for case 6

Indicators	Values
Simple Payback Periods(years)	0.913 years
Simple payback period without Environmental benefit (yr)	0.935 years
NPV (6%)	380293.4 Tk.
NPV (9%)	297179.5 Tk.
NPV (12%)	238296.2 Tk.
IRR (%)	121

Source : Author

NPVs, IRR are very high and PBP is less than 1 year because this HH extended their business hours by the help of solar lamps (CFL & Dim lights) at night thus their income increases by 2400 Tk. per month. Also they replaced considerable amount of kerosene by the solar lamps. Thus the investment becomes financially incredibly viable.

VI. Description of the Finding from the Case Studies

- Case Studies at a Glance

Table 7.1 : Summary of the 20 years financial analysis (with environmental benefit) for all case studies

Indicator	Case 01	Case 02	Case 03	Case 04	Case 05	Case 06
Simple payback period	19.27 years	22.77 years	9.67 years	2.31 years	0.80 years	0.91 years
NPV (6%) in Tk.	3047.2	3066.97	28304.36	36788.55	87786.5	380293.4
NPV (9%) in Tk.	57.94	-1956.59	16364.90	27832.6	68265.8	297179.5
NPV (12%) in Tk.	-2056.77	-5510.19	7918.99	21488.83	54472.62	238296.2
IRR	9%	8%	16%	52%	119%	121%
Environmental Benefit in Tk.	4173	5216	7825	7303	596	15650

Source : Author

Table 7.2 : Summary of the 20 years financial analysis (without environmental benefit)

Indicator	Case 01	Case 02	Case 03	Case 04	Case 05	Case 06
Simple payback period	27.36 years	30 years	10.85 years	2.59 years	.81years	0.94 years
NPV (6%) in Tk.	653.93	593.92	23816.98	32600.31	87444.61	371318.6
NPV (9%) in Tk.	-1846.78	-3918.79	12793.53	24499.31	67993.70	290036.8
NPV (12%) in Tk.	-3615.32	-7118.26	4996.72	18761.36	54249.97	232451.7
IRR	7%	6%	15%	47%	119%	119%

Source : Author

a) Net Present Values (NPVs)

According to the Table 7.1 and 7.2 all NPVs at 6% interest rate show positive values. So, for all cases to buy a solar home system for 20 years is financially viable at 6% interest rate. Case 1 and 2 use SHS system only for lighting purposes thus for these two cases NPV becomes negative at 9% and 12% interest rates. Case 3 uses SHS for lighting as well as for entertaining TV by substituting car battery with solar energy. For this case NPVs remain positive at all three interest rates. In case of share consumption (case 4) also represents higher level of NPVs. Microenterprises and HH that uses solar home system for income generating activities bears highest level of NPVs (cases 5 and 6).

From the above studies it is clear that who use solar energy for business and income generating purposes and who can purchase SHS by sharing reveals relatively higher level of NPVs than who use SHS only for lighting purposes.

b) Internal Rate of Return (IRR)

IRR and NPV are positively related. Table 7.1 and 7.2 shows case 5 and 6 (microenterprises) have the highest level of NPVs as well as IRR and cases 1, 2 and 3 have relatively lower level of IRR due to the use of SHS only for daily HH activities. Case 4 shows comparatively higher level of IRR due to share consumption (shares only one 1 lamp of 3 lamps solar panel with his neighbor) thus reveals more financial viability in terms of IRR.

c) Pay Back Period (PBP)

PBP has negative relationship with NPV and IRR. Higher level of NPV and IRR mean lower level of PBP. From Table 7.1 and 7.2 we find that 3 cases have PBP less than 5 years and 3 cases have PBP more than 5 years. In case of share consumption and using SHS in microenterprises (cases 4, 5, & 6) indicates lower level of PBP on the other hand using SHS only for HH daily activities (cases 1, 2 & 3) indicates higher level of PBP.

d) Environmental Benefit

Environmental benefit is calculated by considering only the amount of kerosene and candles used before the panel installation. The higher amount of replacement of kerosene and candles with Solar PV system means higher level of environmental benefit. The information of burning 1 liter kerosene produces 3.15 kg CO_2, 1 candle produce 30g CO_2 and 1 ton CO_2 equal to 20 USD are used to calculate environmental benefit of 20 years.

Case 6 shows highest level of environmental benefits because this HH substitute huge amount of kerosene (15 liters of kerosene per month) by SHS that were used for HH lighting and running grocery shop from the evening to mid night.

The other microenterprise (mobile servicing center, case 5) demonstrates less amount of environmental benefit in terms of Taka due to substitution of candles (60 candles per month) with solar lamp as burning candle produce less CO_2 than burning kerosene.

Environmental benefits for the other cases (1, 2, 3 & 4) measure from the kerosene that the HHs used for lighting purposes before solar lamps installation in terms of Taka.

VII. Conclusion & Policy Recommendations

From environmental point of view, Solar PV System generates and supplies with one of the cleanest forms of electrical energy, eliminating the process any type of CO_2 emissions that pose a great threat to our atmosphere. Especially when Kerosene or other types of crude oil burns to produce light or energy, significant emission of Green House gases occurs in the process. Therefore, Solar PV System is one of the new forms of Green Energy that has a far-going positive effect in environmental sustainability.

However, as far as this paper concerns, from financial point of view, in rural areas Microenterprises (MEs) and Households (HHs) who use Solar lamps in income generating activities beside daily HH usage stand out for relatively higher levels of NPV, IRR and lower level of PBP. Again, sharing one Solar PV System by two HHs or MEs is financially more viable. Yet, sharing one Solar PV System is not recognized officially by the service providers. Monthly installments are collected only from one authorized person. Therefore, owing to some management problems sharing of SHS has not yet been possible in large scale in the rural areas.

Nevertheless, the micro-installment system, adopted by the solar service providers, designed especially for rural areas has opened a window of opportunity for the Rural Electrification program to succeed, paving a way for the greater success of the Millennium Development Goals (MDG). Still, for the electrification program to reach out even to the poorest people in rural areas the following action plans can be recommended:

- Govt. should provide some sort of subsidy may be equal to the environmental benefits (calculated in terms of Taka in this study) that received our society from SHS for 20 years.
- Government should reduce the amount of subsidy given to the different stage of production and supply of grid electricity.
- The Solar PV System service providers should make arrangement to sell a single PV panel jointly in the name of more than one users and collect due payments separately from each of them then the number of Solar PV users would rise and the system can be expanded even to the root level.

In future the financial viability of mass installment of SHS in grid connected urban areas may be considered as research agenda.

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Examining Efficiency of Islamic and Conventional Banks in Pakistan: Using Data Envelopment Analysis

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Keywords : *conventional banks, islamic banks, efficiency, ratio analysis, data envelopment analysis.*

GJMBR-C Classification : *JEL Code: G21*

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Strictly as per the compliance and regulations of:

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Sufian Saeed [α], Farman Ali [σ], Baber Adeeb [ρ] & Muhammad Hamid [ω]

Abstract - This study employs two approaches to assess efficiency of Islamic and Conventional banks in Pakistan by using Ratio analysis technique and a non parametric Data Envelopment Analysis technique. This research study considers 19 banks over the period of 2007-2011. The findings reveal in both methods that conventional banks are performing better than Islamic banks. This research study differ from other studies in respect that it uses two approaches to evaluate efficiency of public, private, foreign and Islamic banks. Furthermore, efficiency under Data Envelopment Analysis is evaluated by considering input and output oriented measures while lending funds, deposits and portfolio investments are taken as an output variable while input variables are borrowed funds and capital. This study calculates technical, pure and scale efficiency.

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I. Introduction

Financial sector which include stock exchange, banks, financial institutions, credit unions and money lenders etc. make key contribution toward economic growth and social well being. According to a report of (State Bank of Pakistan [SBP], 2010) the assets of Pakistan's financial sector has grown up to 9.2 trillion rupee in 2010 with five year average increase of 13.86% annually, and banking sector was the biggest player whose assets composition in financial sector was 73.2%. Banks as an integral component of financial sector mobilize savings of people and allocate credit among the investors. Efficient performance of banks boost investment, increase output and the financial sector is a base on which real sector is raised. The need of developed banking system is as much important for economy as blood for body. Its importance toward economic and social well being fascinate to study banking efficiency.

There are two banking streams that are currently operating in Pakistan; Conventional and Islamic banks. Conventional banks are operating since the establishment of Pakistan while Islamic banks are recent phenomena and they have started operating since 1980. Islamic banks are also showing high growth rate of 15% per annum. People's interest and growth of Islamic banks led conventional banks to open Islamic windows inside Conventional banks that are operating independently. According to Shariah principles the structure of Islamic financial institutions/Islamic banks is based on four important paradigms.

a) Prohibition of interest.
b) Speculation is strongly restricted.
c) Zakat is compulsory to be deducted from each account.
d) Prohibition in dealing with goods and services that are declared illegal.

Islamic banking industry has wide range of institutions to generate profit from investing, trading and consumer services. Islamic banking is of course risky but its structure is more stable and its payoff from successful practices is also tremendous. There are 05 full-fledged Islamic and 12 conventional banks operating under Islamic windows operation. As a whole all of these have 841 Islamic branches operating in the country. Conventional banks are not subject to the limits prescribed above.

The Induction of Islamic windows among conventional banks have increased competition between Islamic banks and conventional banks. This competition is essentially leading both of these streams toward efficiency. There long term market share and profitability depends on seeking efficiency in respective levels i.e. Technical, Pure and Scale efficiency. It has also been studied that there is a great competition in banking sectors because of innovative techniques and latest technology. The only way to survive and compete in this industry is an optimal and efficient utilization of scarce resources.

Conventional banking industry is highly strong industry; having rich history and expertise, enjoying interest that is main driver of their banking system, having huge amount of capital and choice to enter in Islamic banking industry but Islamic banks are not blessed with all those benefits that are being enjoyed by conventional banks. First, beside all these favorable conditions for conventional banks and restrictions for Islamic banks fascinate to know that still various studies have approved better performance of Islamic banks.

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Second, it is necessary to monitor the performance of financial sector especially banking sector to design a batter strategy to fill up its loophole.

In response toward the importance and significant role of banking sector for economic and social well being, various studies have been conducted in Malaysia and Bahrain for efficiency evaluation but still there is an acute shortage of literature under Pakistani scenario. Similarly there is also need to monitor panel based performance of banking industry for its consistent and smooth operations in Pakistan. As far as the breadth of previous comparative literature is concerned; dataset was limited up to 2008 by considering either ratio analysis or DEA technique. This is a gap that present study seeks to fill by increasing its breadth from 2007-11 with panel based comparative analysis of Islamic and conventional banks in Pakistan. Consequently, understanding banking efficiency is equally important for investors, bank managers, clients, policy makers and all other stakeholders to take an appropriate, performance based decision.

This study is designed to examine efficiency Islamic and conventional banks and to rank them by using ratio analysis and DEA technique. Studies that have been conducted in Pakistani perspective are limited up to 2008 while this study is an extension which takes data for the period of 2007-11 into account. Two techniques ratio analysis and DEA technique are employed by considering Input/output oriented measure under DEA.

II. An Overview of the Literature

The literature on banking efficiency has grown up considerably during the nineties century. The concept of efficiency under DEA technique could be traced back to 1928 when Cobb and Douglas Originated efficiency through structural relationship in input and output of economic production. Due to increasing competition among the banking industry especially after arrival of Islamic banks in the banking industry and its tremendous growth direct the intention of researchers, managers and policy makers to develop criteria to evaluate banking efficiency. Then the scope of Cobb and Doulas work was enhanced by Berger and Humphrey through applying it on banking sector (Kamaruddin, Safa and Mohd, 2008).

Iqbal (2001) conducted a comparative analysis of Islamic and conventional banks by utilizing both trend and ratio analysis. He found that Islamic banks performance was fairly well during 1990-98. Both trend and ratio analysis indicates that Islamic banks are performing better in term of efficiency as compare to conventional banks. The trend analysis of this research study indicate downward trend of Islamic banks. The reason behind downward trend was the involvement of conventional banks and introductory stage of Islamic banks.

Safiullah (2010) perform an analysis of financial performance of Interest based and interest free Islamic banks streams. It has been found that conventional banks are doing better in term of efficiency and liquidity while interest free banks are performing better in term of solvency, liquidity and profitability. Finally it has been concluded through categorized ratio analysis test that Islamic banks are superior to that of conventional banks. It has also been stated that opening of Islamic windows in conventional banks is also an indicator of superiority of Islamic banks while it is also suggested for conventional banks to spread their network to rural areas that may enhance the performance of conventional banks as well.

Hamid and Azmi (2011) investigate the performance of interest free and interest based banking system by using ratio analysis and t-test to check significance. The result reveals that Islamic banks are more liquid and less risky as compared to the interest based banking system. Liquidity, profitability, solvency and community involvement is checked from 2000 to 2009. The empirical analysis of this research study does not indicate any statistical difference in performance and found that the performance of both banking stream is almost same.

Sufian and Noor (2009) compared by considering MENA and Asian Islamic banks to evaluate their technical, pure and scale efficiency. The result reveals that MENA Islamic banks were having higher average technical efficiency as compare to their Asian counterparts. In addition a significant positive relationship of technical efficiency has been found with profitability, size, capitalization and loan intensity and technical inefficiency outweigh scale inefficiency. This research study was also conducted by using Data Envelopment Analysis technique and it is suggested at the end to improve the managerial skills for more efficiency enhancement of Islamic banks.

Usman, Wang, Mahmood and Shahid (2010) stated by applying DEA technique over a panel of conventional banks of Pakistan. It has been found that Foreign owned banks are more efficient in tern of technical efficiency while state owned and domestic private banks are found to be the least efficient banks. Productive efficiency is further divided into Technical and Allocative efficiency. This research study was intended to evaluate the efficiency of Pakistani Conventional banks from 2001-2008. It has been concluded in this study that there is need to do something for the betterment of state owned and domestic private banks to enhance their technical efficiency.

Akhtar (2010) examine the performance of Commercial banks of Pakistan by considering data from 2001-2006 using DEA technique. It has been found that foreign banks are better in term of X-efficiency from domestic public as well as private banks. It has been found in this research study that foreign owned banks have mastered the Cross borders opportunities and skill. While Pakistani banks are still fail to utilize the domestic benefits and opportunities. That's why Pakistani banks are failed to perform better. It has been suggested in this research to improve the internal performance as well as managerial skills of these commercial banks. Furthermore it has been suggested to use technology, managerial skills and internal resource and opportunities optimally in order to bring efficiency.

Nazir and Alam (2010) evaluate the performance of 28 commercial banks of Pakistan to check the effect of Privatization over operating income. DEA techniques was used to evaluate the performance of these commercial banks from 2003-2007. The result of this research study indicates that privatization cannot help banks in improving their operating income even the result of several previous research shows positive relationship of privatization and profitability of banks. But the results of this research study were contradictory with previous research that added further robustness in findings. Several assumption have been made over this contradictory result First, Law & order situation of Pakistan is instable, Bad-Debts, implications of SBP, and growing commercial banks industry led to decline in efficiency. The results of this research study are favorable for State owned commercial banks.

Another research study investigates the scale efficiency of Islamic banks by using DEA and it has been found that Scale efficiency score was highest in 2007. While the Dawood Islamic bank was found to be the most efficient in term of scale (Bin-Dost, Ahmad, and Warraich, 2011). This research study took data from 2006-09 of five full fledged Islamic banks of Pakistan and it was concluded that performance of Dawood Islamic bank was quite higher than other banks. On average basis 2006 was least scale efficient while the score of scale efficiency was highest in 2007.

Shah, Shah, and Ahmed (2011) compared Islamic banks with Conventional banks and found that Islamic banks are better than conventional banks in term of technical efficiency in loan base approach and scale efficiency is also higher than conventional banks While, Conventional banks are better in term of income base approach. This research study is conducted by estimating efficiency of Islamic banks and convention banks similarly; the efficiency of local and foreign owned banks was also calculated in it. As far as structure is concerned Islamic bank's efficiency is quite lower than foreign owned banks while Islamic banks efficiency is better by comparing it with local owned banks.

The results of previous studies are mix and this study is in line with these different studies and will examine the efficiency of Pakistani banks by considering two approaches: Data Envelopment Analysis approach and Ratio analysis approach for further authentication.

III. Methodology

a) Data and Source

Financial reports including balance sheets and income statements of respective banks are used to conduct this analysis so the data of 19 banks has been taken including 05 full-fledged Islamic and 14 Conventional banks from "*financial statement analysis of financial sector*" over SBP site and these 19 banks are further divided into 04 different panels given below. SBP site and respective banking sites are explored to collect financial and non financial data. All these banks are analyzed using Ratio analysis approach and DEA approach on overall and individual Panel basis.

b) Ratio Analysis

In order to rank the performance of commercial banks, two calculated measures of financial performance have been taken from State Bank of Pakistan site. These Ratios include Efficiency and liquidity ratios that could be seen in Appendix I. Rating points are awarded by taking average value of five years efficiency and liquidity ratio that has been taken from SBP website. These banks are rated by giving 0 to 1 points based on the performance of efficiency and liquidity. A bank that is showing highest performance in ratio is awarded with 1 points and bank showing lowest and weak performance, that ratio is awarded with 01 point respectively. Each ratio and bank is evaluated under same process. Finally the sum of all these points is taken to count their total rating points and rank them. A bank whose total rating points are highest is ranked first, second, third and so on.

- Ratios/ Profitability Ratios
- Liquidity Ratios

c) Data Envelopment Analysis (DEA)

Second, A Non parametric DEA approach is used to evaluate the efficiency of Islamic and conventional banks and this technique will also help to fulfill the limitations of using ratio analysis technique. Now a day DEA technique has earned well reputation and is very popular among researchers.

While analyzing Decision Making Units (DMU's) input oriented measure define that how much input quantity can proportionately be reduced without changing produced level of output quantity. On the other hand one could cross question that by how much output quantity be proportionately enhanced without changing the level of input quantity consumed. Output oriented measure is an opposed measure to input oriented measure.

Constant return to scale (CRS) indicates that a level of proportionate increase in inputs will resultantly bring proportionate increase in output. Where Variable return to scale (VRS) means that it is not compulsory that output increase in same proportionate percentage with inputs. Furthermore VRS propose two more facets where DMU's are operating either on *Increasing return to scale (IRS)* or *decreasing return to scale (DRS)*. If the proportionate increase in inputs results in higher proportionate increase in outputs then it will be called IRS. On the other hand DRS means proportionate increase in inputs will result in less proportionate increase in outputs.

Modern efficiency measure could be traced back when Parrell (1957) drew upon the work of Debreu (1951) and Koopmans (1951) and define about a measure that was simple to evaluate efficiency of DMUs that was able to consider multiple inputs. He further proposed that efficiency of a firm is based on two basic components.

Technical Efficiency which describe the ability of a company to generate maximum output from a given set of inputs and *Pure Efficiency* depend on managerial decisions which reflect the ability of management to use inputs or outputs in an optimal proportion. Technical efficiency is decomposed into pure technical efficiency and scale efficiency. Efficiency estimation of all these three measures vary from 0 to 1; Where 01 indicates absolute perfection and fully efficient whereas 0 represent absolute inefficiency. The wedge between 01 and the value observed measure technical inefficiency. Let us assume under Technical Efficiency measure that (X1, X2) two input variables that are used to produce single output (y). Under this assumption we could draw SS' unit Isoquant of fully efficient firm available in Figure 1. The inputs of firm are defined by P whereas Q is an efficient point on the frontier. Technical efficiency of a DMU is most commonly measured by the ratio

$$TE_I = 0Q/0P$$

That is equal to one minus QP/0P and it will take value between 0 and 1. Furthermore TE is decomposed into two important components, in order to drive scale and pure technical inefficiency. For that purpose, data is evaluated through CRS and VRS. If there is any difference between CRS and VRS then it represents scale inefficiency. Figure 2 illustrate by considering one input and one output and have drawn 2 frontiers for CRS and VRS. Similarly scale efficiency is measured by ratio

$$TE_{I,CRS} = AP_C/AP$$

Whereas PP_C is Technical inefficiency under CRS

$$TE_{I,VRS} = AP_V/AP$$

PP_V is Technical inefficiency under VRS

$$SE_I = AP_C/AP_V$$

So the difference between above two is P_CP_V is put down to Scale inefficiency

We can also see that

$$TE_{I,CRS} = TE_{I,VRS} \times SE_I$$

Because,

$$AP_C/AP = (AP_V/AP) \times (AP_C/AP_V)$$

Figure 1: Calculation of Technical efficiency in DEA

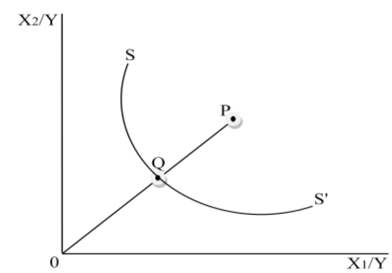
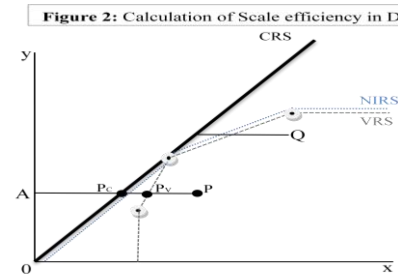
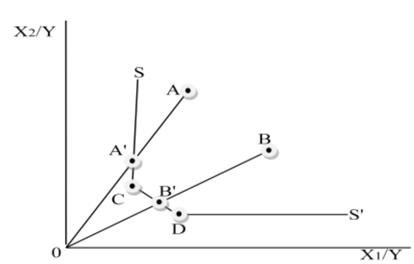


Figure 2: Calculation of Scale efficiency in DEA



The piecewise linear form of the non-parametric frontier in DEA can cause a few difficulties in efficiency measurement. Some author use the term *Input excess* while some author considers only those DMU efficient whose slack value is 0. The problem arises because of the sections of the piece wise linear frontier which run parallel to the axes which do not occur in most parametric functions. Figure 3 illustrate SS' piecewise linear form on non parametric frontier whereas C and D firms are efficient because both lies over frontier. We can see that A and B are inefficient firm so their efficiency could be evaluated by OA'/OA and OB'/OB respectively. We can see that A' lies over the frontier where X_1 input is same for firm C and A' while X_2 input could be reduced because firm C is getting less X_2 input and is considered efficient. It is called input slack that is also possible in output when multiple outputs are used.

Figure 3: Efficiency measurement and input slacks



The selection of input and output variable is still disputable while there is no consensus among researchers about selection of these variables. There are two more frequent approaches that are used to analyze efficiency through DEA technique and these approaches are intermediation approach and production approach. Under intermediation approach banks are considered as a central party that resolve financial problem by transferring surplus to deficit. While in production approach banks are seemed to be as a producer of loan and deposits.

This research study is designed by considering three output and two input variables. Output variables include *lending funds, deposits* and *portfolio investments* while input variables are *borrowed funds* and *capital*. As we know that there is no consensus among researchers about selection of input and output variables while the selection of variables for this research study is based on previous literature and availability of financial data.

IV. Empirical Findings

First of all findings are based on the application of ratio analysis technique whereas the focused banks are ranked based on their efficiency and liquidity performance. Secondly technical efficiency (TE), pure efficiency (PE) and scale efficiency (SE) is analyzed by using DEA of Islamic and Conventional banks of Pakistan. Nineteen banks are being studied and evaluated under this section by using DEA technique using DEAP 2.1 software.

a) Ratio Analysis Technique

Information stated in Table 1 is presenting Ratios derived through SBP's site for the period of 2007-2011 evaluated on an average basis. Each ratio is evaluated by considering scale formula ranging from 0 to 01. It has been found that Muslim commercial Bank Ltd. (MCB) is leading among Public, Private, Foreign and Islamic banks with highest rating points of 0.7186. Similarly Muslim commercial bank is followed by Deutsche bank AG and National bank of Pakistan with 0.6320 and 0.6139 rating points respectively. On the other hand Albaraka Islamic Bank, The bank of Punjab and Oman international bank SAOG are residing at the bottom with 0.4276, 0.3292 and 0.3136 respective rating points. All of the remaining banks lie in between these banks and the gap among all these banks is showing the comparative inefficiency. If we make bench mark of MCB then we can see that Albaraka Islamic bank, the bank of Punjab and Oman International bank SAOG lies far away behind MCB.

Table1 : Ranking of selected banks in Pakistan by using ratio analysis

All Banks	Rating Points	Ranking
MCB Bank Limited	0.718615462	1
Deutsche Bank AG	0.632022043	2
National Bank of Pakistan	0.613900239	3
United Bank Limited	0.608167709	4
Habib Bank Limited	0.601568927	5
Allied Bank Limited	0.587464196	6
Citi Bank N.A.	0.585478205	7
Bank Al-Habib Limited	0.554410777	8
First Women Bank Limited	0.553222519	9
Meezan Bank Ltd.	0.524414301	10
The bank of Tokyo-Mitsubishi	0.523622077	11
HSBC bank Middle East Ltd	0.513578248	12
Dubai Islami Bank Pakistan Ltd.	0.508482355	13
Burj Bank Limited	0.501151569	14
The Bank of Khyber	0.488104536	15
BankIslami Pakistan Ltd	0.467529093	16
Albaraka Islamic Bank	0.427637894	17
The Bank of Punjab	0.329291006	18
Oman International Bank SAOG	0.313647988	19
Mean all banks	0.529068902	-
Mean Conventional banks	0.544506709	-
Mean Public Sec. banks	0.496129575	-
Mean Private Sec. banks	0.614045414	-
Mean Foreign banks	0.513669712	-
Mean Islamic banks	0.485843042	-

Source : Authors evaluation is based on Financial Ratios derived from SBP's report "Financial Statement analysis of financial sector (2007-2011)" under Pakistani Context.

b) Data Envelopment Analysis Technique

This section represents the performance 19 selected banks on overall bases for the period of 2007-2011. By using three output variables that include *lending funds, deposits* and *portfolio investments* and two input variables such as *borrowed funds* and *capital*, we have derived following technical, pure and scale efficiency scores under input and output oriented measures.

Under input oriented measure Table 2 is showing technical, pure and scale efficiency of all selected banks on average basis for the period of 2007-2011. Input oriented measure shows efficiency/ In-efficiency in term of Inputs that how efficient/inefficient the bank is in minimizing its inputs through given set of outputs. The concept of utility from economics has been added in it under utilization of input and output oriented measures. The concept of economics is utilized in a sense where consumer wants to enhance his utility of outputs through optimal utilization of inputs resources and he aim to get more utility with minimum level on inputs.

The result shows that First women bank limited, National bank of Pakistan, Habibd bank limited are fully efficient in term of technical, pure and scale efficiency basis. It means that these three banks are using input resources optimally. The bank of Khyber from public sector banks scored technical efficiency of 0.2842 that is very low so it means that the level of inefficiency or wastage of input resources is 0.7158 to get a same level of efficient banks, that is comparatively very high. Similarly Oman international bank and the Bank of Tokyo Mitsubishi are the weakest banks in term of technical, pure and scale efficiency. On average basis technical, pure and scale efficiency is derived 0.6400, 0.7613 and 0.7883 respectively under input oriented measure. Under output oriented measure average technical, pure and scale efficiency score could be arranged 0.6505, 0.7631, and 0.8111 respectively.

Table 2 is also showing technical, pure and scale efficiency of Pakistani banks over the period of 2007-2011 under output oriented measure. Output oriented measure shows efficiency/inefficiency in term of output that how efficient/inefficient the bank is in maximizing its output by keeping given set of inputs. By using output oriented measure we can find it out that how efficiently and optimally banks are utilizing their given/available input resources to maximize the level of output. Similarly the efficiency of First women bank limited, National bank of Pakistan and Habib bank limited are more efficiently utilizing their given set of inputs to maximize the level of outputs Similarly, the Bank of Khyber, Oman international bank and the Bank of Tokyo Mitsubishi are inefficient banks but there is a minor difference between the results of input and output oriented measure. Under Output oriented measure technical, pure and scale efficiency could be arranged 0.6505, 0.7631 and 0.8111 respectively.

In this study it is interesting to note that pure technical inefficiency outweighs scale inefficiency in Pakistan. In essence, the finding of this study suggests that all Pakistani banks including Islamic and conventional banks are managerially inefficient in controlling their operating costs and utilizing their resources to the fullest. Sufian, Noor and Majid (2008) compared MENA and Asian banks by doing a comprehensive study for efficiency evaluation. The result suggests that Asian banks are suffering with pure technical inefficiency. Not only Pakistan but even the whole Asian region is suffering wish pure technical inefficiency where pure technical inefficiency outweighs scale inefficiency.

Furthermore, two major categories of selected conventional and Islamic banks are decomposed into sub-categories such as; public sector banks, private sector banks, foreign banks and Islamic banks. All these decomposed sub-categories excluding Islamic bank reveals pure technical inefficiency that contributes more toward technical inefficiency. Scale efficiency is better than pure technical efficiency in these major and sub-categories. Technical, pure and scale efficiency score of Islamic banks are 0.6139, 0.8055, and 0.7406 under input oriented measure. While under output oriented measure technical, pure and scale efficiency score are 0.6139, 0.8405 and 0.7159 respectively. Pure and scale efficiency score of Islamic bank reveals scale inefficiency outweighs pure inefficiency that means Islamic banks have been operating at a relatively non-optimal scale of operations i.e. either they were too small or too large to be scale efficient. As far as the scope of Islamic banks under Pakistani scenario is concerned it seems that Islamic banks are operating at too small scale. So there is an immense need for conventional banks to strengthen their management by controlling operating cost and utilizing their resources to the fullest while Islamic banks need to operate at optimal scale.

Table 2 : Technical, pure and scale efficiency of banks in Pakistan

All banks	Input Oriented			Output Oriented		
	TE	PE	SE	TE	PE	SE
First Women Bank Limited	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
National Bank of Pakistan	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
The Bank of Khyber	0.2842	0.5644	0.5768	0.2842	0.5812	0.5884
The Bank of Punjab	0.6252	0.7138	0.8794	0.6252	0.6988	0.9008
United Bank Limited	0.7984	0.8444	0.9504	0.7984	0.8968	0.8894
MCB Bank Limited	0.9008	0.9054	0.9938	0.9008	0.903	0.9972
Habib Bank Limited	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Allied Bank Limited	0.8476	0.8658	0.9754	0.8476	0.8556	0.9902
Bank Al-Habib Limited	0.6536	0.7016	0.9344	0.6536	0.6894	0.9560
Citi Bank N.A.	0.5322	0.7144	0.7962	0.5322	0.7188	0.7784
Deutsche Bank AG	0.7448	0.8582	0.8408	0.7448	0.8692	0.8298
HSBC bank Middle East Ltd	0.6118	0.7396	0.833	0.6118	0.7504	0.822
Oman International Bank	0.0138	0.3310	0.0576	0.2138	0.2176	0.3425
The bank of Tokyo-Mitsubishi	0.0784	0.2002	0.4370	0.0784	0.1158	0.738
Albaraka Islamic Bank	0.4512	0.6320	0.6736	0.4512	0.7092	0.6266
BankIslami Pakistan Ltd	0.5842	0.9524	0.6050	0.5842	0.9838	0.5902
Dubai Islami Bank Pakistan	0.6766	0.8036	0.8288	0.6766	0.8128	0.8196
Meezan Bank Ltd.	0.8028	0.9038	0.8964	0.8028	0.9002	0.9016
Burj Bank Limited	0.5550	0.7358	0.6992	0.555	0.7968	0.6418
Mean all banks	0.6400	0.7613	0.7883	0.65055	0.76312	0.8111
Mean Conventional banks	0.6493	0.7456	0.8053	0.66362	0.73547	0.8451
Mean Public Sec. banks	0.7273	0.8195	0.8640	0.72735	0.82000	0.8723
Mean Private Sec. banks	0.8400	0.8634	0.9708	0.84008	0.86896	0.9665
Mean Foreign banks	0.3962	0.5686	0.5929	0.43620	0.53436	0.7021
Mean Islamic banks	0.6139	0.8055	0.7406	0.61396	0.84056	0.7159

Source : Financial Statement Analysis of Financial Sector (2007-2011) report of SBP.
Note : TE=Technical Efficiency; PE=Pure Efficiency; SE=Scale Efficiency. This Comparison is based on Five years average values of Technical, Pure and Scale Efficiency while these values lies in between the range of 0 to 1.

V. Conclusion

The present finding of ratio analysis is based on efficiency and liquidity ratios. Each bank is evaluated and ranked on the basis of their ratio. The result under ratio analysis technique presents that conventional banks are performing well in an overall evaluation of banks. The finding of present study suggests that performance of conventional bank is better than Islamic banks. The results of this study are also consistent with (Rosly & Bakar, 2003; Safiullah, 2010) who found that conventional banks are better in term of efficiency and liquidity ratio.

Under DEA technique TE, PE and SE are calculated over the period of 2007-11 employing both input and output oriented measures. Under input oriented OTE (Overall Technical Efficiency) measure 3 banks First women bank, National bank of Pakistan and Habib bank limited are fully efficient whereas overall mean Technical Efficiency is 0.64 and inefficiency in utilizing input is 0.36. Input oriented measure show the level of input inefficiency that how the banks can reduce their inputs at a given level of output. The Technical inefficiency is due to Pure and Scale inefficiency. The empirical results of Pure and Scale efficiency are 0.7613 and 0.7883 respectively. Whereas managerial inefficiency is 0.2387 and inefficiency due to size is 0.217. Input oriented measure show a significant level of Technical, Pure and Scale inefficiency.

Output oriented measure show the level of output inefficiency that how a banks can increase their outputs at a given level of inputs. The result derived through output oriented measure of overall banks over the period of 2007-11 indicate OTE, OPE and OSE as 0.6505, 0.7631 and 0.8111 respectively. The result suggests Technical, Pure and Scale inefficiency as 0.3495, 0.2369 and 0.1889 respectively which means that there is considerable room to enhance output through given level of inputs.

Mean TE under both Input and output oriented measures of Islamic bank is 0.839 that is better than Public sector banks and foreign banks while lower than Private sector banks. Mean PE under input oriented measure of Islamic bank is 0.932 that is better than public sector banks but weak than private sector and foreign banks. The result of output oriented measure of Islamic bank is calculated as 0.922 that is again better than public sector and foreign banks but the performance of private sector is much better than Islamic banks. A SE of Islamic bank under both input and output oriented measure is calculated as 0.887 and 0.895 respectively. SE under both input/output oriented measure of Islamic bank is better than public sector and foreign banks but weaker than private sector banks of Pakistan. The results of this study are consistent with (Srairi, 2009; Mokhtar et al., 2008) who found that conventional banks are more efficient than Islamic banks.

VI. Limitation and Suggestions

Like any other study, the present study has also several limitations that justify the need to conduct more research. First, even we know that DEA technique evaluate efficiency by making benchmark from available information but it is not always possible for a bank to become fully efficient over time because, several input and output variables are being used that are difficult to manage. Second, Selected input and output variables might not be exhaustive and the dataset is limited so, future studies could enhance the scope of their study by adding other variables in their research. Third, this study employs ratio analysis and DEA technique to evaluate efficiency in Pakistani context. Future studies may enhance the scope by doing cross country analysis and comparing the efficiency score with other countries. Furthermore future studies of banking industry should compare efficiency score based on parametric approach along with non parametric and ratio analysis approach to check efficiency and consistency between and among them.

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APPENDICES

Appendix I : Efficiency and Liquidity Ratio

Sr. No.	Ratios	Formula
Profitability/Efficiency Ratio		
1	Spread Ratio	$= \frac{\text{Net Markup/Interest Income}}{\text{Markup Interest Earned}} * 100$

Spread ratio is a gap/spread of interest amount collected from lender and interest amount paid to the depositors. Higher the ratio means better the performance of specific bank.		
2	Net markup/Interest margin	$= \frac{\text{Interest income} - \text{Interest Expense}}{\text{Total Assets}} * 100$
Interest margin ratio is calculated by dividing net amount of interest income by dividing it with total assets to calculate the Net Interest margin as per Total Assets.		
3	Return on Equity	$= \frac{\text{Profit/Loss After Taxation}}{\text{Total Equity}} * 100$
Return on Equity ratio is an indicator to find out the value of profit as per Equity of each shareholder. It is direct measure to calculate shareholders profit by divided Profit after Tax over Total Shareholder's equity.		
4	Return on Assets	$= \frac{\text{Profit/Loss After Taxation}}{\text{Total Assets}} * 100$
Return on Asset Ratio is calculated to find out the value of profit after tax as per employed value of Total assets. This is a very important ratio to be calculated.		
5	Non-markup/Interest income to total assets	$= \frac{\text{Total Non} - \text{Markup Income}}{\text{Total Assets}} * 100$
Non markup income ratio is derived by extracting the value of non markup income and dividing it over total assets. It represents that how much income gained by excluding the value of markup.		
6	Net markup/interest income (after prov.) to total assets	$= \frac{\text{Net Markup/Interest income(After Provision)}}{\text{Total Assets}} * 100$
This ratio is calculated by taking interest earned and subtracting the value of provision. Later on it is divided over Total Assets to calculate the net markup interest value as per the value of total assets.		
7	Markup/interest expense to markup/interest income	$= \frac{\text{Markup/Interest Expense}}{\text{Markup/Interest income}} * 100$
A simple ratio that is calculated by dividing interest expense over interest income. It represents the proportionate ratio of income and expense.		
8	Non-markup/interest expense to total income	$= \frac{\text{Non Markup/Interest Expense}}{\text{Total Income}} * 100$
A non markup interest expense over total income is calculated by excluding the value of markup interest expense and interest income.		
Liquidity Ratio		
9	Cash & Cash equivalent to Total assets	$= \frac{\text{Cash} + \text{Cash Equivalent}}{\text{Total Assets}} * 100$
Cash and cash equivalent are most liquid forms of assets. This ratio presents the amount of most liquid assets as per ratio of total assets.		
10	Investment to Total Assets	$= \frac{\text{Investments}}{\text{Total Assets}} * 100$
It represents the amount of Assets that has been distributed in different projects to gain profit. It shows us the proportion of assets use up for investment purposes.		
11	Advances net of Provision to Total assets	$= \frac{\text{Advances Net of Provisions}}{\text{Total Assets}} * 100$
Another important ratio for banking sector to calculate the proportion of advances and assets.		
12	Total liability to Total assets	$= \frac{\text{Total Liability}}{\text{Total Assets}} * 100$
Total liability to Total assets ratio is an important ratio which show us the proportion of debts that are used to finance business as per ratio of Total Assets.		
13	Gross advances to deposits	$= \frac{\text{Gross Advances}}{\text{Deposits}} * 100$
This ratio is showing the percentage of Gross advances and deposits.		
14	Gross advances to borrowing & deposit	$= \frac{\text{Gross Advances}}{\text{Borrowing} + \text{Deposits}} * 100$
Another important ratio for banks that is used to calculate the percentage of Gross advances and deposits. To check out whether advances are more than the value of borrowing + Deposits or less than that.		

Source : Financial statement analysis of financial sector (2007-2011), report of SBP

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The Current Ethical Challenges in the Nigerian Commercial Banking Sector

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Abstract - Ethics and morals are seen as personal view points. No minding the viewpoint, south ethical and moral values are very relevant in the banking industry. Ethics consist of certain rules and standards of conduct recognised as binding in a professional body, association or organisation, which is binding in the members. This paper discusses the relevant functions of commercial banks, and the ethical challenges in the performance of these functions. It evaluates the current ethical challenges in the banking industry, discusses the roles various regulatory agencies, have to play, in the adherence to ethical values, and advances solutions that will combat the aforementioned ethical and unethical challenges for the commercial banks to survive, ethical and moral values must be respected and adhered to, and sanctions meted out to erring individuals, that disobey the rules. This paper is descriptive in nature as it examines, the ethical issues, challenges and recommendations involved in ethical practices by commercial bankers in Nigeria. It proffers far reaching solutions to these ethical/unprofessional challenges in the commercial banking sector in Nigeria.

Keywords : *commercial bank, ethics, unethical activities, BOFIA act, poaching, balance sheet, engineering, round training, CIBN (chartered institute of bankers of nigeria), APCON (advertising practitioners council of nigeria).*

GJMBR-C Classification : *JEL Code: E58, G21*

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Strictly as per the compliance and regulations of:

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I. Introduction

a) *The Nigeria Commercial Banking System and Ethical Challenges*

Hassan K. (2000) sees the commercial banks as profit making oriented financial institutions set up for keeping and lending money and other valuation items for the purpose of making profit. Commercial banks are joint stock establishments structured to conduct banking business; that includes the business of receiving deposits on current account, savings account or other similar accounts paying or collecting cheque drawn by or other business as the governor of the Central Bank of Nigeria may include as the functions of the commercial bank.

Ogunbi and Ogunseye (2005) opined that there are basically three types of banking system. These include, the unit banking system, which is a method where all the departments of the bank operate under the same roof. The evidence of such a system is found in the Community Banks which are established and located in communities to serve the banking needs of the communities. They cannot branch out.

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In the branch banking system, the head office of the bank is located in the commercial nerve centre of the country or political headquarters of the country or state of the promoter (Ogunbi and Ogunseye, 2005). Branches of the banks are spread across the nooks and crannies of the country but are connected online to the headquarter to facilitate smooth operation. The Nigerian banking system can be seen as the branch banking system save for the establishment of the community banks.

The universal banking systems came into being as a fall out of the globalisation and internationalisation of the financial system. Under this procedure a bank is established to perform some basic commercial, merchant and developmental banking functions, in addition to carrying out ancillary financial functions like insurance, stock broking, agency services and the likes.

From the above explanations, the Nigerian banking system is graduating from the branch banking system to the more modern and much more rewarding universal banking system, so that it can work within the global thinking in the new world economics banking and financial order.

Commercial banks, the focus of this paper are retails banks that deal in short term money and credit Ogunbi and Ogunseye(2005). They are seen as the institutions that deals in money and credit and receives deposits from surplus spenders (which could be any of the economic agents, household, firms or government) repayable partly by cheque and partly by cash.

Commercial banks by their nature in a developing country like Nigeria perform some basic function.

Hassan (2000), Ogunbi and Ogunseye (2005), Anyanwu (1993), Umoh (2004), Donli (2004) enumerated the functions of commercial banks in Nigeria as thus;

- Facilitating business transactions through the use of cheques,
- Performing ancillary services like the issuing of letters of credit, drafts, transfers on behalf of their customers, bills drawn on the authority of letters of credit; discount bills and promissory notes,
- Commercial banks assist in the acquisition of stocks, shares either in the primary or secondary markets with their experts in their investment banking units, they assist the customers to trade in the capital market.

- They act as attorneys, executors and trustees especially where the memorandum of association authorises it, or else they can take advantage of the default clause under S. 38(1) of CAMA 1990.
- Commercial banks act as agents and deposit mobilisation through current (chequing) or demand deposit accounts, saving accounts or time or fixed accounts.
- They are agents in safe-keeping of valuable goods, documents and customer particulars. This can be through bailment – bailor – bailee relationship over bailed goods like jewelleries, certificate of occupancy, educational and academic certificates and transcripts.
- They are agents of lending/credit creation on the satisfaction of core lending principles, such as suitability. Safety represents the fall back option or simply pure collateral. Ogunbi and Ogunseye (2005). Collateral takes the shape of stock or share certificates, landed properties or life insurance premium. Suitability deals with the situation where the purpose of the loan does not antagonise the prohibited areas i.e. the purpose of the loan should be in conformity with government policy, e.g. a loan to finance illicit trade or drugs or murder or any other form(s) of illegality will not be acceptable.
- Commercial banks act as agents in the payment system. Through this process, rent and rates, insurance premiums, periodic remittances to professional institutions, insurance companies (direct debit system), children in academic institutions outside the home country or states, and any other forms of standing instructions or direct debit system are performed.
- Assisting in saving mobilisations and as a catalyst for capital formation which is necessary for investment in the economy.
- Commercial banks facilitate trade and travels by making foreign exchange transactions available at competitive rate. Ogunbi and Ogunseye(2004).
- They encourage private, corporate and business people to purchase government treasury bills and development stocks which is a sufficient ingredient in boost investment in the Nigerian economy.
- They facilitate business transactions by making the use of cheques, bank-drafts and other financial documents possible. Ogunbi and Ogunseye(2004).
- They assist in providing short, medium and long term loans through the creation of loans and advances. This is used by the investors to develop the productive sectors of the economy.
- The commercial banks invest directly in the productive sectors of the economy through collaborative efforts and acquisition of shares in reputable blue chip companies.
- They give technical and financial advice to their clients in matters relating to investments, new acquisitions, portfolio re-structuring and diversification (Ogunbi, 2000).
- Commercial banks are agents in facilitating international transactions, through the procurement of foreign currencies, travellers cheques and affecting trade payments through their correspondent bank.
- Finally, they give reference reports on the integrity and financial standing of their customers where the customers are directly involved or indirectly requested to comment on their perceived assessment of their customer's capability to make reference report or stand ad referees to other people or institutions.

Among the Nigerian industrial sectors today, one can say that the commercial banking industry is the most visible and arouses the one of the most public interest (Adeyemo, 2012). This also raises the interest in the ethical challenges facing the banking industry. Olisimbye (1999) opined that the banking sector has become of the most critical sectors and commanding heights of the Nigerian economy with the wide implications on the level and direction of economic growth and transformation of Nigeria. But unfortunately presently, the much respected, cherished and time valued integrity and survivability of the basic functions of the Nigerian commercial banks have been called to question due to the unethical practices such like incessant frauds and accounting scandals. Ayozie (2012), Adeyemo (2012), Oseni (2006) opined that the incessant frauds in the commercial banking sector and unethical challenges stressed that the "spate of fraud in the Nigerian commercial banking sector has lately become a source of embarrassment to the nation, as apparent in the seeming attempts of the law enforcement agencies to successfully track down the culprits.

In the performance of these functions to their customers, certain ethical issues are raised. The determination of right and wrong, positive or negative performance, based on the individual or organisational involvement in the satisfaction of the banking customers is always questioned. The ethical, negative or wrong performances form the focus of this paper. What are they, and how can it be corrected.

Ethics in the context of this paper involves on what is right and wrong, or moral conduct pertaining to any aspect of the performance of the banking functions in Nigeria by the commercial banks.

Ethics consists of certain rules and standards of conduct recognised as binding in a professional body or an association. Obeng (1990).

Ethics and morality will be used interchangeably and considered synonymous with societal ideas of honesty, honour, virtue and integrity in matters of commercial banking in Nigeria.

Ethical issues are principles that serve as guidelines for both individuals and organisations.

Morality refers to certain standards of behaviour which makes a person to be regarded by his/her community as being virtuous or upright in character. Obeng(1990).

Morals are beliefs or principles that individuals hold concerning what is right and what is wrong in a community or society. Clow and Baack(2004).

Ethics consists of certain rules and standards of conduct recognised as binding in a professional body or association. The banking, marketing, legal, advertising or medical associations has certain rules of conduct that guides the members in the performance of their professional duties to the public at large. These ethics specify the duties the practitioners of these professional bodies owe to themselves, to each other and owe to the general public in practising their professions. Obeng, (1990).

Chandan, et al (1990) defined ethics as a "theory of morality which attempts to systematize moral judgements and establish and defend basic moral principles".

As this definition suggests, moral principles and moral judgements are also subjective in nature and depend much upon the value system of an individual or society. But how do you determine the validity of the value system of the individual or the judgement about his/her ethical behaviour.

For example, killing or lying in itself may be unethical in some religions, but acceptable in others as a means of entering heaven. But killing or lying to save a life might become ethical. A terrorist to a government or a nation may be a killer, armed bandit or an immoral criminal. But to his own terrorist, religious or ethnic group, he/she is regarded as a freedom fighter or a hero. Killing someone may be religiously unethical, but nations yearly decorate war heroes based upon the number of enemies killed in war situations, or in counter terrorist activities.

From the above discussions, it is somehow easy to define ethics, but a bit difficult to identify what is ethical and what is not (unethical);

- How do we determine what is an ethical conduct in the commercial banking industry?
- Does ethical conducts in the banks have a universal application?
- Does commercial banking ethical conducts differ in time and from one bank worker to another from one time duration to another?
- Does the concept of ethical conduct in the bank depends on the religious background of the sponsors or owners of the banks?
- Does ethical conducts in banks vary with time?

These questions and many more becomes very expedient because the wearing of clothes (mini or maxi skirts, trousers and certain blouses are tolerated by certain religious sects and abhorred by others. What constitutes the definition of decent dressing? Does religion have any role to play in the commercial banking industry or in determining ethical conducts?

Based upon these questions, controversies and dilemma about the universal, acceptability of what constitutes ethical standards especially amongst the professional groups. Chandan (1990) further asked a number of related questions to solve the puzzle on ethical behaviour.

- Is there a set standard against which ethical standards can be measured? Or is there a situational code of ethics according to which the ethical merits of an activity or professional body can be measured and evaluated?
- Is the evaluation of ethical and unethical conduct(s) consistent among cultures and countries?
- Does it vary from one individual to another? Who (group or person(s)) decides on what is right or wrong?
- Is it the individual(s) family, professional institutes, associations, religious bodies (faiths) or the community?

Chandan (1990), Ayozie (2012), Chandan, et al (1990), Clow and Baack (2004) opined that the concept of ethics and morality does not only differ in interpretation and application, but also differs from culture to culture, and from one community to another. With changes to the moral values over time in Nigeria, Ayozie (2012) reported of study in the Nigerian Guardian (2012) Newspaper on certain subjects.

For example the issue of gay/same sex marriage was illegal 150 years ago in America, but has been legalised and acceptable as a way of life and marriage in the United States, United Kingdom, France and other European countries, as President Obama/ Prime Minister David Cameron is forcing and cajoling African countries to accept gay marriages. In churches in the western world and United States gay priests are allowed to preach and administer marital vows. But such practices are not only illegal in African countries, especially Nigeria, but morally and culturally unacceptable by all the religious faiths, including traditional worshippers. Gambling used to be widely condemned in the past. Now even the churches and individuals run baazar, bingo, auction, and lottery games to raise fund which is a form of gambling. Pre-marital sex was a taboo and morally unacceptable in the past. Today, couples live together and have children outside wedlock/marriage (live-in-lovers) or live as partners.

So how do we determine the validity of the value system of the individual or the judgement about the ethical behaviour?

In different countries and economies there is a lack of consensus about what is an ethical conduct.

Consensus notwithstanding, I will identify banking practices, and commercial banking functions that are susceptible to ethical challenges in the modern day Nigeria.

The absence of moral values that has permeated every aspect of the Nigerian life, has equally directly and indirectly affected the financial services industry and in this case the commercial bank. The customers and the public believes that majority of the malpractices, bank frauds, and dishonesty in the commercial banks are perpetrated by insiders or with the very active connivance of the bank staffs and outsiders (customers). The multiplication and spread of bank frauds, unethical and unprofessional conducts presently in the commercial banks and within all the cadres of bank staff (Directors, Seniors, Middle and Lower Bank workers) is gradually eroding the public confidence in the Nigerian banking system.

II. What are These Unethical Practices

Unprofessional and unethical practices and behaviour are summarised as the abuse of the confidence, trust and interest the customers and public reposes in the directors, managers and staffs of the commercial banks.

These unethical practices are reflected in various forms and levels in the commercial banks Donli (2004), Ayozie (2012), Business Day (2004). Some and by no means the exhaustive unethical practices include the following:

a) *Having Undue Access and Tampering with the Customers' Accounts*

There had been reported cases in the print media, followed by customer complaints against undue access and manipulation of their accounts, both active and dormant, by the bank staffs. Bank staffs engage in unauthorised withdrawals from customer's accounts, unauthorised overdrafts, unauthorised lodgements and operations of the account, fictitious charges, payment of cheques and other banking instruments of commercial bank personnel against customer accounts, and the operation of fictitious accounts, or operating the accounts of dead bank customers. In most case customers that have relocated overseas or to other part of Nigeria, have had their bank account closed or made dormant. Customers who for job loss, have not operated their accounts for sometimes, have had their accounts make dormant by some dubious bank workers. To conceal most of these atrocities, commercial bank workers of different cadres engage in the manipulation of book keepers throw-out-items operated unethically and dubiously just for account reconciliation.

b) *Conversion of Cheques or Cheque Conversion*

Many bank directors and top management staff have been prosecuted by the Economics and Financial Crimes Commission (EFCC) for this type of sundry offences and others. EFCC have gained convictions and assets recoveries and plea bargain from very top bank official (e.g. Cecilia Ibru). Many bank in the past have had their banking licences revoked (Peak Merchant Bank in 2004). The commercial banks recklessly and dubiously converted FIRS cheque valued at Billions of Naira. The bank officials exploited the loopholes in the clearing system to divert funds into accounts other than that of the payee stated in the cheque. The clearing process which is only known to the bank workers, only confirms that the drawer's account is debited and funded. There was no control outside the collecting bank to ensure that the proceed and funds is credited into the right account. Because of the prevalent moral decadence in the Nigerian society and low ethical standards, this obnoxious malpractice thrives in the commercial banks. Some financial institution and commercial banks engaged in name-dropping of reputable multinational and blue chip companies to raise fictitious commercial papers and the funds are later converted for other personal and non-banking needs.

c) *Outright Breach of Trust*

Some commercial banks have in the past dishonoured their own managers cheques. This exemplifies the poor internal control system of the commercial banks although they might claim to have a genuine reason for their actions. Banks have also out-rightly refused to perform on crystallised guarantees, claiming that it will amount to loss.

d) *Commercial Bank Frauds*

Frauds can be described as a conscious premeditated action of a person or group of persons with the intention of altering the truth and or fact for selfish personal monetary gain. It involves the use of deceit and trick and sometimes highly intelligent cunning skill. The action usually takes the form of forgery, falsification of the documents and signatures. It also involves outright theft. Employees and customers of banks engage in certain degrees of fraudulent practices throughout the world. Fraud is not an inhuman behaviour.

Perry (1984) examined fraud and forgery as not only forging of another person's signature, but also the act of counterfeiting of coin, notes or documents, falsifying a document whether in a material particular or in copying of another person's signature or illegally using another person's signature.

Randiwkz (1979) classified fraud with white collar crime and defined them as illegal acts characterized by deceit and concealment, force or violence or threats thereof within the broad class of white collar crime.

Young (2002) hunted of the ample evidence which exists to show that individual integrity of those managing/running the commercial banks are not a higher level now. Ogwuma (1985) stated that although the existence of frauds in the banks is not an uncommon or unexpected behaviour, its prevalence now is very worrying.

The term fraud is defined in different ways by different authors. Boniface (1991) defined fraud as "any premeditated act of criminal deceit, trickery or falsification by a person or group or persons with the intention of altering facts in order to obtain in due personal monetary advantage. It usually involves the perpetration of some forgery or falsification of documents or illegal authorisation of signature. The certified fraud examines in Adeyemo (2012) defines fraud as illegal acts characterized by deceit, concealment or violation of trust. These acts are not dependent on the application of threat of violence or of physical forces. Frauds are normally perpetrated by individuals and organisations to obtain money, property or services to avoid payment or loss of services or to secure personal or business advantage. The Collens English in Adeyemo (2012) defined fraud as "deceit, trickery, sharp practice or breach of confidence, perpetrated for profit or to gain some unfair or dishonest advantage. Ojo (2008) concluded by stating fraud arises when a person in a position of trust and responsibility digresses from some agreed standards, breaks the rules to advance his personal interest at the expense of the interest of the public (customers).

From these definitions, it is apparent that fraud is a noticeable unethical practice by a privileged bank worker who takes undue advantage of a vulnerable/ weak customer. Frauds have many classifications but this paper restricts the classifications to four noticeable areas. Adeyemo (2012) classified them as;

a) Insider non-management fraud – These are perpetrated mostly by bank employees.
b) Outsiders/Insiders – This involves the collaboration of the bank staff and outsiders as explain below.
c) Outsiders fraud – This includes the customers and/or non-customers of the commercial banks.
d) Management frauds – This involves the management of the commercial banks.

For the purpose of this paper which involves the unethical challenges of commercial bank works, the insider, outsider/insider, and the management frauds would be explained. This discussion is just to reveal the unethical challenges facing the commercial bank workers.

a) The insider or non-management frauds are perpetrated by the employees and non-management staff of the commercial banks. This entails the application of fraudulent means to obtain money or other property from the commercial bank. Robertson (1996), Olatunji (2009) included that insider frauds in the commercial banks involves falsification, lying, exceeding authority, violation of the bank/employers policies embezzlement of the bank funds using in the form of cash or other assets.

Boniface (1991) some of the manifestations of employee frauds in the commercial banks includes the following unethical practices;

- Suppression of cash/cheques.
- Computer fraud which takes the form of alteration of the programmes or application packages, or bursting into the computer system through remote sensors. Diskette or flash drives can also be tampered with by bank employees, so as to gain access to unauthorised domains or give credit to accounts for which the funds were not intended. This kind of fraud can remain undetected for a long period of time.
- Diversion of fund by bank staff. Here the bank staff diverts customers deposits and loan repayments, tap customers funds from interest in suspense accounts from the banks.
- Cash thefts from the Tills and ATM machines by banks staff, or with connivance by the bank staff.
- Stuffing of fake/counterfeit currency notes in ATM machines by bank employees.
- Forgeries of customer's signatures with the intention of illegally withdrawing money from the account with the bank.
- Using forged cheques to withdraw money from customers' accounts.
- Opening and operating of fictitious account to which illegal transfers could be made and false balances credited.
- Claiming of overtimes for hours not worked.
- Lending to fictitious borrowers affected through fictitious accounts opened at a branch of the bank.

b) Outsider/Insider fraud – This involves a collaboration of bank employees/staff and outsider and customers for the purpose of defrauding the bank. For any bank outsider/customer to succeed, more often than not, there must be an insider who is providing information and other logistic support to the outsiders to succeed. (Adeyemo, 2012).

c) Management fraud – This type of fraud is normally committed by the management staff of the banks, which normally comprise of the board of directors, chairman, directors, managing directors and general manager. This is an embarrassing unethical practice as funds are held in trust for the investors by top management. The victims of this fraud includes the investors and creditors, and the medium for perpetrating this fraud is through the financial statement. The reasons for this type of fraud includes the 'painting/showcasing the bank in good light in the eyes of the regulatory bodies like CBN, NDIC (Nigerian Deposit Insurance Corporation), NASB (Nigerian Accounting Standards Board) and the need to pull in more investment from both the existing and potential shareholders of the organisation. Management always commit this fraud which is an unethical conduct.

Fakunle (2006) defined management fraud as the manipulation of records and accounts typically by the commercial bank's senior staff with a view to benefiting in some direct and indirect ways. Deception and deprivation are the main elements fraud, and management fraud satisfies this requirement.

Ajisebotu (2006) stated that management fraud has some basic elements which are;

- The damage suffered by the victim.
- A material false statement.
- Knowledge of the falsification (statement) and lastly the reliance on the false statement by the victim (customer).

The Association of Certified Fraud Examiners (ACFE) opined that this fraud manifests itself through overstatement of assets and revenues or understatement of liabilities and expenses, but is normally carried through five methods;

- Concealed liabilities and expenses,
- Fictitious revenues,
- Improper and or inadequate disclosure
- Improper asset valuation
- Timing differences

d) The outsiders frauds are perpetrated by customers and non-customers of the bank and the common methods according to Onkagha (1993) are; advance fee fraud (a.k.a. 419), forged cheques, cheque kitting, account opening fraud, counterfeit securities money transfer fraud, letter of credit fraud and clearing house fraud.

III. Why are Frauds Committed in Nigerian Commercial Banks (Causes)

Ojo (2008) classified the causes of fraud and forgeries in commercial transaction, under to generic factors. The causes include the unethical involvement of commercial bank staff which is the focus of this paper. two classifications are: Ojo (2008), Endogenous or institutional factors and Exogenous or environmental This applies more to the institutional factors. The factors.

a) The endogenous/institutional factors which covers the focus of this paper and are unethic al practic e by the bank staff are;

- Poor book-keeping by bank staff.
- Genetic traits – which are trans-generational (or inherited) attributes possessed by the staff, that propels them (him/her) to engage in bank frauds e.g. some inherited it from their parents, or pathological kleptomaniacs who steals just for the fun of it or for conquest are not suited for professional bank jobs.
- Inadequate infrastructural facilities, e.g. poor communication systems and incessant power failure results to a build-up of unbalance postings.
- The overcrowding of office space(s) encourage staffs to commit bank fraud.
- A weak accounting and poor weak internal control system.
- Ineffective/poor internal auditing system.
- Inadequate supervision of subordinates by superiors.
- Staff disregards for ("KNC") Know your customer rule.
- Poor data base management and information communication technology (ICT).
- Conflicting, ineffective, and helpless personnel policies.
- Disparity in the salary structure between certain categories of staff with almost te same qualification e.g. HND and BSc graduates.
- Poor salaries and conditions of services.
- General frustrations occasioned by management unfulfilled promises to the staff and the bank union members.
- The employee/staff refuses to abide by laid down procedures, including sound ethical conduct, and most times without any sanction or penalty.
- Failure to engage in regular call-over.
- The commercial bank's reluctance to report fraud and place a disclaimer on convicted ex-staff due to the perceived negative publicity and destruction of the bank brand/image. This encourages more fraud.
- The banking experience of employees.

Commercial bank frauds occur more and at a higher rate of recurrence among staff with little experience and knowledge in financial matters. The more experience and knowledgeable a bank employee is, the less probability that frauds would pass such staff undetected unless with the active support of that staff (Adeyemo, 2012).

The literature of Alahi (1994) identified fraud causes under two headings or classifications. These are;

i. Institutional factors
ii. Societal environmental factors

The institutional factors are those are traceable to the internal environment of the commercial bank, while the environmental/societal factors include those outside the banking industry.

Some of the common causes in Alashi (1994) of the institution fraud factors are;

- Inadequate infrastructures.
- Delays in procuring documents.
- Lapses in management control systems of corporate customers.
- Negligence by the customer.
- The huge volume of work done by the staff, which makes it difficult to detect the bank frauds by staff.
- Few bank workers, doing heavy volume of work.
- Low banking experience of workers.
- Inadequate/lack of training.
- Very poor management/management style.
- Poor recruitment system.
- Poor security arrangement.
- Unnecessary use of sophisticated accounting machines, making human interaction and supervision minimal.
- Frustrations on the job and lack of motivation to work.
- Lapses in the management control systems of corporate customers.

The societal/external environmental causes are;

- Slow and tortuous legal processes delays in the prosecution of fraud cases. A frustrated party due to long adjournments and delays might likely abandon a case, and this will lead to miscarriage of justice.
- Non/late reporting of frauds to the police or supervisory bodies.
- Societal emphasises on wealth and money as a symbol of achievement. Ayozie (2012)
- Low societal values/moral.
- Lack of specialised manpower (i.e. forensic investigators) for the investigation of fraud.
- Lack of effective punishment/deterrent.
- Fear of negative publicity to the banks.
- Frequent adjournment of court processes. This night frustrate an applicant and favour the defendant who committed the fraud.
- Fraudulent activities of prosecuting officers and connivance with the judges to release some defendants accused of fraudulent activities.
- Unnecessary and abuse of the plea bargaining process by the bank workers and prosecutors.

b) In all the classifications of fraud, the authors all agree that fraud leads to loss of money which belongs to the customers or the bank. The image and reputation of the bank is also negatively affected as customers' morale is low. The loss of money lead to reduce level of resources, which hampers the operation of the bank and this might lead to loss of patronage.Other effect includes loss of confidence in banks by the customers. So a commercial bank should set good ethical conduct aimed at promoting a healthy banking habit, which will be profitable to the bank and to the customers (Ayozie, 2004).

Majority of the commercial banks have been affected by one form of bank fraud or the other, by insider bank staff. Bank frauds come in various degrees and forms, and have been committed by bank staff at every level, but the greatest fraudulent acts are generally perpetrated by the experienced bank staff of most commercial banks who have gained sufficient knowledge, trust and control over a specific area, department and branch of the commercial banks. The risk to the banks reputation in the nation due to bank fraud is not quantifiable, but mostly enormous, so the risk to the image of the bank by bank staff who engages in fraud should be an ongoing concern. The saving grace is that most of these bank losses occasioned by bank frauds are covered by the relevant insurance policies. There have been reported cases of commercial bank forgeries and fraud which is on the steady increase. The losses that emanated from such fraudulent practices as payment on forged instruments, diversion of customer funds into other accounts, especially those owned by the bank staff and their accomplices, defalcations, illegal transaction in travellers cheques using active and dormant customer accounts without necessary authority and approval, and recycling of cheques, are most common cases of fraud and unethical practices by the bank staff. Most banks because of image, reputations and customer perception failed to report cases of fraud and forgeries to the relevant authorities like EFCC, CIBN, CBN, and to the Nigerian police authorities, as the actual quantum of commercial bank forgeries and fraud in the system yearly, far exceeded the figures reported by the Nigerian media. In majority of these cases, there were the actual involvements of insiders, most who are bank staff, and experienced directors of the bank.

c) Credit Facilities Granted Internally (insider related credits)

The Banks and Other Financial Institutions Act (BOFIA 2002) provides against the abuse in granting credit to insiders in a commercial bank or financial institution. The Act (2002) defines who a director is, and the specific conditions for granting credit to such persons. This and other measures by the regulatory authorities notwithstanding, non-performing insider related credits more than any other factor, accounted for the collapse of most of the commercial banks that went into liquidation and some other ones that were

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recapitalised in the last ten years. It went so bad that one or two directors accounting for over 90% of a bank's entire loan portfolio. Even when the danger of such concentration is brought to the notice of the bank directors (perpetrators), there is obvious reluctance to bring the indebtedness down to within the single obligor limit. Business Day (2004). This practice is made more virulent by concealment which the regulators might not detect early enough, until the health of the bank has been terminally impaired. There is also the practice of endless role-over of non-performing insider credit at very ridiculous lower rates of interest, to favour the perpetrators.

d) Dealings in Securities by Insiders (Bank staffs and their associates). Insider Dealings in bank Securities

With the crash of Enron, Worldcom, and the liquidation of most prominent commercial banks in Nigeria, there is now the revelation of unreasonable exuberance in the capital market. The crash had a tremendous impact on the U.S. and Nigeria capital markets, with the revelation of insider dealings, including abuses relating to stock options. The Securities and Exchange Commission (SEC) in the past ten years had black listed many employees of various stock broking firms for gross insider abuses and unethical and unprofessional activities, which includes clothing shares of multinational and blue chip companies and selling the shares to the uninspecting members of the Nigerian public. There are also reported cases where commercial bank staff engages in unethical and authorised purchases and sales of securities, placement of bank funds by treasury offices in real, phony finance houses and terminally sick banks, and engaging in unauthorised lending to distress borrowers for their family and personal gains.

e) Unauthorised Tampering with Customers' Accounts

There had been reported cases by bank customers on the manipulation of their personal or corporate accounts by bank workers. This includes unauthorised withdrawals of funds from customer's accounts, fictitious charges, unauthorised overdrafts and payment of cheques of bank personnel against customer accounts or fictitious account so to conceal these nefarious atrocities, bank workers engage in the manipulation of book-keepers thrown-in-item, computer rejects and other items needed for account reconciliation.

f) Meeting the Commercial banks Capitalisation Requirements

The Central Bank of Nigeria (CBN) does not accept borrowed funds for bank capitalisation. Evidences abound in the recapitalised commercial banks verification that the Director and promoters disguise borrowed funds, just to satisfy the requirements of recapitalisation. There are also reported cases of commercial banks evacuating cash from their bank vaults, and using that to obtain drafts of other banks for the sole purpose of acquiring shares in the bank.

g) Over Ambitious and Unrealistic target setting for bank staff (Females in Particular), Unrealistic profit and Liability Targeting by the Commercial banks

It is the practice in most commercial banks especially the new generation banks, who set unrealistic, unattainable and unachievable goals, profit and liability targets for their staff, most especially for the young, mobile, pretty female staff. These includes mandating the females and in most cases the males to mobilise 100 new customers in a week or month, with a clearly, specified proviso that the staff might not have his/her appointment confirmed if the unrealistic targets is not met within the time limit. Most female staff have been given the target of mobilizing a minimum of N10m per week, with the confirmation of appointment and probably the promotion tied to this unachievable high achievements and targets. A lot of female staff have been sexually assaulted, raped and killed all in a bid to achieve the targets, and most have lost their jobs because of the difficulty in achieving such targets. Commercial banks through the use of 'cost of funds' as identified in their books have abused the payment of brokerage to bank staff, based on the principal sums mobilised. To retain their banking jobs, and ensure progress in their career, bank staff resorts to unethical and unwholesome practices, like "corporate pro-stitution" and sleeping with their clients, so as to attain this unrealistic targets, while at the same time keeping their eyes open for greener pastures. In such an atmosphere and situation, survival of the fittest is the watch word, where ethics, morality, dedication and professionalism are thrown to the waste bins.

h) The Non-observance of know your customer Procedures

The standard practice universally in commercial banking is that the staffs and the banks must know their customers. This is often breached when accounts are opened by proxy, or when a person that is unknown by the staff or the bank opens an account, especially in this era of aggressive marketing and deposit mobilisation to meet the unrealistic and unachievable targets. The surrounding implication, is that such accounts could be used for nefarious/ dubious transaction transactions illicit trade, money laundering and terrorism, and then abandoned without the banks being able to trace the owners of such accounts. Having sufficient information about the customers and making use of that information is the most effective strategy against the usage of back accounts for illegal activities such as money laundering and for terrorism. In addition to minimizing the risk of being used for illicit and other nefarious activities, this protects the bank against fraud, reputation and other

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financial risks, and enables individual commercial banks to recognise any suspicious activities and accounts. This made the CBN in the past to introduce the concept "know your customer – (KYC)" manual for commercial banks and other financial institutions in Nigeria. Not minding these procedures enumerated above, a lot of commercial banks deals with unknown individuals, customers and corporate bodies that brings to the banks very large cash deposits, running into billions of naira, and which are never reported to the CBN, ICPC, NDLEA and the EFCC as required by the law, and the new cash life banking policy. Such unknown accounts have been used for illicit activities, including terrorism, drug trade and money laundering, after which the owner(s) go underground without a trace.

i) Deceptive Advertisements and Opening of New Branches :

Section 6(1) of BOFIA Act (2004) (as amended) categorically states that "no bank may open or close any commercial bank branch office anywhere within or outside Nigeria, except with the prior consent in writing of the bank. But recent event events have made mockery of the law as there are several cases of commercial banks opening cash centres, ATM centres and branches without getting the approval of the Central Bank of Nigeria (CBN). Some branches operate for some years before their requests for approval are forwarded to the Central Bank of Nigeria (CBN). Also there are numerous cases of acquisition of properties, shares in companies, establishment of subsidiaries, without getting the prior approval of the CBN. In most of the cases, these commercial banks did not have the necessary free funds to support their investments. Not minding the clear guidelines by the CBN and the Advertising Practitioners Council of Nigeria (APCON) in respect of financial adverts and financial sales promotions, there were many deceptive adverts in the past, on sales promotion, and non-existing products, and adverts that did not reflect the realities on ground. Many commercial bank adverts use exaggerated claims and puffery, Ayozie (2012) e.g. a new/or marginally capitalised bank describing itself as very solid or the first to introduce certain non-existing products. The CBN and APCON have had cause in the past to stop some financial adverts by advertising agencies, on behalf of their client i.e. the commercial banks.

j) Unhealthy Competition and staff Poaching among the Commercial bank

The continuing expansion of the banking system at a pace faster than the development of competent hands results in undue competition for available experienced employees/bank staff (Business Day, 2004). This leads to staff poaching, head hunting and excessive inducement in the area of remuneration and other perquisites (Jumbo housing grants/loans, upon engagement, signing – on bonuses and foreign holiday trips for the workers and their families. This invariably leads to an excessive rise in the banks operating costs. Poaching if not properly checked can be injurious to the operations of the commercial banks that have suffered the "brain drain and head hunting activities. (Business Day, 2004). These commercial banks; are left with the additional burden of having to recruit and train the staff, and having to wait for a long time before these staffs become experienced enough to master the jobs. Critical and very useful secret and open information can later be used as a competitive strategy, which will be taken from the old company to the new one. There is also the problem of the appointment of employees/staff who lacked adequate banking experience and qualifications for the position offered them. This invariably discourages the commercial banks from training their staff, and consequently the overall skill level of the banking industry is affected. Most commercial banks do not follow rigorous employment and interview processes. Employments are based solely on the Director's/Sponsor's recommendation on gold platted complementary cards and not on academic/professional qualifications or experience on the current or previous jobs. Other employees are recruited based on the sexual relationships between the bank director and the employees. This invariably has affected the ethical conduct of such unqualified staff. Another problems is the running down and bad mouthing of competitors through deliberate misinformation on mass media, and the internet, such as the circulation of phoney/false list of distressed banks, misuse of confidential bank/customer confidential information gained through banking operations and interactions with other in the banking industry.

k) The late/non Remittance of duty Collections and vat

Most commercial hardly comply with the requirement that they should remit the custom duties and VAT (value added tax0 to the Central Bank of Nigeria (CBN) with the stipulated period of one week (seven days). The CBN and the federal ministry of finance had in the past blacklisted some commercial banks who delayed remittance or deliberately hold on to government funds of VAT and custom duties. This is clearly a breach of law and contract and is considered an unethical practice.

l) Balance Sheet Engineering

Business Day (2004) – Most commercial bank have this problem of transparency and accountability. There are reported cases of deliberate rendition of inaccurate returns to the regulatory authorities like the state or federal ministries of finance and the Central Bank of Nigeria (CBN), with the intention and purpose of misleading them, and benefit from such deceit. The

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commercial banks manipulate their balance sheets with the intent of concealment of deposits to reduce cash reserve requirements reclassification of loans to other sectors of the economy as lending to the real sector, so as to benefit from the lower cash reserve requirements of 9.5% (per cent) instead of 12.50% (per cent). They also conceal to avoid liquidity ratio penalties, for the deceitful purpose of understanding the volume of deposits in order to evade insurance premium payable to the Nigerian Deposit Insurance Corporation (NDIC). In the past, the NDIC sought the assistance of the CBN to debit the accounts of some commercial banks that refused to pay the insurance premium due, after the discovery of hidden deposits by banks examiners and finally for the classification of balance sheet items as off-balance sheet items.

m) Indecent Dressing by Bank Employee

The banking industry by nature is a conservative place that has a peculiar but acceptable decent type of dressing both for the males and females. Very recent observation reveals that young female graduates have been given over ambitious and unrealistic marketing targets. In a bid to mobilise funds and meet up with the unrealistic targets, they wear "micro mini skirts" and some revealing tops just to entice their male clients and use that as an avenue to meet up with the fund targets. Many staff have been sexually harassed and abused because of the indecent dressing. The male counterparts tattoo part of their bodies, wear tight fitting trousers and polo shirts so as to entice their rich female clients. Clients have complained of this unconservative and unethical dressing by all categories of bank staff, who is a bid to mobilise funds among their clients with their dressing.

n) Foreign Exchange Malpractices

Most commercial bank officials used the foreign exchange for sharp malpractices and as an avenue to get rich quick. They do this by; (i) selling forex to customers without the customers having the required cover for such bids or selling to ghost customers who did not even apply for the forex, (ii) round tripping practices involving suspicious dubious documentations to support the opening of foreign exchange accounts by either customers or bank workers.

o) There are growing incidences of fake currency either printed, distributed and inserted to be dispensed in the Automated Teller Machines (ATM). The Central Bank of Nigeria (CBN) Governor Sanusi (2013) provided an alarming figure of the growing trend of currency counterfeiting in Nigeria. Recorded counterfeit notes per one million pieces processed were about 3.9 pieces in 2007, 6 pieces in 2008, 8.4 pieces in 2009, 7.3 in 2010, 5.4 in 2011 and 8.4 pieces in 2012. The dispensing of this fake Nigerian currency notes by the ATMs is made possible with the connivance of fraudulent bank staff and their external accomplices. The Get Rick Quick Syndrome prevalent in the society has entered the banking profession, making bank staffs to partake in printing and distributing counterfeit currencies.

p) Strong ethical orientation and training will inculcate in the bank staffs, the virtue of honesty, hardwork and fear of God. Currency counterfeiting is not only illegal, can lead a staff to jail on conviction, can also adversely affect the image of the individual concerned and the corporate image of the bank. Also, it is recommended that for every 5 – 6 years, the federal government, through the CBN has to re-design the currency notes, because after that period, counterfeiter tend to catch up with the printing of fake/counterfeit currencies.

q) Commercial bank management should collect current and relevant references about the staff. These references should be constantly updated. The only caveat is that references are more relevant the time/day it was given because an honest worker in the bank today might change due to societal or peer influences.

IV. How do we Correct the Unethical Conducts or Improve on the Ethical Standards in Nigerian Commercial Banks

In order to improve on the ethical climate in the banking industry, a plan of action is necessary, and this plan of action can be categorised into three different levels and areas where each level has a significant contribution towards the formation of the entire ethical system. Ayozie (2012),Donli (2004), Business Day (2004). Some of these measures are contained in some cases the financial and advertising laws, and the ethics, and code of conduct of the Chartered Institute of Bankers of Nigeria (CIBN), the Advertising Practitioners Council of Nigeria, the National Institute of Marketing of Nigeria, the Central Bank of Nigeria (CBN) and the EFCC manuals on financial institution, amongst many others.

V. On an Individual or Personal Level Promotional Activities' (Bank Advertisements, Sales Promotion and Dressing Code)

The individual bank consumer can do a lot to protect him/herself from the effects of the unethical and misleading adverts and banking influence. We have to understand that all customers do not react to the same stimulus in a similar manner. Hence, morally offensive dressings, and advertisements must be so considered after an objective evaluation of the intent and content of any financial/misleading advertisement, or the expressed intent of any male/female bank worker who dresses provocatively or unethically. This means that the advertisement or the style of dressing must be explicitly manipulative and provocative, and the consumers morally and ethically balanced so as to be consciously aware of such intended manipulation and provocation. Chandan, et al, (1990), Ayozie, (2012). Based on these assessments, a bank consumer has many alternatives to choose from. These are;

a) If the customer believes that the financial advertisement is misleading, dubious or contains a non-existing product, or if the sales promotion is deceitful, he/she may stop patronising the bank, start with a boycott of their services and advice his/her friends to act likewise. Simply they will engage in consumer boycott of the banking services. If there are sufficient numbers of people thinking in the same manner, then the commercial bank will get the message, change the misleading advertisement or sales promotion, so as to win back the loyalty and confidence of the bank customers. There had not been any noticeable customer boycott of any financial/banking service in Nigeria.
b) The customers should write to the commercial bank to lodge their complaints. The customers individually or in consortium with other customers or consumer groups may write to the bank, APCON, CIBN, or CBN raising the issues in a specific way. The writer had had cause to complain to the BARCLAYS Banks in London and NATWEST Bank, and the complaints were promptly looked into and resolved satisfactory. Most reputable banks and their managers take complaints seriously, and take necessary action in order to correct the anomalies, and also to keep the customer's goodwill and loyalty and to maintain the brand.
c) Write to a media house (print or electronic). Many houses (print, electronics and the societal network sites) have consumer oriented columns, where they encourage customers to lodge their banking service complaints. They are also phone in programmes on Radio and Television stations where customer's complaints are looked into. We have the social network sites where almost all the commercial banks are hooked up with and a section for FAQs (frequently asked questions) and consumer complaints are answered via the internet. Most of these media houses publicly take up the cause on behalf of the customers.
d) Write directly to the public affairs or customers complaints department of the commercial bank with the complaint to be favourably looked into.
e) File a complaint with the proper regulatory agency. There are several legal bodies which oversee the relationship between the customers and the commercial banks and also check the truth, decency and legality of financial advertisements. Such regulatory body includes the CBN, APCON, SERVICOM, CIBN and the Consumer Right Protection Agency of Nigeria. These bodies could assist in getting some remedial action from the commercial banks for the customers, if there is a justified reason(s) for it.
f) Write to an appropriate superior in the commercial bank, or make a verbal complaint about an unsatisfactory product or service by the commercial bank to a superior authority in the banks. The attention given to the complaint and the remedial actions recommended by the superior authority will determined whether the complaint could be taken further or resolved at that particular point.
g) Finally, the customer can see a solicitor or lawyer for an individual or group action suit, depending on the problem. This can be expensive and time consuming, but if the complaint is a very serious one, like the tampering of personal accounts or lodgement of suspicious funds for money laundering, then it can be a very useful action. For example, if money have been lodged and debited from an account without the owner'sconsent, such account owner should report such transactions to the bank, senior staff, the regulatory body or to the Nigerian Police.

VI. Organisational/Corporate Level

This is the most important level of which the management of the commercial banks can play an important role in shaping the ethical climate of the banks. Very top management and experienced bankers should play a strong ethical role models and mentors for the younger ones so as to see that sound ethics permeates all the levels of the organisational hierarchy. One way to achieve high standards of ethical conduct for the young bankers is to set goals that are achievable, realistic and not over ambitious, because setting too high goals, unrealistic targets, or over ambitious fund mobilisation targets might induce some employees, especially the females to use unethical methods to achieve them. This is especially true at the marketing level. The ethical concept must be clearly defined and communicated at all levels, and that the management must ensure that these concepts are respected and followed through ethically and responsibly. So if the top bank management and directors establishes a policy of ethical conduct for all members of staff and enforces this policy, then the best opportunity exists for proper ethical conduct in commercial banking and the marketing of financial services. In addition, without the framework of general organisational policies, the bankers themselves should develop personal standards of ethical, moral or professional conduct, and abide by these norms, without been coerced to do so. The development of strong moral, personnel, ethical and professional code on the part of the commercial bankers is further strengthened by certain motivations which are both internal and external. Some of these motivations are:

a) Civic Responsibility – The commercial bank as an organisation and their employees (bankers) are part of the society in which we live and presumably they are highly respected members of the community. Any unethical banking behaviour would have an adverse reflection on their integrity, reputation and honour. Since it is not always possible to separate social life from business life. So a conflict between the social role and the business role would have a negative impact on the banker's civil role to the society. So commercial bankers consider it their civic role/duty not to offend any segment of the community around them. They want to make sure that the customer's banking and financial needs are adequately satisfied and on time too. They make sure that issues of deposits, withdrawals and other sundry banking and non-banking services are promptly and satisfactorily attended to.
b) Employment of Staff – Commercial banks should be wary of employing new staff without obtaining suitable references or aiding and abetting new staff in their failure to meet their financial and non-financial needs/obligation to previous employers and customers.
c) Legal Obligations – In order to defend and protect the defenceless customers, some laws have been enacted by the legislature for the CIBN, CBN, APCON, NIMN, etc which makes it a criminal offence to deliberately mislead the customers by false and non-existing claims Ayozie (2012), e.g. through Consumer Protection Laws, APCON, CIBN and CBN financial and advertising laws. The fear of punishment itself would act as a deferent to most commercial banks who would then abstain from untruthful, deterrent, false and misleading advertising claims. There are also legal provisions for the consumers in case their private or corporate accounts have been compromised. Customers have right to question insider related credit facilities, fraudulent transactions, fake opening of an account with a customer's names. Customers have legal indemnity, in case their private accounts had been comprised by bank employees.
d) Banks should be cautions, patient and wary of employing new staff without obtaining suitable references from previous employers, academic and religious leaders/teachers. Such references especially from previous employers and teachers must be cautiously verified over time. Instances about where bank workers who were sacked from one bank, dubiously get work with another bank only to commit a more grevious bank fraud still exists in the banking sector.
e) Commercial banks should be too hard on new staff in their failure to meet their financial obligation to previous employers.
f) The relevant regulatory bodies like the CBN, CIBN, EFCC, ICPC, and APCON should enforce their requirements which states banks should seek references from previous employers or last institutions attended before recruiting new staff into any position, particularly senior management positions, or junior positions where the staff will be exposed to huge raw cash. In the face of staff cut throat competition, many commercial banks fail to observe this precautionary necessary measure. At other times, commercial banks that are expected to give some reference to their former staff bring in bad blood in their responses often as a result of their circumstances under which the staff in question left the bank. If the staff were to be excellent and was poached by the new bank, previous employers in most cases delay the references or write negatively about the staff.
g) There should be thorough meticulous and more professional internal and external auditing of the financial transactions/activities of the bank staff and the corporate entity. There must not be a long time gap so that the dubious activities of the staff will be detected early. Internal auditing can be unannounced and should be periodic.
h) Bank staff personal accounts must be periodically monitored to detect the diversion of customer's money into such accounts.
i) All cases of fraud detected immediately must be reported to the relevant regulatory and professional institutes like the Chartered Institute of Bankers of Nigeria (CIBN). A disclaimer in a widely circulated national daily must be immediately placed so as to inform other staff who might be disposed towards committing bank fraud, and to act as a deterrent to other staff.
j) The provision on the BOFIA Act (Bank and Other Financial Institutions Act) must be rigorously and religiously adhered to. The conditions for granting insider credit must be adhered to and verified by the auditors or other senior management staff/or directors who must be professional in their approach. Non-performing insider related credit facilities especially those not tied to profit yielding ventures must be discouraged. Concealment of credit facility information as well endless role-over of non-performing insider credit at ridiculous rates of interest must be discouraged or reduced to the barest minimum. Insider dealings on securities, insider abuses and other unprofessional/unethical practices must be internally and externally checked. Cloning of share certificates must be discouraged.

k) Necessary internal mechanism and forensic accounting must be introduced and monitored to eliminate the manipulation of customer's accounts by bank workers. Other activities that must be reduced to the barest minimum are unauthorised withdrawals and overdrafts, concealment of bank atrocities, manipulation of book keeper's thrown out items, computer rejects and fictitious charges.
l) The CBN measure to make cheque clearing stringent must be maintained. There should be thorough control outside the collecting commercial bank to ensure that the proceed is credited into the right account. Name dropping of multi-national companies so as to raise fictitious commercial papers must be discouraged.
m) The foreign exchange unit of the commercial bank, especially at the headquarters must be monitored, and manned by senior but competent bankers, who understand the foreign exchange practices. Round tripping and the use of balances on customer accounts for the purchase of foreign currency without their consent must be eliminated or reduced to barest minimum.
n) Periodic verifications/checks must be done by the CBN to make sure that the capitalisation base of the banks are intact. Borrowed or stolen funds for the purpose of recapitalisation must be detected early.
o) All VAT, custom duties and other government money must be remitted to the CBN within the stipulated seven days. The federal ministry of finance and the relevant regulatory section in the CBN must enforce this guideline. Defaulting banks must be blacklisted and their names published in the media.
p) Balance sheet engineering will be eliminated if transparency in commercial banking activities are reinforced. This will eliminate the problem of deliberate rendition of inaccurate returns to the regulatory authorities with the intent to mislead and benefit therefrom. Transparency will eliminate the shortcomes innumerable in the section under balance sheet engineering.
q) The CBN and other regulatory agencies must closely monitor the activities of the commercial banks who desire to open new branches either locally or oversees. The cash centre or ATM (Automated Teller Machine) centres must also be monitored to make sure that the security of customers when withdrawing their money is guaranteed. Section 6(1) of BOFIA as amended must be enforced. No bank must open any bank cash/ATM centre without the approval by the CBN as recommended in the BOFIA Act. All cases of acquisition of properties, shares in companies' establishment of subsidiaries must be with the approval of the CBN.
r) All financial adverts must as a matter of urgency be vetted by the CBN and APCON, to ensure that misleading and false claims are eliminated. This will assist the customers in making a wise choice in the information they receive. Every claim made in the print, electronic, outdoor, transport, internet and stadia adverts by be truthful and verifiable. Customer emotions must not be misleading. Adverts must not mislead, deceive and offend the customers.
s) Head hunting and poaching must be discouraged, and eliminated, not minding the continuing expansion of the banking system. The available competent hands must be encouraged to staying within a bank and mentor the junior ones overtime. If poaching is not discouraged, commercial banks will be greatly affected by the "financial brain drain". Hence banks will spend so much in constant recruiting and training of new staff. They cannot afford the luxury of this exercise because of available limited resources. It will also reduce the risk of revealing critical, but secret competitive information from one commercial bank to another. Employee skills and competences will be maintained overtime if need hunting and poaching is eliminated. Staff will be committed to the growth of a bank, instead of moving from one bank to another like rolling stones that gathers no moss.
t) Commercial banks should not set unrealistic, unattainable profit and liability targets for their staff. Staff should be encouraged to be hardworking, but not through unattainable targets on fund mobilisation for new staff, and must especially for the females. Target setting must be a joint activity, set by the bank management and the worker. Unethical and unwholesome practices must be discouraged. Females should not be made to compromise their integrity just because targets are to be met. Dedication and professionalism must be encouraged amongst all cadres of workers. Aggressive deposit mobilisation must be realistically achieved, and staff must not be made vulnerable.

VII. Preventing and Controlling of Bank Frauds

Adeyemo (2012) opined that to guarantee an effective strategies of fraud prevention and control, commercial banks are to ensure that the operational systems are designed with inbuilt control devices. Banks can reduce or totally eradicate frauds if all the control devices built into the system are respected uncompromisingly and unconditionally. Some of the recommended measures are;

- Hiring honest, genuine, hardworking and sincere people – Banks needs to hire honest and sincere staff, because the cost of hiring a dishonest staff is incalculable, especially to the brand and to the image of the bank. A dishonest staff will undermine any attempt to create a positive work environment and constantly strive to defeat any internal control put in place (Adeyemo, 2012).

- Pre-employment back ground checks, especially the criminal records checks (CRCs), educational history checks, previous employment verification, family background and civil history for possible law suits, will be helpful in hiring honest people. This must be done thrice and not once for a proper honest report which can be used for employment.
- Exemplary Leadership – The top management of the bank must set an excellent ethical standard to be followed by other bank staff. Every staff no matter how highly placed should be governed by the same ethical standards rules and regulations of the commercial bank, and the banking professional body.
- There should be adequate and constant training especially in frauds and ethical standards.
- The judicial process should be reinforced in the media to encourage speedy hearing of fraud cases, and the publication of such cases will act as a deterrent to other staff, who might wish to engage in fraud.
- Performing announced and unannounced audits checks (internal and external audits) – There should be regular/periodic assessment procedures by all commercial banks, and this must be complemented with uncustomary random announced and unannounced financial audits and fraud assessments (Adeyemo, 2012). This helps to unearth any vulnerability and appraise the effectiveness/effectualness of the existing controls and send the message to all bank employees that fraud prevention and control are of high priority to the commercial bank.
- Probing every unpleasant major or minor allegations of fraud – A timely, meticulous, and honest investigation of any allegation of commercial bank fraud, direct to internal control and warning signals of frauds will give the indication that frauds are not treated with kid gloves by the commercial bank.
- Enforcing internal controls – Internal controls should be designed to promote operational efficiency and effectiveness, provide reliable financial information, safeguard assets, and records, encourages adherence to prescribed policies and finally to comply with the regulatory agencies (Adeyemo, 2012). It will also ensure that transactions are valid, properly authorized, properly recorded, properly valued, classified, reconciled to subsidiary records and done by many employees and not carried by a single staff.
- Establishing a favourable work environment – The setting up of a favourable work environment devoid of rancour, bitterness, and jealousy, encourages a bank staff to follow an established ethical code of conduct, laid down policies and procedures which will make them operate in the best interest of the bank. It opens a line of communication between the employees and management of the commercial banks and guarantees positive staff recognition, sound reward system, greater motivation to perform and productivity. A favourable work environment that has a fair, honest and positive reward system has the tendency of reducing the act of internal and external bank fraud.

VIII. Self/Personal Ethical Measures

Even though all the measures and motivations enumerated above are adequate to encourage ethical standards among the commercial bankers, there are some self-personal policing activities that will further ensure that bank staff operates within the accepted code of conduct. These self-policing/personal ethical measures are:

a) Being very modest in dressing when going for official assignment especially for fund mobilisation. This is very essential for the ladies and young male bankers. Workers should not over or underdress. Dresses should not be too revealing, or showing the cleavages of the females so as not to discourage the concentration of the customer especially the males. The perfumes if used must not be too choking or overbearing. Party shoes and clothes must not be worn to work. The banking job is a conservative one, although dynamic, but the dressing must be within the acceptable societal norms, so as to reduce sexual harassment among the vulnerable workers.
b) Bank staff of all cadres must strictly adhere to the code of conduct set by the CIBN and their respective banks. Such will maintain the integrity and brand image of the bank. Constant training and reminders on the ethical issues must be periodically given to all workers (senior, middle and lower level workers).
c) Financial motivation and mentoring should be encouraged. The senior staff must constantly encourage the junior workers, and motivate them to learn on the job and adhere strictly to strong ethical values. "Hard work does not kill". This will reduce the get rich quick syndrome of the younger staffs in particular.
d) Adequate motivation must be given and maintained as this will reduce the temptation of bank fraud. Staffs must have access to decent acco-mmodation/housing and personal loans. Constant training locally and overseas must be introduced so as to increase the motivation and interest of the workers in doing their jobs satisfactorily.
e) Whistle Blowing – Commercial bank workers must be encouraged to blow the whistle directly or

indirectly, by pointing out any unethical, unwholesome or fraudulent activities which were detected in their cause of their work. They must immediately report to their superiors or managers depending on the customer/worker complaint procedures in the banks.

IX. Conclusions and Summary

It is really difficult to identify what is ethical or unethical, as this varies from one culture, society, occupation or institution to another. Ethical values are situation specific and time oriented. Ayozie, (2012). Nevertheless, everyone whether in business, medical, law, advertising and more specifically now in the commercial banking sector must have a sound ethical base that must apply to the conduct of the banking business. The writer has enumerated the problems and solutions which is not exhaustive. Morals and ethics have been viewed as personal viewpoints, and moral judgements are seen as meaningless expressions of emotion. Not minding the viewpoints, sound ethical and moral values are very relevant both to the bank workers, the customers, the regulatory bodies, and to the business world in general. Not minding the ethical challenges Nigerian commercial bankers have performedcreditably well, considering the unfavourable economic, political and social climate in which they operate in.

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The Impact of Earnings Management on Stock Returns: The Case of Tunisian Firms

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Abstract - Measuring earnings management is a crucial issue for stockholders and investors a like. Investors' efficient evaluation of a firm (firm performance and its stocks returns on the stock market) depends on the selection of a measurement model appropriate to earnings management. Within this line of thinking, our study aims at presenting and comparing four earnings management measurement models examining Tunisian stock market information content and the ability to forecast managers' behaviour. We classified the variable "discretionary accruals" into higher and lower levels and then analysed its effect on returns. The obtained results point to a significant coefficient for the two levels of discretionary accruals (according to the four models). This confirms that discretionary accruals allow Tunisian investors to better evaluate firm value and optimally form their stocks portfolios. Moreover, this study highlighted the determining role of firm size. For this latter, earnings management allows for increasing abnormal positive stocks returns for large Tunisian firms and reducing abnormal negative stocks returns for small Tunisian firms. In conclusion, if these accruals measurement models reach conclusions which are empirically reliable, this comes from the fact that they are very partial to reflect a complex reality.

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Strictly as per the compliance and regulations of:

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Sonia Sayari [α], Fayçal Mraihi [σ], Alain Finet [ρ] & Abdelwahed Omri [Ѡ]

Abstract - Measuring earnings management is a crucial issue for stockholders and investors alike. Investors' efficient evaluation of a firm (firm performance and its stocks returns on the stock market) depends on the selection of a measurement model appropriate to earnings management. Within this line of thinking, our study aims at presenting and comparing four earnings management measurement models examining Tunisian stock market information content and the ability to forecast managers' behaviour. We classified the variable "discretionary accruals" into higher and lower levels and then analysed its effect on returns. The obtained results point to a significant coefficient for the two levels of discretionary accruals (according to the four models). This confirms that discretionary accruals allow Tunisian investors to better evaluate firm value and optimally form their stocks portfolios. Moreover, this study highlighted the determining role of firm size. For this latter, earnings management allows for increasing abnormal positive stocks returns for large Tunisian firms and reducing abnormal negative stocks returns for small Tunisian firms. In conclusion, if these accruals measurement models reach conclusions which are empirically reliable, this comes from the fact that they are very partial to reflect a complex reality.

I. Introduction

Earnings management is a crucial issue for stockholders and investors. Investor's evaluation of a firm (firm performance and stocks returns on the financial market) depends on selecting a measurement model of earnings management.

Our study aims at presenting and comparing four measurement models of earnings management in terms of information content of the Tunisian stock market, trying to predict managers' behaviour. According to Selon Dechow and Skinner (2000) "the current research methodologies simply are not that good that identifying managers of firms that practice earnings management". Measurement problems imposed while detecting manipulation are numerous and complex (Dechow *et al.*, 1995; Collins and Hribar, 1999; Courteau and al, 2011).

During these last decades, research conducted on earnings management reached mixed results. Some studies report results confirming interest in earnings management (Brochet and al ,2012) and the reverse is true (Courteau and al, 201). These mixed results in the literature are justified by the difficulty in giving a universal definition to earnings management concept and the limitations of the adopted methodologies. Then, this debate exists since ever and cannot be resolved in a very simple manner. Our study is motivated by lack of empirical studies focusing on measuring effect of earnings management on stock prices within the Tunisian context, mainly because accounting legislation is known for its fiscal and accounting rigidity which hinders frequent changes of accounting methods and requires that financial communication content should respect a certain number of rules notably in terms of publishing earnings. In a similar vein, according to Courteau (2011), use of Chtourou model (2001), seems to produce an evolution in earnings management practice.

Taking into account these lacks, a crucial question is raised on the possibility to confirm that managers tend really to affect the Tunisian financial market through earnings management?

To this end, we focused on investors' behaviour with the aim of testing the effect of earnings publishing on stock returns.

This choice has been adopted after reviewing the theoretical and empirical models focusing on the topic and examining discretionary accounting practices, which affect published earnings while respecting both accounting texts and rules. Such discretionary practices relate nevertheless to manipulations which aim at influencing a group or an individual to make them or him/her react accordingly.

During these last years bankruptcy of Enron and Wordcom has raised serious questions on earnings management practices. However, despite these financial scandals, the accounting model remains an informational vector enabling information users to formulate or revise their expectations of the firm's economic perspectives. At the moment of announcing accounting results, there appeared some speculations that consequently influenced stock prices. Beaver (1968), Ball and Brown (1968), Divesh Sharma (2003), David, Burgstahler (2004), Colasse (2004) and Scot and al (2011) showed that publicly announcing accounting results on the US market leads to a significant variation of stock returns the very day. There is a positive

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relationship between stock prices and unexpected profits, suggesting that the higher is surprise effect (good or bad news), the more significant is market reaction (Qiang and al 2010). Accordingly, if accounting information diffusion leads to a change in equilibrium stock price, we can point intuitively to earnings management practices as one of the reasons. Within an information perspective, accounting production, opportunistic manipulation of accounting results and the way they are presented to the public may represent a tool of influencing or guiding positively investors' anticipation towards increasing stock performances. This line of thinking, paradigmatic as it is, is known explicitly as earnings management relying on flexibility of accounting conventions to declare higher profits.

Managers are led to maximise their financial communication policy by presenting the market the most successful image, exploiting insufficiencies of accounting rules. Indeed, retaining the most interesting norm inherent to accounting processing or a specific position (French, IASC, FASB, international practices ..) adding hiding legal undertakings can only reinforce context of information asymmetry that determines market functioning. Managers play all tricks, both at the level of form or content, to respond to markets expectations and requirements.

In Tunisia, few studies are conducted to examine the relationship between accounting manipulation and returns, though the issue of manipulation is regularly addressed by researchers. However, in the US, many studies explicitly examined as a topic or as a context of research earnings management. Many recent studies like those conducted by Mastumra (2003) and young (2005), attempted to determine the impact of accounting manipulation on the financial market.

Our study on the Tunisian stock market answers to this perspective. Such an emerging and recent market is characterised by a strong information asymmetry and a weak level of information efficiency. These specificities may lead to identify earnings management practices particular to the Tunisian market. Then, we concern ourselves with the degree of the impact of this accounting practice on investors' behaviour.

Indeed, the aim of this article is to observe whether Tunisian investors are aware of the presence of manipulation practices and whether this latter encourages them to react during earnings publication. If information of financial statements is useful to investors, like the case of net profits (Ball and Brown, 1968; Beaver, 1968; Zhen and al (2005), Foerster (2009), Yang and al (2011), Scott and al (2011), some accounting practices carrying substantial information content are supposed to make the market react. Consistent with the hypothesis of efficient markets in its partial form and with the hypothesis of rational anticipations, only the non-anticipated portion of information leads to abnormal movements of prices, provided nevertheless that this information is sufficiently relevant. This paper extends that of Sayari and Omri (2006) on the analysis of accounting manipulation between 1996 and 2003 on the Tunis Stock Exchange by lengthening the study period till 2008. Our objectives consist in measuring first earnings management behaviour (through four measurement models) and second in better under-standing its determinants. In order to evaluate the impact of this behaviour on stock prices, we adopt the approach proposed by Chtourou et al (2001).

To this end, we present a the first section the fundamental aspects of earnings management and the reaction of the financial market following this behaviour while explaining the reasons likely to lead managers to manipulate accounting figures in view of either scoring advantages, or communicating to investors their own anticipations on the firm's future. The second section presents the used data and describes the methodology used to measure earnings management as well the impact of this behaviour on stock prices.

II. Review of the Literature

a) Theories Explaining Earnings Management

According to efficiency theory, correlation between information and stock markets is noticeable. Indeed, it is declared information which is supposed to be reflected in stocks and not accounting value in itself. In this line of thinking, accounting modification which has no impact on cash flow cannot bring about any information to the market and cannot then affect the price as it has no effect on investors' predictions and expectations[5].

Studies focusing on phenomena related to information content of accounting profits, highlighted investors tendency to focus on variations in earnings (Foerster, 2009; Yang and al 2011). These studies matured into the functional fixation hypothesis according to which investors are not warned, hence unable to discover the effects of modifying accounting data on cash flows (also accruals).

Often with reference to functional fixation hypothesis, recourse to accounting results is a normal attitude as investors do not adopt any other source of information. Such behaviour is at the origin of this tight combination between stock prices on the one hand and accounting changes on the other, independently from cash-flows[6].

[5] With regard to this rationality hypothesis, investors refer to cash-flows expectancy and ot on accounting results to evaluate the firm.

[6] We should mention at this level that a study conducted by Abdelmoula (1997) on the Tunisian financial market examined level of investors' appreciation of different sources of information edited by firms listed on the Tunis Stock Exchange. The assumption in this article presents balance and statement of account as the two essential sources for evaluating Tunisian firms.

obvious that they upgrade evaluation of firm taking into account magnitude of detected manipulations.

What remains are few researchers who show concerns about functional fixation hypothesis, separately considered from other factors. Grossman and Ztiglitz (1976) assume that investors' rational behaviour affects and guides naïve investors. Then, naïve investors will be taken to follow rational investors' behaviour when making arbitration profits till the disappearance of these profits. This will be taken in what follows.

Signal theory came to justify some accounting practices. It assumes that accounting figures need to be confirmed as a genuine tool of signalling market trends, in as much as they allow investors to better appreciate the firm's real value.

The hypothesis recently used by researchers of accounting shows that there is information asymmetry between investors and managers. These latter dispose of private information on the situation and perspectives of the firm and also on its capacity to generate future cash flows. In this context, earnings management may be used as a flexible tool allowing for transmitting to investors private information mainly their own opinions on the long-term strategy of the firm and to shape accounting information, within the limits of law. In particular, accounting result is a variable on which managers wish to act. As mentioned by Beaver (1989), « no other figure in the financial statements receives more attention by investors' community other than earnings per share"[7]. Indeed, at the heart of this theory, manipulated accounting figures is an instrument to signal market trends, is as much as they allow investors to better appreciate the firm's value and build up, in an optimal manner, their stocks portfolios.

Many studies like those of Kim and Verrecchia (1991), Dontoh and Ronen (1993) and Bamber and Choen (1995) indicate that information asymmetry may guide sock prices reactions during publication of accounting information. Nevertheless, and according to Watts and Zimmerman (1986), competition between firms and motivation to attract the maximum of investors, force managers to present accounting data modified in their favour. As a consequence, firm value is either under-estimated or over-estimated on the market. According to information monopole line of thinking, managers retain information about firm's future at the expense of investors. Managers diffuse even on the market private information that they hold through an appropriate management of accounting results. Accordingly, Beaver (1968) and Morses (1981) underline that published accounting results have an information content in so far as their declarations are likely to provoke an increase in the variance of abnormal returns mean. Ball and Brown (1968) used these abnormal variations of returns to highlight importance of accounting results to investors during their announcement.

As we have mentioned and to support the notion of managers' operation efficiency in the market through accounting modifications which lead in their turn to a variation in annual results, Jocobson (1963) notes that 75% of changing accounting methods led to an increase in earnings of the studied firms. Irani (2001) provided a similar percentage around 76% of the studied firms benefited from a positive impact of an accounting change on the published results. At this level, we may cite as an example of changing accounting methods, the passage from a decreasing amortisation of contributions to a linear amortisation.

Signal theory based on earnings management is a financial communication tool as underlined by Zhen, Xie et Xu (2005). These researchers contradicted the prejudice according to which earnings management get investors mistaken and defend the thesis that information value of published results is enriched. In contrast to this thesis, other researchers support the idea that earnings management is an attempt to fool stakeholders. Christensen et al (1999) experiment in their turn the possibility of reducing information value of published results through interference of potential motivations of earnings management (Zimmerman 2007).

More recent studies in the accounting field provided models in which these earnings management practices reveal a rational behaviour. In this line of thinking, Hunt, Moyer and Shevlin (1995), Louis (2003) and Zhou (2003) support the idea of market value as positively related to reducing volatility of results through discretionary management. Likewise, Subramanyam (1996) indicates that information content of net earnings is superior to information content of non-discretionary results and cash-flow (Beyer 2009).

b) *Studies of the Impact of Earnings Management on Stock Return*

Referring to the hypothesis of information validity of accounting manipulation, some researchers have focused on the relationship between accounting figures and firm evaluation. Indeed, they tried to examine whether manipulated accounting figures reflect more firm evaluation than non-manipulated figures. This is the same like examining whether investors are aware of declared manipulated earnings and their impact on evaluating the firm's stocks.

Empirical studies on this topic can be classified into two categories detailed below.

The initial studies focused on correlation studies[8] which rely on the efficiency hypothesis of

[7]The relationship between accounting results and stock rates is probably the most important relationship in stock market analysis. Its importance is reflected on the attention investors give to the rate-profits ration. Accounting result corresponds to the sum of two elements which correspond to financial flows or to « accruals » which characterize committed accounting.

[8]For readers interested in this methodology, please refer Dumontier (1999) and Raffournier (2002).

financial markets. This thesis assumes that stock value is the best estimator of the firm's real unobservable value. In this line of thinking, ability to reflect listed stock value will be considered as the parameter that validates all accounting data. To this end, a number of researchers determine degree of informativeness of an accounting result through its level of correlation with the real observed stock value. Subramanyam (1996), by manipulating a sample in the US market, suggests to measure correlation between stock value and a triple measure of the result, i.e. declared net result, the result that could have been declared by the firm in the case of using a simple accounting method instead of a committed accounting procedure and finally the result which should have been declared without manipulation. The second measure relates to global treasury excess fixed as the objective of appreciating interest of a committed accounting method in its systematic type. It is about accounting or some types of products or costs which are affected by the result in the sense that the event which generated them relates to this result, even if these products or costs generated receivables or payments during previous fiscal years or during the coming fiscal years. The third measure of results is hard to track down. Observations that are made of aggregating amounts which are due to accounting manipulation, in a way to obtain a theoretical result equal to the result that could have been published if this latter was not manipulated. Manipulated amounts are determined according to the models which compare amounts object of manipulation with those similar published by firms of the same sector. McNichols (2000) and Randal, al (2003) assume that conceptions of these models and manipulated ammounts should be of the same magnitude for all firms of the same sector. Then, any deviation from an average behaviour of firms is seen to result in manipulations[9].

Subramanyam (1996) confirms this position indicating that net results are strongly correlated with the firm's market prices more than the simple treasury excess. This argument favours accounting as practised, since published result reflects better firm value more than result generated by a simple cash accounting. Subramanyam's results support similarly the position that theoretical net result, which could have been published, outside manipulation is correlated with firm's market value less than the published result, supposed to be manipulated. Then, recourse to manipulation by managers is done through assimilating to the result the impact of some efficient events during firm evaluation. It provides then an accounting measure of the firm performance which is more consistent with the performance assessed by financial markets as if it is limited to an extremely rigid interpretation of accounting principle and rules. Subramanyam has shown indeed that manipulated amounts are positively correlated to the firm's market prices. The assumption is that manipulation represents an informational contribution compared to firm value. In this line of thinking, Janin (2000) obtained similar results while conducting studies on a sample of French firms, supporting further the thesis of an improvement in the information content of published accounting figures, by accounting manipulation practices.

Subramanyam and Janin (2000) join on the basic assumption that a manipulated result relects better firm potentials more than a non-manipulated result. However, the authors do not specify whether investors use effectively this information superiority or even whether they are aware of these manipulations.

The second category of studies based on reaction studies methodology pointed to investors' attitudes towards manipulation. Dumontier (1999), Dumontier and Raffournier (2002) and Burgstahler, Leuz (2004) focused on rates movements affected by information to explain how investors react to publication of new information.

Balsam et al. (2002) and Xie (2005) examined a sample of US firms considered to have manipulated their results, to the extent they correspond exactly to those expected by financial analysts. It is clear that reaching such agreements is not a stroke of luck. As for Degeorge et al. (1999) and Koh (2003), they show in an extremely convincing manner that firms are able to provide results practically identical to those expected by investors, because a majority of them use to that end latitudes that accounting rules offer them. The study of Balsam et al (2002) aim at determining whether manipulations are the very incentives which led firms to publish results consistent with those expected. To this end, they first estimated the amounts manipulated. Then, they examine whether investors' reaction to this publication takes into account these manipulations. It seemed that investors react to this information as if the published results were not manipulated. This is not surprising knowing that at the moment of publication, detailed financial statements through which we can assess all eventual manipulation were not already available. Balsam and al (2002) and Burgstahler and al (2004) focused on the manner with which investors react at the moment of publication of these detailed financial statements. They note that manipulations which increased declared results are systematically associated to negative reactions of prices, whereas those which aimed to diminishing declared results are associated to positive reactions. It seems then that investors are aware of manipulations once they possess elements enabling them to detect such manipulations. It seems then

[9] See McNichols' article (2000) for more details.

The results that we mentioned are interesting in as much as they show that financial market is generally not naïve in terms of earnings management strategies. Nevertheless, they enable us to know whether these accounting manipulations have real information content. The study of Dumontier and Elleuch (2002) is rich with recommendations. It examines the French market with the aim of determining whether investors believe that results superior (or inferior) to those the firms could have published in the absence of any manipulation open up positive (or negative) opportunities. Similar to the study of Balsam et al (2002), the study of Dumontier and Elleuch (2002) shows that investors react to result publication as if this latter was not manipulated. Since they are short of elements allowing for detecting manipulations at that moment, Dumontier and Elleuch (2002) pointed to how investors react at the moment of publishing detailed financial statements. They note a positive correlation between manipulations and stock prices movements. This suggests on the one hand that investors are aware of manipulation, as they react accordingly. On the other hand, this suggests that investors consider manipulation as rather informative, as rates variations and manipulation direction are of the same signal. Indeed, a deeper analysis led them to assert that it is the downward manipulation of earnings which led to these rates movements, while upward manipulations were with no significant effect on rates. It seems then that although aware of accounting manipulations, investors do not change evaluation of the firm, when they perceive an upward manipulation tactic. However, they believe that downward manipulations signal that managers have rather pessimistic anticipations on the future of their firm. This leads them to diminish firm value.

III. Impact of Earnings Management on Stock Returns: The Case of Tunisian Firms

The aim of this paper is to examine whether discretionary accruals possess information content on the Tunisian market and to test whether earnings management practices affect stock prices of Tunisian firms. The methodology used to this end is that of event studies.

a) *Estimating Earnings Management for Tunisian firms*

In this section, we try to measure earnings management through computing discretionary accruals, we present the sample, period of study, models to be estimated and the used methodology.

i. *The Tunisian Institutional Context*

Since the creation of the New Market in 1996 in Tunisia, the Tunisian context has been offering an interesting ground to analyze this practice. First, Tunisian accounting standards provide managers with a great flexibility to choose accounting practices compared to Anglo-Saxon standards respecting thus the Tunisian conceptual framework with the possibility of presenting their accounts according to IFRS norms[10] or the US GAAP. Additionally, the Tunisian context is known for its ownership concentration of firms and for a financial market with relatively less cash flow.

In contrast to the US, in Tunisia, earnings announcement is subject to investors' acute attention and is seen by them as an objective to reach. This encourages the firm to commit itself to earnings management. It can then be deduced that the Tunisia market may favor earnings management to the upward. Our study may improve our comprehension of earnings management within an environment where financial information is geared towards stakeholders and not only investors (shareholders).

ii. *Sample and Period of Study*

Data has been collected from accounting statements of 33 firms quoted at the Stock Exchange of Tunis (BVMT) between 1999 and 2008.

The study is limited only to firms whose data is fully available. Firms of the financial sector (companies, insurance …) have been deleted as they cannot be studied in the same manner as others because of the specific nature of their activities and financial statements. Among the 33 retained firms, 7 have been eliminated because of unavailability of relevant data.

iii. *Earnings Management Measurement Models*

Estimation models of retained accounting accruals of our study are inspired by Jones' model (1991), contributions of Dechow et al. (1991) and de DeAngelo (1986)[11]. Cautious to compare, we have adopted then Chtourou, Bedard and Courteau's procedure (2001) according to which discretionary accruals are defined as residuals of this model:

$$\mathrm{TAC}_{ijt} / \mathrm{A}_{ijt-1} = \alpha_j (1/\mathrm{A}_{ijt-1}) + \beta_{1j}(\Delta \mathrm{RE}_{ijt} / \mathrm{A}_{ijt-1}) + \beta_{2j}(\mathrm{PPE}_{ijt} / \mathrm{A}_{ijt-1}) + \mathrm{e}_{ijt} \quad (1)$$

with :

$^*\mathrm{TAC}_{ijt}$ = total accruals of a firm i of a group j during year t.

$$TAC_{ijt} = BN_{ijt} - FGE_{ijt} \quad (2)$$

with :

$^*\mathrm{BN}_{ijt}$ = net profit of firm i of group j at year t.

[10] IFRS norms relate essentially to aggregated accounts. The joint use of norms of different organisms is frequent in Switzerland. Then, listed companies often refer to IAS (IFRS), to European Rules.

[11] Total accruals of a firm i at year t (ATit) thus consist of two components: (1) non discretionary (ANDit) and (2) discretionary (ADit). Non discretionary adjustments represent adjustments hard to manipulate.

$*FGE_{ijt}$ = funds generated by operations of firm i of group j at year t.

$*A_{ijt-1}$= total assets recorded at the end of year (t-1).

$*\Delta RE_{ijt}$ = variation of total net returns between t and t-1 of firm i of group j.

$$\Delta RE_{ijt} = \Delta \mathrm{Re}v_{ijt} - \Delta \mathrm{Re}c_{ijt} \qquad (3)$$

with :

$*\Delta Rev_{ijt}$ = variation of total returns between t and t-1 of firm i of group j.

$*\Delta Rec_{ijt}$ = variation of payables between t and t-1 of firm i of group j.

$*PPE_{ijt}$ = gross funds of firm i of group j at date t.

$*e_{ijt}$ = residual of the model representing discretionary accruals of firm i of group j at year t (DAC_{ijt}).

Since discretionary accruals are measured by residuals of model (1), we should then estimate first the coefficients α_j, β_{1j}, β_{2j} using a panel method for each group of firms. Then we should compute DAC_{ijt} as follows:

$$DAC_{ijt} = TAC_{ijt} / A_{ijt} - \left[\alpha_j(1/A_{ijt-1}) + \beta_{1j}(\Delta RE_{ijt} / A_{ijt-1}) + \beta_{2j}(PPE/A_{ijt-1})\right] \qquad (4)$$

This choice is justifiable on many grounds. Indeed, collecting accounting and stock market information of firms could not be done beyond 8 market sessions[12]. Thus, we consider information cumulated by the literature and maximise at the same time the sample size.

Terms between inverted commas represent the non-discretionary part of accruals. It is worth noting that there are many estimation models enabling measurement of this latter component.

Indeed, non-discretionary accruals, which are generally independent from earnings management, are rather sensitive to the economy's general layout as well as to firm-specific factors and correspond, according to DeAngelo (1986), to total accruals of the firm for the previous session.

$$NDAC_{ijt}=TAC_{ijt-1} \qquad (5)$$

with

$*NDAC_{ijt}$ = non-discretionary component of accruals of firm i of group j for session t.

$*TAC_{ijt-1}$= total of accruals for the previous session (t-1) of the same firm i of group j.

As for Healy (1985), he measures non-discretionary accruals by average of accruals of the same firm during a given period preceding this year.

$$NDAC_{ijt}=\sum_{t=1}^{T}\frac{TAC_{ijt-1}}{T} \qquad (6)$$

with : T : number of years of the estimation period.

However, Dechow and Sloan (1991) adopt a comparative analysis method by industry and estimate non-discretionary accruals using average of accruals of firms belonging to the same sector with N denoting number of firms belonging to sector j at date t of the firm under study.

$$NDAC_{ijt}=\sum_{i=1}^{N}\frac{TAC_{ijt}}{N} \qquad (7)$$

Finally, we conclude that there are four known models allowing for estimating non-discretionary accruals. Total accruals are presented by the difference between net profits and funds generated by operations[13] (they are cash flows of current operations computed by the difference between cashed products and expenses). Discretionary accruals will be computed by eliminating non-discretionary accruals from total accruals.

IV. Methodology

First, we compute total accruals for each firm of the sample, during each year of the study period using equation (2). Second, we estimate non-discretionary accruals according to the four mentioned-above approaches, i.e. the amount between inverted commas in equation (4) and equations (5), (6) and (7). Finally, we compute for each firm and for each year discretionary accruals as the difference between total accruals and non-discretionary accruals, computed according to the presented-below four approaches.

This empirical validation allows thus for testing the presence of earnings management within Tunisian firms.

a) Interpretation of the Results

Discretionary accruals are computed and classified for all firms according to their importance level. The following tables report the statistics and results for the four models:

[12]According to the literature, financial information for each firm should be studied over a relatively long period of time in order to infer tendency of normal accruals. Thus, the choice will be done according to the highest number of years depending on data availability.

[13]These funds are computed first by adding to net profits, non-payable costs like amortisations by deleting delayed taxes and finally we should add variation of equity, i.e. we should eliminate receivables and add increases in contributing accounts.

Table 1 : Descriptive statistics of discretionary accruals computed by model 4

Model 4	TAC	NDAC	DAC
Variance	0.109891	0.041771	0.086536
Max	0.116965	0.067369	0.344222
Min	-1.50451	-1.02968	-1.50062
Mean	-0.17154	-0.13611	-0.03543

According to model 4, discretionary accruals (-0.03543) stand similar to non-discretionary accruals (-0.13611) decreasing thus total accruals (-0.17154).

Table 2 : Descriptive statistics of discretionary accruals computed by model (5)

Model 5	TAC	NDAC	DAC
Variance	0.109891	0.152075	0.149515
Max	0.116965	0.152099	1.36601
Min	-1.50451	-1.6179	-1.43053
Mean	-0.17154	-0.19423	0.022692

According to model 5 and referring to the mean, we notice that total accruals (TAC) are negative (-0.17154) despite the up-ward-oriented discretionary behaviour, knowing that this latter measured by positive discretionary accruals (DAC) (0.022692).

Table 3 : Descriptive statistics of discretionary accruals computed by model (6)

Model 6	TAC	NDAC	DAC
Variance	2.297855	0.109891	1.812823
Max	4.486751	0.116965	4.887637
Min	-7.24165	-1.50451	-5.73714
Mean	-0.14964	-0.17154	0.0219

Likewise, according to model 6, negative non-discretionary accruals hide the positive effect of discretionary accruals (0.0219) at the level of total negative accruals (-0.14964).

Table 4 : Descriptive statistics of discretionary accruals computed by model (7)

Model 7	TAC	NDAC	DAC
Variance	0.01506	0.008298	0.006762
Max	0.116965	0.025214	0.163054
Min	-0.40031	-0.25508	-0.24852
Mean	-0.08455	-0.08455	-3.4E-18

According to model 7, discretionary accruals are invisible hence total accruals (TAC) relate to non-discretionary accruals (NDAC).

According to this study and with reference to these four tables, we notice that the results change according to the used model. Indeed, Model 4 highlights accounting information of the firm under study. Model 5 is based on a manipulation of the previous year only, while model 6 considers average of this behaviour during a past period. As for model 7, it is defined according the sector to which the firm belongs.

The two models 5 and 6 have detected an average positive discretionary accrual whereas it is negative for the other two models (4 and 7). In other words, firms manage their profits to the upward according to models 5 and 6 and to the downward according to models 4 and 7.

This difference in results between models is explained by Young (2004) by the nature of earnings management (management of CA, expenses and provisions) and the structure of the firm's costs. The author insists that these two attributes are not directly observable and consequently he cannot vouch for a "better" model useful for researchers. Thus, he proposes as a solution the distinction between common and specific factors by eliminating specific effects in view of improving measurement of earnings management. It is convenient then to point out that Dechow and Sloan (1991) took in account sectorial average to compute non-discretionary accruals. In contrast, Chung, Ho and Kim (2004) insist that this latter hypothesis is not firms should have the same capital structure and risk.

b) Firm size and Discretionary Accruals

In order to better understand, from an economics philosophy perspective, this earnings management behaviour, we developed a relationship between discretionary accruals and firm size.

According to Zimmerman (1983) the more firm size is important; the higher is the probability of managing profits to the downward. According to this hypothesis, we may say that large firms are more sensitive to political pressures than small firms. They are thus subject to a great transfer of wealth. This hypothesis has been studied mainly in the oil sector by total cost capitalisation method. In this study, we will classify firms in three groups (large, medium and small firms), according to a size criteria measured by stock market capitalisation.

In order to better analyze this relationship, we will present discretionary accruals for each group of firms (classified successively as large, medium and small) in the following table:

Table 5 : Discretionary accruals by firm size

	Model 4	Model 5	Model 6	Model 7
Large	-0.14752699	-0.04719644	-0.03212799	-0.00510439
Medium	0.06129647	0.11599244	-0.01852009	-0.0281159
Small	-0.02005712	-0.00072133	0.11634905	0.0332203

According to model 4, large firms manage profits to the downward by obtaining negative discretionary accruals, while earnings for medium-sized firms are managed to the upward as they record positive discretionary accruals. As for small firms discretionary behaviour is relatively unnoticed.

Model 5 results confirm model 4 results. This may explain the mood of each group of firms. Indeed, large firms want to decrease their results to avoid State's interest in income tax. Medium-sized firms want to look performing on the market to gain a better visibility, allowing for collecting external resources. Small firms want to show reliability of their accounting information to promote a positive image needed to their success.

Model 6 which relates to history of total accruals was able to detect a positive discretionary behaviour for small firms. Indeed, these latter had better prove their increasing development in time to confirm possibility of future existence in the market.

Model 7 which relates to the firm's evolution within its sector was able to detect earnings management to the upward for small firms. Indeed, these latter want to prove and show (to their external environment) their competitive competence within their sectors by reporting higher profits.

V. A Preliminary Conclusion

According to this study, we notice that large firms posses, in average, negative discretionary accruals as the results of the four models suggest. Likewise, we notice a difference in the results of these four models at the level of averages and small firms. This leads us to conclude that large firms tend to manage to the downward their results. In th is line of thinking, Rafournier (1990) assumes that firms using earnings-diminishing methods face a high risk. The same authors insist that large firms prefer decrease their earnings because governments generally focus on large firms to finance State budget through leveraging higher income taxes. According to Healy (1985), managing accruals is to the downward if generated profits are outside the limits fixed for remunerating managers in order to prove their competence by increasing their future profits.

a) Firm Sector and Discretionary Accruals

According to Rafournier (1990), firms belonging to highly-concentrated sectors prefer earnings-diminishing method. In order to test the relevance of this hypothesis to Tunisian firms, we set ourselves to analyse discretionary accruals for each sector. The results are presented the following table and figures:

Table 6 : Discretionary accruals by sector computed with the four models

	Model5	Model6	Model7	model4
AGRO-Food	0.060295	0.320821	6.94E-18	0.219642
Bank	-0.0513	-0.06782	5.9E-18	-0.18631
Trade	0.01591	0.011722	1.2E-17	0.019457
communication	-0.00548	-0.00173	0	0.149522
Industry	-0.02428	-0.05561	-1.4E-17	-0.06364
Real estate	-0.00702	0.007745	0	0.031141
investment	0.012858	0.045473	9.25E-18	0.01638
Leasing	0.24901	0.186105	-5.6E-17	0.013631
Tourism	-0.01147	-0.00451	0	0.156277
Transport	-0.02051	-0.01067	0	0.123929

Figure 1 : Discretionary accruals by sector computed with model 4

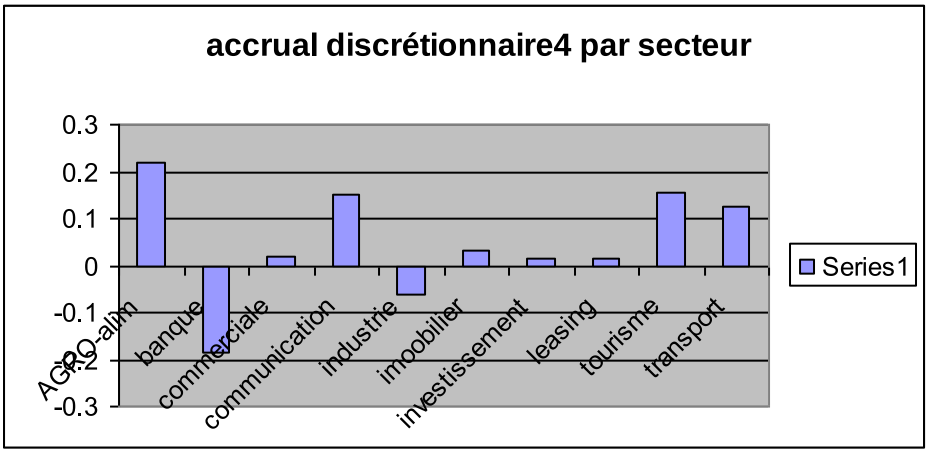
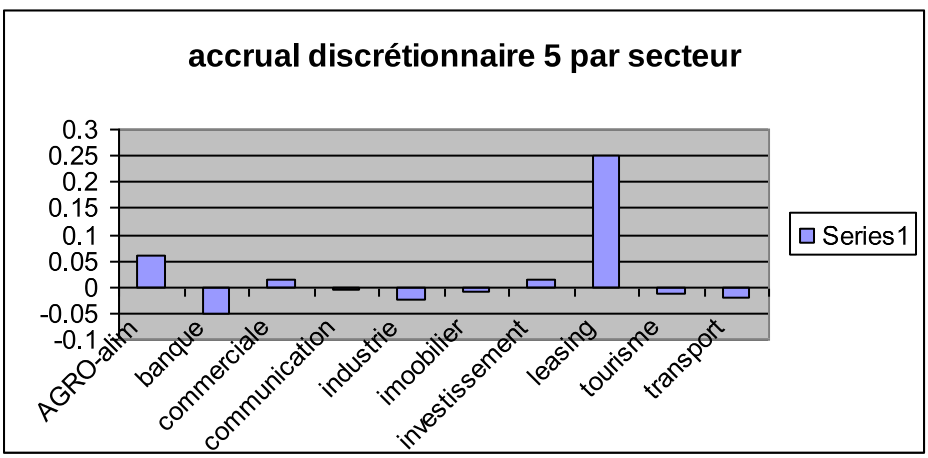


Figure 2 : Discretionary accruals by sector computed with model 5



According to model 5, discretionary accruals are low for all sectors except the Leasing sector in which firms tendto manage to the upward earnings (Figure 2).

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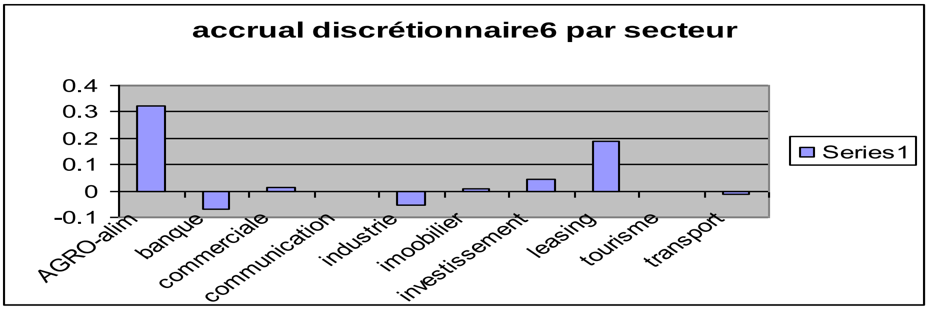
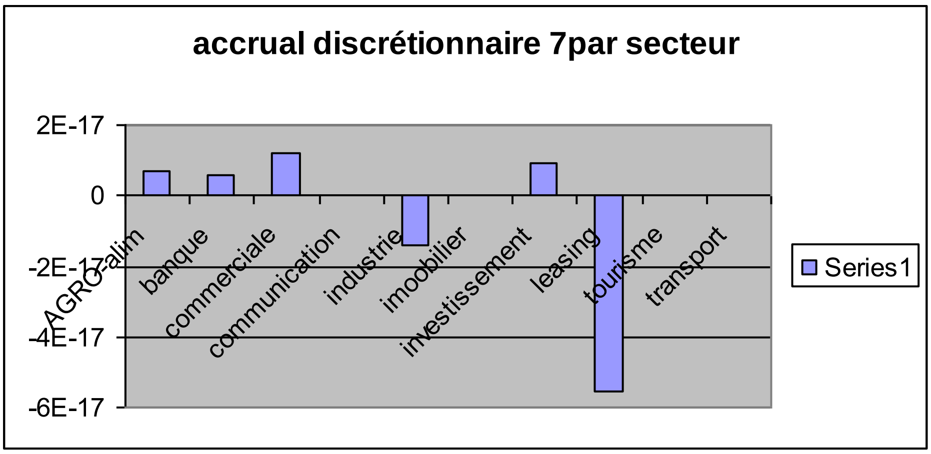
Figure 3 : Discretionary accruals by sector computed with model (6)



According to model 6, there are higher discretionary accruals for the Agro-food and Leasing sectors(Figure 3).

Figure 4 : Discretionary accruals by sector computed with model (7)



Model 7, which considers behaviour by sector, contradicts the other models and proves that Leasing firms intensively manage their profits to the downward (Figure 4).

As a summary, we notice a difference in the results of the four models. Indeed, model 4 falls short in pointing to the presence of discretionary accruals for the leasing sector (Figure 1). According to model 5, presented in Figure 2, the leasing sector retains the highest level of discretionary accruals compared to the other sectors. In Figure 3 which presents model 6, we detect higher levels of discretionary accruals for Agro-food and leasing sectors. Finally, Figure 4, presenting model 7, detects negative discretionary accruals for the leasing sector.

b) *Impact of Announcing Manipulated Earnings on the Financial Market: An Application on the Stock Exchange of Tunis*

In what follows, we present the to-be-tested hypothesis, the sample, study period, methodology and the obtained results.

i. *Hypothesis*

First, we will attest for the following hypothesis H0: there is no average abnormal return around date of announcing manipulated earnings.

ii. *Sample and Period of Study*

As we have concluded in the third section, and in order to obtain the most interesting estimations of parameters of the market model in terms of reliability and stability, the study period should be enough long and periodicity should be as short as possible. Then, we will estimate the market model by supposing that announcement date is the date of the JORT (government official laws bulletin) publication. However, use of daily data leads to missing data problems biasing thus estimation results. To mend for this, we had better ignore stocks whose number of quotation days is low, which enabled us to select the most-liquid 18 stocks to be presented below with their estimations.

iii. *Methodology*

✓ test of « H_0 » : RACM=0

Previous literature indicates that after having fixed announcement date and estimation period, the first step consists in estimating the market model written by equation 2, section three above.

The second step consists of computing abnormal returns during event date. Indeed, we will compute during the 30 days around announcement date (15 days before and 15 days after) what follows:

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$$RAi.t = Ri.t – E(Ri.t)$$

With:

$RA_{i.t}$: abnormal returns of stock i at date t.

$R_{i.t}$: observed returns of stock i at date t

$E(R_{i.t})$: expected returns of stock i at date t in the absence of an event, i.e. the norm computed as the return expected by the market model after having estimated its parameters and replacing market return with its value.

The third step will be devoted to computing for each stock its 30-day cumulative abnormal return. Hence, cumulative abnormal return of a stock i during the event period is computed as follows:

$$RAC_i = \sum_{t=-15}^{15} RAit$$

The fourth step consists of grouping together all the stocks and computing average cumulative abnormal return of the sample "RACM" and testing H0 hypothesis according to which this average cumulative abnormal return is null.

Grouping together stock will depend on discretionary accruals identified in the previous section according to the four models. This will enable us to point to the effect of this behaviour on stocks' abnormal returns.

iv. *Results and Interpretation of Hypothesis H0*

First, we test the effect of earnings announcement on abnormal returns without considering effect of manipulation by computing cumulative abnormal return of the entire sample. Then, we group together stocks into three categories according to level of discretionary accruals. At this level, we estimate cumulative abnormal returns of each group and for each of the four models used in section one above.

a. *Average Cumulative abnormal returns « RACM » of the entire sample*

Cumulative abnormal return at the end of event period for each stock is reported in the following table[14]:

Table 7 : Cumulative Abnormal Return

	RAC
ATL	-0.11975
BIAT	0.106166
BNA	-0.10919
BS	-0.18126
BT	-0.00239
BTEI	0.072717
CIL	0.00923
SFBT	0.093056
SIAM	-0.02193

	RAC
SOTETEL	0.017543
SOTUMAG	0.085684
SOTUVER	-0.0696
SPEDIT	0.056664
STB	0.325017
TUNISAIR	-0.01999
TUNISLEAS	-0.02943
UBCI	-0.04485
UIB	-0.05085

[14]Details about cumulative abnormal returns during the whole event period are presented in appendix 3.

In order to test the effect of earnings announcement on returns, we compute average cumulative abnormal return, standard deviation and "t-student" of cumulative abnormal returns of the entire sample:

Table 7 : Average Cumulative Abnormal Returns of the Entire Sample

Std Dev	RACM	student
0.00111501	0.00649	5.821

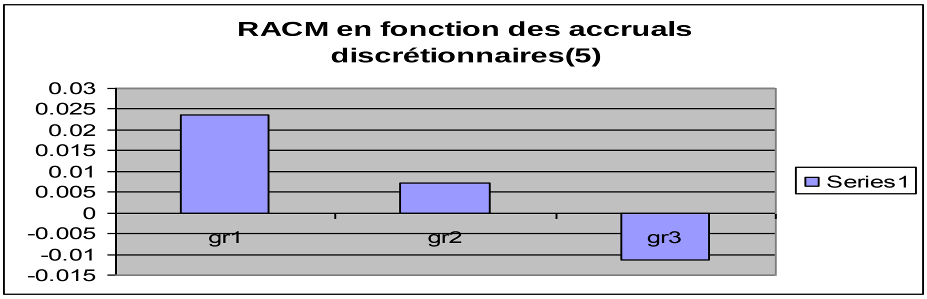
We note that "t-student" (5.821) approximates 6, a value neatly superior to 2. Accordingly, we reject H0 and confirm that on the whole earnings announcement significantly and positively affects average cumulative abnormal return. Hence, earnings announcement carries information content that might significantly influence market reaction. This conclusion corroborates those of Ball and Brown (1968) and Patell and Wolfson (1984). Nevertheless, this conclusion needs further analysis to prove with confidence that managers tend to influence the market, not by their good behaviour but rather through publishing accounting information manipulated by discretionary accruals.

b. *Effect of discretionary accruals on average cumulative abnormal returns « RACM »*

For each of the four accruals-determining models, we classify first the 18 firms in a decreasing order according to level of discretionary accruals. Second, we classify them into three 6-firm groups. Third, we compute for each group corresponding average cumulative abnormal returns.

In order to better study the effect of discretionary accruals on average cumulative abnormal returns, we graphically report level of RACM of each group and for each model.

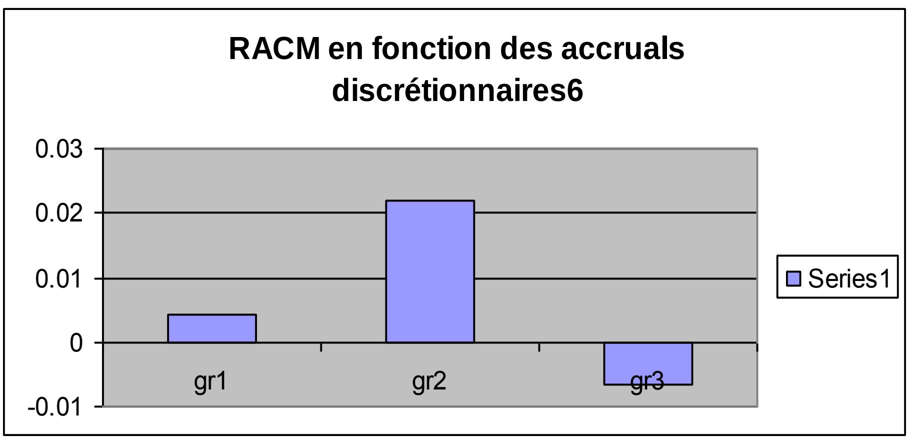
Figure 5 : RACM in terms of discretionary accruals computed with model (5)



According to model 5, firms whose discretionary accruals are positively high (group 1) have interesting high returns compared to the estimated norm, whereas firms whose discretionary accruals are modest (group 2) record a return slightly superior to the norm. However, firms whose discretionary accruals are negatively high (group 3) record a return inferior to the norm. This leads us to conclude that upward earnings management increases positive abnormal returns and that downward earnings management increases negative abnormal returns (Figure 5).

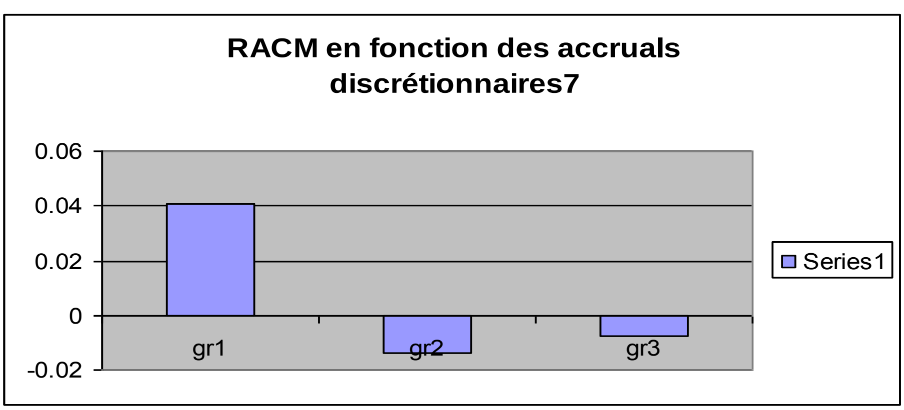
The results given by model 5 are reported in Figure 6 and confirm the results given by model 4.

Figure 6 : RACM in terms of discretionary accruals computed with model (6)



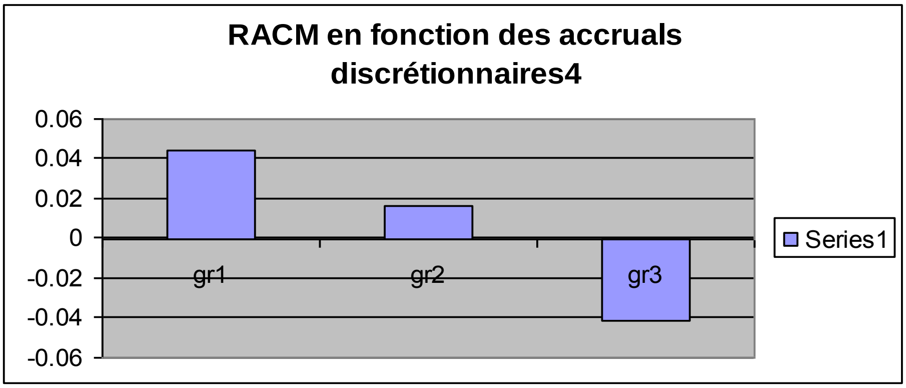
According to model 6, firms with a modest level of discretionary accruals (group 2) record the highest positive abnormal returns. This leads us to conclude that increase in discretionary accruals (in positive and negative terms) tends to set the obtained returns around the norm.

Figure 7 : RACM in terms of discretionary accruals computed with model (7)



With reference to the results given by model 7, we can conclude that the obtained returns deviate from the norm if the firm manages to the upward its earnings, since earnings management to the downward (group 3) may only lead to a slight deviation between obtained returns and estimated ones.

Figure 8 : RACM in terms of discretionary accruals computed with model (4)



Finally, we can conclude that firms with high discretionary accruals have positive average cumulative abnormal returns as indicated by all models (4, 5, 6, and 7). The second category of firms has a negative average cumulative abnormal return for model 7 and positive for models 4, 5, and 6. The last category has a negative average cumulative abnormal return for all models 4, 5, 6, and 7. This leads us to conclude that firms adopting a manipulative behaviour measured by high positive or negative discretionary accruals have a positive (negative) abnormal return during publication of their earnings.

As a summary, Tunisian managers may adopt an accounting policy allowing for hiding weaknesses in their management by influencing investors' behaviour on the stock market and by increasing the difference between real stock profits and those which could be achieved if no manipulated information has been provided. Indeed, discretionary accruals behaviour adopted by managers of firms listed on the Stock Exchange of Tunis leads to returns, unusually amplified, associated with earnings announcement.

This enabled us to notice that investors within the Stock exchange of Tunis, unable to seize the effects of changing accounting methods on earnings, may be easily trapped by managers who adopt an earnings management policy allowing them to cover the firm's bad performance and financial difficulties. If the firm is in difficulty, the manager tends to manage profits to the upward and consequently investors over-evaluate stocks and returns obtained following earnings announcement will be superior to those generally observed. However, if the firm is performing well, the manager tends to manage profits to the downward in order to minimise tax value and consequently investors under-evaluate stocks. At the time of earnings announcement, returns will decrease from their usual level.

VI. Conclusion

Our answered two questions on the impact of earnings management on stock prices for Tunisian firms, applying four models of accruals estimation. According to (Healy and Wahlen(1999); Young(2011), earnings management intervenes once managers use their discretion in accounts and in structuring in view of altering financial results either to fool third parties on the firm's real economic performance or to influence accounting figures. Accounting literature presented several models in which these practices report to rational equilibrium behaviour.

Studying the Stock Exchange of Tunis, we showed in our first empirical section that Tunisian firms adopt earnings management behaviour measured by discretionary accruals. In this study, we notice that large firms have in average negative discretionary accruals, using the results given by the four models. *Rafournier (1990)* insists that large firms prefer reducing their earnings, because governments focus closely on their profits to finance the state budget by leveraging higher taxes. Taking into account sector effect, we noticed different results as given by the four models. Generally speaking, firms belonging to highly-concentrated sectors (leasing and agro-food) prefer results-diminishing methods.

In the second empirical section, we showed that firms adopting earnings management measured by discretionary accruals have positive or negative discretionary accruals or positive (negative) abnormal returns during results publication. These results enabled us to conclude that earnings management is a practice adopted by Tunisian firms to influence investors' perception of the firm's future returns and to provide them unexpected market results superior to their expectations.

Indeed, Tunisian managers may adopt an accounting policy which allows for hiding their management practices. This is related to their influence on investors' behaviour and on the market, by increasing the gap between real stock returns and that which could have been achieved in case no manipulated information was declared. Accordingly, we notice that investors of Tunis Stock Exchange, unable to seize the effects of changing accounting methods on

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firm results, may be easily trapped by managers who adopt a policy of earnings management.

These results which contradict those of Nikbakht and al (2009) give more credit to conclusions made by Kang and al (2010) and Young (2012). We might explain such conclusions by the fact that large firms which attract government's interest and analysts tend to cover the firm's poor performance and financial difficulties. Then, for these firms, managers tend to upwardly manage earnings and consequently investors over-evaluate corresponding stock and returns achieved following earnings publication tend to be superior to those observed. However, if the firm is performing well, managers, tend to manage earnings to the downward in view of reducing income tax value and consequently investors under-evaluate the stock. Moreover, at the moment of publishing earnings, returns decrease from their usual level (Rouen and al2012).

It is worth noting that studying earnings is a controversial subject (Courteau and al 2011). Our contribution relates to substitution variables used while empirically validating theoretical assumptions. Our conclusions, though, should be interpreted with caution. Size used to define political costs may represent many other influences. Some variables are studied through a binomial logistic regression technique. Moreover, used methodologies miss to take into account interactions between independent variables. However, these interactions are ignored by multivariate techniques which intuitively process weight of the different independent variables.

This study may serve as a preamble to exploring new research venues mainly on the effect of investors' institutional participation on Tunisian mangers' behaviour and their effects on the market. Then, in front of earnings management practices, rating organisms and public authorities should think about the opportunity of an astute regulation that limit such behaviour. Other studies may test the relationship between earnings management and long-term performance after having identified the explanatory factors of this behaviour.

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Performance Evaluation of Regional Rural Banks: Evidence from Indian Rural Banks

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Abstract - The genesis of the Regional Rural Banks (RRBs) for around three and half decades can be traced to the need for stronger institutional arrangements for providing rural credit. The inception of RRBs can be seen as a unique experiment as well as experience in improving the efficacy of rural credit delivery mechanism in India. In the wake of introduction of financial sector reforms, the feasibility of RRBs emerged as the most crucial factors in deciding the desired role due to their limited business flexibility with hardly any scope of diversification, smaller size of loans with higher exposure to risk prone advances and professional inefficiency in financial deployment. In order to strengthen RRBs and to improve their performance, various initiatives have been taken by the Government of India and Reserve Bank of India. The paper, therefore, is a synopsis on the evaluation of performance of RRBs in India with respect to deposit mobilization, credit channelization, credit deposit ratio, deployment of credit to various occupations etc.

Keywords: rural banks, deposit mobilization, credit deployment, india, population groups.

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Strictly as per the compliance and regulations of:

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I. Introduction

The bank nationalization witnessed an incredible achievement in the banking system through the expansion of bank branches in the country. The establishment of more rural branches undoubtedly has served the twin objectives of mobilization of rural deposits and channelization of credit to the rural areas. However, the pace of acceleration of deposit mobilization depends on the economic and industrial infrastructure of higher magnitude as well as creating greater awareness among rural populace for effective use of bank credit. The credit absorption capacity in the rural areas largely depends on the availability of required infrastructure. The deposit mobilization and channelization of credit in social and productive units to meet the social objectives with profitability is the major motive of any financial institution. Regional Rural Banks (RRBs) as like any other scheduled commercial banks (SCBs) in the country mobilizes the deposits of people and as a business institution it utilizes deposit in providing credit to needy people in rural and backward areas and thereby tries to earn certain profit for its survival. The RRB in India was established in the year 1975 and the prime objective behind its establishment was to provide banking facility to the rural people in the country and there by accumulating the rural saving and out of it to give credit to the rural people like small and marginal farmers, small scale industries, village artisans and craftsmen etc (Ibrahim, 2010) who failed to get credit from cooperative institutions.

The credit is a function of deposit. The higher the amount of deposit, the higher can be the fund for credit to a financial institution to deploy in the economy. The deposit mobilization of a bank depends on the income of the surrounding environment where the bank exists and the number of branches spread by it. To make successful deposit accumulation, the RRBs need to bring the rural masses. Similarly, the deployment of credit depends upon the availability of funds, business condition in the economy and the recovery rate. The deposit mobilization is a significant indicator of banks performance. The main idea is to tap deposit and culminate savings habit of the community. Further, tapping of potential savings and marshalling them especially for rural uses through small credit and to increase the village level income was the concern area for the RRBs of the country.

RRBs have been in existence for around three and half decades in the Indian financial scene. The inception of RRBs can be seen as a unique experiment as well as experience in improving the efficacy of rural credit delivery mechanism in India. A remarkable feature of their performance over the past three and half decades has been the massive expansion of their retail network in rural areas. From a modest beginning of 6 RRBs with 17 branches covering 12 districts in December 1975, the numbers have grown into 196 RRBs with 14,446 branches working in 518 districts across the country in March 2004. Govt. of India initiated the process of structural consolidation of RRBs by amalgamating RRBs sponsored by the same bank within a State as per the recommendations of the Vyas Committee (2004). The amalgamated RRBs were expected to provide better customer service due to better infrastructure, computerization of branches, pooling of experienced work force, common publicity marketing efforts, etc. and also derive the benefits of at large area of operation, enhanced credit exposure limits and more diverse banking activities. As a result of amalgamation, the number of RRBs was reduced from 196 to 133 as on March, 2006 and further to 82 RRBs with 15,658 branches operating in 621 districts as on March 2011. Thus, under the amalgamation process, a number

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of RRBs have been amalgamated but the branches have increased. The credit deposit ratio of RRBs has increased from 46.3 per cent in March 2004 to 59.6 per cent in March 2011 (RBI, 2010-11). It is, therefore clear that RRBs have moved far away from the conditions and compulsions that were prevailing at the time of RRBs in 1975. Hence, in the context of present day competition with other banking and non banking institutions, improvement of performance level is essential for the survival of RRBs. Keeping in view the above facts in mind, the paper attempted to analyze the performance of RRBs in terms of growth of deposit, credit deployment and credit deposit ratio etc.

II. Review of Literature

A number of studies have been made on the various aspects of working and performance of RRBs in India. A concise review of these studies is painted in the following paragraphs to identify the significance of the present study.

The RRBs followed usually the same methods of operation and procedures as followed by commercial banks which have not found favourable for the rural masses. In many cases, banks have not been located at the right place. For instance, the sponsoring banks are also running their branches in the same areas where RRBs are operating. The issue whether location matters for the performance has been addressed in detail by Malhotra (2002). The Narasimham Committee (1998) emphasized that while discharging their functions as purveyors of rural credit and mobilisers of rural savings, RRBs should not ignore the importance of financial viability and operational efficiency. The productivity, profitability and solvency of the RRBS must be maintained and sustained to enable them to function as an effective and efficient institution of rural credit. Hadi and Bagchi (2006) assessed the performance of RRBs in India in general and in West Bengal in particular. The study reviewed the progress of the RRBs in West Bengal in terms of expansion of branches, credit expansion and deposit mobilization since inception till the end of June 2001. Shivappa (2007) in a study examined the growth in advances, deposits and financial performance of the RRBs. The study covered the RRBs as a whole and discussed mostly theoretical issues rather than any analytical depth. Kumar (2008) opined that amalgamation became a death blow to the credit starved rural poor, most of whom are small and marginal farmers, agricultural and landless labourers, and artisans. The study recommended for an immediate de-amalgamation of RRBs in the interest of the vast majority of the rural poor.

Dhaliwal, Kaur and Arora (2009) pointed out that RRBs were established in India essentially for taking banking to the doorstep of rural masses, particularly in areas without banking facilities. RRBs were expected to operate as State sponsored, region based and rural oriented commercial banks. RRBs were expected to mobilize resources from rural areas and play a significant role in developing agriculture and rural economy by deploying mobilized resources in rural sectors for the needy not conversed by other formal credit institutions. Singh and Singh (2009) in their paper examined the recovery performance of Manipur Rural Bank. The study observed that the repayment of loans mainly depends on proper utilization of the loan amount, supply of quality assets, generation of sufficient income from schemes, availability of infrastructural and marketing, facilities, willingness to re-pay continuous supervision and follow up visits etc. Ibrahim (2010) studied performance evaluation of RRBs in India and investigated whether the merger/amalgamation of RRBs in India, undertaken in 2005-06 has helped to improve their performance. Various committees have also emphasized the need to improve the performance of these banks which play an important role in the rural credit market in India. The study finds and concludes that performance of rural banks in India has significantly improved after amalgamation process which has been initiated by the Government of India.

Bhaskar (2011) found that RRBs have to be repositioned and to carry out their entrusted responsibility of meeting the credit requirements in rural sector. In order to repositioning of RRBs, loss making RRBs should take step for enhancing productive by improving the skill and performance of their employees by better and specialized training in the areas of banking and finance, IT, management etc. Reddy and Prasad (2011) in an evaluative study observed that these banks penetrate every corner of the country and have been extending a helping hand in the growth of the economy. Despite the RRBs journeyed over three decades, they have achieved performance to the expected level quantitatively but not turning towards sound financial management and productivity. Kumar and Sharma (2011) in a comparative study of Himachal Gramin Bank and Parvatiya Gramin Bank found that the Parvatiya Gramin Bank is more conservative as compared to the Himachal Gramin Bank with regard to NPAs' management.

Whatever studies have emerged on the topic, they have primarily relied on exploratory analysis done for a particular year or on a group of RRBs to draw inferences. This kind of an approach has a serious limitation that the findings are guided by the choice of the year of analysis. To overcome this problem, one need to consider, as attempted in this paper, reasonably long period for analysis where extreme observations would be evened out so that one may get results that are more dependable.

III. Objectives of the Paper

The objective of the study is to analyze the performance level of rural banks in India. The specific objectives are as follows-

- To examine the trend and growth of deposit mobilization of RRBs in India.
- To analyze the growth trend and sector wise deployment of credit of RRBs over the years.
- To review the credit deposit ratio of RRBs in India.

Hypotheses Framed

- There is no difference in the growth of deposit as well as the growth of credit of RRB operating in India.
- RRB has made special dent in banking operation for fulfilling the socio economic motto over the years.

IV. Research Methodology

The RRBs operating in India has been considered as research population of the proposed study. As on March 2010-11, there were 82 RRBs with 15,658 numbers of branches operating in the country. For the purpose of the proposed study, we have considered all the branches particularly for the analysis of performance of the bank. The sources of data collection are financial statements compiled by the head office of Regional Rural Banks, RBI bulletin, RBI Annual Reports, RBI Trend and Progress of Banking in India, Annual Reports of NABARD, Directorate of Economics and Statistics, various reports, surveys and research papers. To assess the growth performance of the bank, we have taken the variables like number of districts covered by RRBs, total deposits, total advances, population per branch, deposit and advances per branch, employee per branch and credit deposit ratio etc. The statistical techniques have been used to test the hypotheses of the study. The parametric test ie,'t' test, has been considered to test significance level in appropriate cases. The study has covered 11 years from 2000-01 to 2010-11 in order to analyze the position of RRBs in the context of global financial sector recession in 2000-01. The impact of restructuring strategies adopted on RRBs performance has been studied for the aforesaid time period.

V. Performance of RRBs: Analysis and Discussions

a) *Branch Expansion of RRBs*

The number of banks operating in India has undergone rapid changes as a result of the controlled expansion. There were 648 banks operating in India in 1947. A large number of them were very small non-scheduled banks with high mortality rates and poor capital base. The introduction of minimum capital base strengthened the financial base of banks for trimming their number. At the time of nationalization of banks, there were only 85 banks (Thingalaya, 1987) in India. The establishment of RRBs in 1975 reversed the trend of healthy banking structure. Since then, 196 RRBs have joined the banking system. The table-1 showed below exhibits that in the year 2000-01, the total numbers of RRBs in all India level were 196 which reduced to 82 in the year 2010-11. This decrease in number is due to restructuring strategies adopted and amalgamation of various RRBs in the country which started after the implementation of the Narasimham Committee recommendation by the Govt. of India. Although the numbers of RRBs have decreased over the years, the branch network has increased to 15, 658 in 2010-11 from 14, 301 branches in 2000-01. During the period of 11 years under consideration, 1,357 number of new branches have been opened in order to cover more number of districts. This has been confirmed by the fact that the number of districts covered by the RRBs in the country has increased from 484 in 2000-01 to 621 districts in 2010-11. It indicates that an additional 137 numbers of districts were covered by setting up of new branches in the various uncovered and under-banked districts of the country. The population served per branch of RRBs is interestingly high ie, roughly 84.6 thousand in 2000-01 which slightly improved and figured at 77.3 thousand populations served per branch in 2010-11. The scenario is extremely terrible while compared with the population per branch of commercial banks as a whole which covered 18 thousand populations by each branch during 2010-11 (IBA, 2011) . The number of employee per branch found to be very low ie, around 4 to 5 persons throughout the period. In 2000-01, the average number of employee per office was 4.90 which has declined to 4.14 during the year 2010-11. This decrease in average number of employee per branch may be due to computerization of the in certain branches of RRBs.

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Table 1 : Branch Network of Regional Rural Banks in India

Year	No. of RRBs	No. of Branches	No. of Employee per office	No. of Districts Covered	Population Per Branch*
2000-01	196	14,301	4.90	484	84622.99
2001-02	196	14,390	4.86	511	84099.61
2002-03	196	14,433	4.82	516	83849.06
2003-04	196	14,446	4.79	518	83773.60
2004-05	133	14,484	4.76	523	83553.81
2005-06	94	14,494	4.73	525	83496.17
2006-07	90	14,520	4.70	534	83346.65
2007-08	90	14,761	4.60	594	81985.87
2008-09	86	15,181	4.51	616	79717.64
2009-10	82	15,475	4.22	619	78203.13
2010-11	82	15,658	4.14	621	77289.14

Source : Reserve Bank of India, Basic Statistical Return of Scheduled Commercial Banks, Various Issues
*population per branch of RRB is calculated with the total population as per 2011 census divided by the number of branches

b) Deposit Mobilization of RRBs

The resource mobilization is an integral part of banking activity and is a significant indicator of bank's performance. The basic principle of branch expansion is to tap deposit and culminate savings habit of the community. Further, tapping of potential savings and marshalling them for strategic uses for productive purposes in particular is the main objective. As a result, various schemes were launched over the years. The Govt has directed the banks to make all possible efforts to access to new deposits that can only expedite the pace of lending activities. There has been a substantial rise of deposits of RRBs during the period under consideration as depicted in table-2. The total amount of deposit in the year 2000-01 was Rs. 37,027 crores and this figure has gone up to Rs. 1,63,928 crores in 2010-11 recording 4.43 times increase in total deposit over the years. Although there has been decrease in the total numbers of RRBs in the country, the quantum of deposit is increasing over the years. At the same time, deposit per branch has increased over the years. The average deposit per branch in 2000-01 was Rs. 2.59 crores which has gone up to Rs. 10.47 crores per office during the year 2010-11. The scenario of deposit per branch of Indian commercial banks is much higher than the RRB as a whole during the same span. The figures for commercial banks as a whole increased from Rs. 14.56 crores in 2000-01 to Rs.44.65 crores in 2010-11(IBA, 2011) . The per capita deposit in RRBs is also very low; the figure for the same was Rs. 0.31 thousands in 2000-01, increased to Rs. 1.35 thousands in 2010-11. It could thus be inferred from the above analysis that the reform measures introduced following Narasimham committee recommendations 1991 and 1998 have positive impact in mobilizing the rural deposits as reflected from the increase in deposit per branch of RRBs. But the fact remained that the RRBs failed to maintain the deposit performance of commercial banks of the country.

c) Credit Channelization of RRBs

The bank credit is an important input variable in the production functions of agriculture, industry, commerce and allied productive activities for the socio-economic development of the backward region of the country. In this connection, Pandey (1968) suggested for the channelization of bank credit in proper direction, as otherwise, there will be adverse affect on the economy of the country. Raj committee (1977) recommended 40 per cent of lending to the priority sector. After nationalization, banks have attempted to steer the direction of change and strive towards achieving fundamental objectives of mitigation of regional disparities, dispersal of industries and reduction of concentration of economic wealth (Raul, 1997). Hartough (1994) studied the implycations of bankers action plan for profit- able small business portfolio and suggested that custo- mers payment track record and market condition etc. Bank should make advances to most attractive and growth potential units. In order to review the efficacy of existing framework of money lending a technical group, was constituted under the chairmanship of S.C. Gupta, submitted its report on July 2007 and recommended alternative avenues of credit dispensation such as micro finance institutions (RBI, 2007). Kumar (2008) opined that as a result of amalgamation of RRBs, quantum of credit allocation of bank has been under a severe concern mostly for small and marginal farmers, agricultural and landless labourers, and artisans. He recommended for an immediate de-amalgamation of RRBs in the interest of the vast majority of the rural poor. Hence, it is very interesting to know composition and direction of credit allocation of RRBs.

The loans and advances offered by the RRBs in the country are also increasing over the years in a continuous manner as observed from table-2. The total amount of loans and advances of RRBs in the country was Rs. 15,794 crores in 2000-01; the amount has gone up to a total of Rs. 98,244 crores. It is clear that the total amount of loans and advances of RRBs in the country has increased by more than 5 times over the period. The per branch advances was Rs. 1.10 crores in 2000-01 which has increased to Rs. 6.27 crores in 2010-11. The RRBs are not in a position deploy credit for socio economic development alike commercial banks in India as the credit per office of RRBs is much lower while compared the figure for credit per commercial banks in India throughout the period. The credit per commercial banks increased to Rs.41.55 crores in 2010-11 from Rs. 7.79 crores in 2000-01(RBI, 2010-11). The per capita loans and advances of RRBs are also very low throughout the period under consideration.

d) Credit Deposit Ratio of RRBs

The credit deposit ratio is considered as dependable indicator of efficiency of bank's participation in the developmental process. It indicates the extent of bank deposits advanced to multifarious activities in the area. Nambiar (1980) articulated that low credit absorption capacity due to low infrastructural facilities in the area particularly in 'no industrial region' is the main hurdle of increasing in C/D ratio. The banks along with developing and implementing authorities of the area can only take a challenge against the congenital impediments to sustain the economic development of that area. Sikidar (1990) has aptly viewed that the C/D ratio should be looked into its segment and disaggregated forms and for extending advances, the sources of fund are deposits, refinance from higher financial institution, and accretion of profit. Nandal and Singh (2002) viewed that due to larger quantum of deposits, banks have advanced credit to a large extent but C/D ratio has not been found satisfactory. They suggested that there should be proper recovery of loan amount from the loanee in order to have satisfactory C/D ratio, otherwise banks would suffer causing harm to the economy as a whole. Bhagawati (1991) articulated that banks in north eastern region have not been able to increase their credit portfolio. As a result, bank's sensitiveness and effectiveness in planning of advances is required for bringing a paradigm change in the competitive environment.

The credit deposit of the RRBs in India has been increased over the years. The fact has been delineated in table-2. In 2000-01, the credit deposit ratio of the RRBs in the country was 41.0 per cent which increased to 59.6 per cent in 2010-11. The trend of credit deposit ratio of commercial banks is much higher than that of the RRBs; the figure was 45.9 per cent in March 2001 which has reached to the level of 73.9 per cent in March 2008 (RBI, 2008). Hence the apparent fact remains that the RRBs failed to maintain the C/D ratio of commercial banks of the country during the period. The reason of significantly low C/D ratio of RRBs may be attributed to nature of loans sanctioned, non-recovery of loans, stubborn cheaters, lack of direction of end use of bank credit, lack of implementation of bankable schemes and so on.

Table 2 : Performance of Regional Rural Banks in All India Level

Year	Total Deposits (Rs. In Crores)	Deposit per branch (Rs. in Crores)	Per Capita Deposit (Rs. In thousands)	Total Loans and advances (Rs. in Crores)	Loans and advances per branch (Rs. in Crores)	Per Capita Loans and Advances (Rs. In Thousands)	Credit-Deposit Ratio (%)
2000-01	37,027	2.59	0.31	15,794	1.10	0.13	41.0
2001-02	43,220	3.00	0.36	18,629	1.29	0.15	41.8
2002-03	48,346	3.35	0.40	22,158	1.54	0.18	44.2
2003-04	57,010	3.94	0.47	26,115	1.81	0.22	46.3
2004-05	62,143	4.29	0.51	32,871	2.27	0.27	52.8
2005-06	71,329	4.92	0.59	38,520	2.66	0.32	55.6
2006-07	83,144	5.73	0.69	47,326	3.26	0.39	58.3
2007-08	99,093	6.71	0.82	57,568	3.90	0.48	59.5
2008-09	1,20,189	7.92	0.99	65,609	4.32	0.54	56.4
2009-10	1,45,035	9.37	1. 20	79,157	5.12	0.65	57.6
2010-11	1,63,928	10.47	1.35	98,244	6.27	0.81	59.6

Source : Reserve Bank of India, Basic Statistical Return of Scheduled Commercial Banks, Various Issues
Consolidated RBI Report on Trend and Progress of Banking in India from 2000-01, 2010-11
RBI, Statistical Tables Relating to Banks in India 2003

In order to analyze the nature of relationship between growth of deposits and growth of advances, coefficient of correlation (r) analysis has been employed. For this purpose, 'r' value between deposit per office and advance per office have been calculated for the period of 11 years from 2000 to 2011. The result obtained is as under-

$$r = 0.99$$

$$t = 21.06 \text{ (cal.)}$$

$$t_{0.05}(9 \text{ df.}) = 1.833$$

$$t_{0.01}\ (9 \text{ df.}) = 2.821$$

The high positive correlation (r=0.997) value between deposit per office and advances per office are statistically significant at 1 per cent and 5 per cent level of significance at 9 degree of freedom. The calculated value of 't' is much higher than the table value. It confirms that along with the increase of deposits, loans and advances has increased at the same proportion. This implies that the RRBs deploying credit at the same rate what they have mobilized for this purpose although they have not attained the stipulated C/D ratio of 60 per cent.

e) Population Group - Wise Growth of Deposits of RRBs

The population group-wise deposits and credit of RRBs viz, rural, semi-urban, urban and metropolitan area is presented in table- 3. It is clear from the table that there is a quantum jump of rural deposit from Rs. 22,307.06 crores in March 2000 to Rs. 84,115.62 crores in March 2010 recording an increase 3.8 fold during 2000-2010. But the percentage share of rural deposit declined from 69.63 per cent to 59.23 per cent during the same period. The semi-urban deposit was Rs. 7,268.64 crores in March 2000 which increased to Rs. 36,625.67 crores in March 2010. The percentage share of semi-urban deposit increased from 22.69 per cent to 25.79 per cent. It shows positive growth of semi-urban deposits both in quantum and percentage term over the years. The urban and metropolitan deposits also increased both in quantitative and percentage term.

Table 3 : Population Group-wise Deposits of RRBs in India (As on March)

(Amount Rs. in Crores)

Year/Population Group	Rural	Semi-Urban	Urban	Metropolitan	Total
2000	22,307.06 (69.63)	7,268.64 (22.69)	2,393.70 (7.47)	65.28 (0.20)	32,034.68 (100)
2001	26,312.89 (69.33)	8,568.89 (22.58)	2,994.39 (7.89)	77.08 (0.20)	37,953.23 (100.0)
2002	30,154.59 (68.43)	10,218.22 (23.19)	3,589.09 (8.14)	101.23 (0.22)	44,063.12 (100.0)
2003	33,745.05 (68.09)	11,664.81 (23.54)	4,039.04 (8.15)	109.25 (0.22)	49,558.14 (100.0)
2004	37,711.63 (67.45)	13,433.77 (24.03)	4,619.74 (8.26)	143.88 (0.26)	55,909.02 (100.0)
2005	40,957.13 (66.65)	15,154.59 (24.66)	5,160.81 (8.40)	174.37 (0.28)	61,446.90 (100.0)
2006	44,359.98 (62.98)	17,978.85 (25.53)	7,403.50 (10.51)	691.91 (0.98)	70,434.24 (100.0)
2007	50,913.97 (62.37)	21,361.13 (26.17)	8,489.90 (10.40)	865.50 (1.06)	81,630.50 (100.0)
2008	59,661.45 (61.19)	25,883.31 (26.54)	10,883.46 (11.16)	1,081.20 (1.11)	97,509.41 (100.0)
2009	71,646.76 (60.43)	31,651.27 (26.69)	13,862.90 (11.69)	1,409.34 (1.19)	1,18,570.27 (100.0)
2010	84,115.62 (59.23)	36625.67 (25.79)	19,271.04 (13.57)	1,998.52 (1.41)	1,42,010.85 (100)
CV	**42.54**	**53.38**	**70.24**	**108.10**	**48.62**

Source : Statistical Returns of Scheduled Commercial Banks in India, Various Issues

(Figures in the Parentheses Indicate per cent to Total Deposit)

The above analysis found that deposits of all the population groups and their percentage share to total deposits of RRBs have increased except percentage share of rural deposit which has declined during the period under consideration. This indicates that in respect of deposit mobilization, the RRBs in rural areas are not performing at par with others groups. The coefficient of variations results, however, gives contradictory results indicating that there have been a less variations of rural deposits. This has called for a further enquiry on the degree of relationship among the population group-wise deposits.

In order to study the extent of deposit mobilization in the rural areas, the correlation matrix analysis is employed among the population group wise deposit during 2000-2010. The result obtained is presented in table-4.

Table 4 : Matrix of Correlation among the Population Group wise Deposits

Variables	Total Deposit	Rural Deposit	Semi-Urban Deposit	Urban Deposit	Metropolitan Deposit
Total Deposit	1				
Rural Deposit	0.99*(21.06)	1			
Semi-Urban Deposit	0.99*(21.06)	0.99*(21.06)	1		
Urban Deposit	0.99*(21.06)	0.99*(21.06)	0.99*(21.06)	1	
Metropolitan Deposit	0.98*(14.7)	0.97*(12.13)	0.98*(14.7)	0.99*(21.06)	1

Source : Calculated by the Researcher on the basis of table-3

$t_{0.05}$ (9 df.)=1.833 & $t_{0.01}$ (9 df.)=2.821 (Figures in parentheses indicate the respective't' values)

*Significant both at 5 per cent and 1 per cent level of significance.

It is observed that the 't' values (calculated) of the highly positive correlations are higher than the tabulated values. It means that 'r' values are statistically significant. It indicates that with the increase in total deposits, the population group wise deposits increased in the same proportion.

f) Population Group wise Credit Channelization of RRBs

There has been a quantum increase of population group wise credits of RRBs during the period 2000-2010. But the percentage share of credit to total credit has declined in case of rural credit. The table-5 presents the facts relating to population group-wise credit of RRBs.

Table 5 : Population Group-wise Credit of Regional Rural Banks in India

(Amount Rs. In Crores)

Year/Population Group (March)	Rural	Semi- Urban	Urban	Metropolitan	Total
2000	9,644.22 (73.47)	2,683.83 (20.45)	777.98 (5.93)	20.06 (0.15)	13,126.10 (100)
2001	11,826.11 (73.17)	3,491.50 (21.60)	1,009.43 (6.25)	24.57 (0.15)	16,163.51 (100.0)
2002	13,509.02 (71.59)	4,105.31 (21.75)	1,212.87 (6.43)	41.56 (0.22)	18,868.76 (100.0)
2003	16,177.11 (71.51)	4,921.71 (21.76)	1,470.67 (6.50)	53.44 (0.24)	22,622.92 (100.0)
2004	18,265.45 (70.19)	5,917.39 (22.74)	1,771.62 (6.81)	65.88 (0.25)	26,020.34 (100.0)
2005	23,017.35 (70.41)	7,529.16 (23.09)	2,072.83 (6.34)	69.49 (0.21)	32,688.83 (100.0)
2006	24,453.53 (66.73)	9,124.13 (24.90)	2,825.82 (7.71)	240.03 (0.65)	36,643.51 (100.0)
2007	32,226.20 (67.34)	11,759.79 (24.57)	3,581.75 (7.48)	287.38 (0.60)	47,855.11 (100.0)
2008	38,736.20 (66.91)	14,434.77 (24.94)	4,340.15 (7.50)	375.44 (0.65)	57,886.56 (100.0)
2009	44,247.18 (66.21)	16,693.32 (24.98)	5,429.25 (8.12)	459.16 (0.69)	66,828.91 (100.0)
2010	53623.12 (64.79)	20,970.86 (25.34)	7,529.29 (9.10)	638.50 (0.77)	82,761.76 (100)
CV	55.64	65.08	73.11	101.83	59.50

Source : Statistical Returns of Scheduled Commercial Banks in India, Various Issues

(Figures in the Parentheses Indicate per cent to total credit)

From the analyses, it is observed that over the years, coefficient of variation of metropolitan credit is on fluctuating trend than that of other population groups ie, rural, semi-urban and urban. As the percentage share of credit in rural areas has declined, it may be observed that a negative attitude of banks to fulfill the socio economic objectives and thereby the motto of rural development although RRBs were created basically to serve weaker sections, village farmers, artisans etc.

An attempt has been made here under to find out the extent of credit utilization among the population group wise credit of RRBs in India. In this respect, the correlation matrix analysis is employed among the variables during 2000-2010. The table-6 presents the

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results of correlations. It is observed that the highly positive 'r' values are significant as the calculated values of 't' are higher than the table value at 5 per cent and 1 per cent level of significance at 9 df. It shows that there is high relationship exist among the variables. It can further be interpreted that along with the increase in total credit, the credit of rural, semi urban and urban areas have also been increasing proportionately.

Table 6 : Matrix of Correlation Analysis of Population Group wise Credit

Variables	Total Credit	Rural Credit	Semi-Urban Credit	Urban Credit	Metropolitan Credit
Total Credit	1				
Rural Credit	0.99* (21.06)	1			
Semi-Urban Credit	0.99* (21.06)	0.99* (21.06)	1		
Urban Credit	0.99* (21.06)	0.99* (21.06)	0.99* (21.06)	1	
Metropolitan Credit	0.98* (14.7)	0.98* (14.7)	0.99* (21.06)	0.99* (21.06)	1

Source : Calculated by the Researcher on the basis of table-5

$t_{0.05}$ (9 df.)=1.833 &$t_{0.01}$ (9 df.)=2.821(Figures in parentheses indicate the respective't' values)

*Significant both at 5 per cent and 1 per cent level of significance

g) *Deployment of Credit of RRBs in India*

The RRBs provide credit support for the development of rural and backward areas. It provides loans to various purposes like agriculture, industry, transport operators, professional and personal loans etc. The credit extension of the RRBs in India during the last ten years is presented in table- 7. The amount of agricultural credit and the percentage share of total credit of RRBs have increased during 2000-2010. The agricultural credit was Rs.6316.56 crores in March 2000 (which was 48.12 percent of total credit), has increased to the tune of Rs. 34063.23 crores in March 2010 (ie, 61.47 per cent of total credit). In case of industrial credit the total loan extended by the RRBs in India in March 2000 was Rs. 919.67 crores (7.01 percent of total credit) and in March 2010, amount of industrial loan has increased to Rs.1707.76 crores (3.08 per cent of the total credit extended).

Table 7 : Credit Allocation of RRBs in India (As on March)

(Amount Rs. in Crores)

Sl. No	Occupation	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1	Agriculture	6316.56 (48.12)	7665.04 (46.88)	8741.08 (46.33)	10642.00 (47.04)	12237.51 (47.03)	16463.32 (50.36)	18820.42 (51.36)	26184.93 (54.72)	32139.74 (55.52)	36437.64 (54.52)	34063.23 (61.47)
2	Industry	919.67 (7.01)	1207.29 (7.38)	1349.95 (7.15)	1489.64 (6.58)	1536.34 (5.90)	1826.65 (5.59)	1871.99 (5.11)	2476.53 (5.18)	2336.59 (4.04)	2600.32 (3.89)	1707.76 (3.08)
3	Transport Operators	626.82 (4.77)	688.57 (4.21)	567.95 (3.01)	529.02 (2.34)	542.49 (2.08)	548.26 (1.68)	503.81 (1.37)	625.35 (1.31)	609.75 (1.05)	755.14 (1.13)	777.47 (1.40)
4	Professional and other services	384.47 (2.93)	469.47 (2.87)	534.14 (2.83)	659.31 (2.91)	706.26 (2.71)	726.39 (2.22)	808.13 (2.21)	1079.46 (2.26)	1610.07 (2.78)	1919.18 (2.87)	1266.70 (2.29)
5	Personal Loans	2469.22 (18.81)	3449.21 (21.09)	4440.28 (23.53)	5583.02 (24.68)	6680.56 (25.67)	7782.71 (23.81)	8240.91 (22.49)	9804.40 (20.49)	10395.51 (17.96)	12328.16 (18.45)	7435.16 (13.42)
6	Trade	1900.87 (14.48)	2234.41 (13.66)	2216.78 (11.75)	2462.73 (10.89)	2718.49 (10.45)	3196.11 (9.78)	3400.68 (9.28)	4322.24 (9.03)	4877.08 (8.43)	5866.81 (8.78)	4072.18 (7.35)
7	Finance	2.88 (0.02)	5.24 (0.03)	16.97 (0.09)	29.02 (0.13)	50.82 (0.20)	59.82 (0.18)	82.55 (0.23)	91.17 (0.19)	446.96 (0.77)	2738.81 (4.10)	2426.13 (4.38)
8	All Others	505.60 (3.85)	632.39 (3.87)	1001.62 (5.31)	1227.59 (5.43)	1547.85 (5.95)	2085.57 (6.38)	2915.03 (7.96)	327.104 (6.84)	5470.86 (9.45)	4182.86 (6.26)	3668.07 (6.62)
	Total Bank Credit	13126.1 (100)	16351.61 (100)	18868.76 (100)	22622.93 (100)	26020.32 (100)	32688.83 (100)	36643.52 (100)	47855.12 (100)	57886.56 (100)	66828.92 (100)	55416.70 (100)

Source : Statistical Returns of Scheduled Commercial Banks in India, Various Issues(Figures in the Parentheses Indicate per cent to Total Deposit and Total Credit)

Although there has been a quantum increase of industrial credit, the percentage shares of industrial credit to total credit of RRBs declined. In case of transport operators, the total amount of credit provided in March 2000 was Rs.626.82 crores but the contribution to transport operator increased to Rs.777.47crores in March 2010. However, the share of credit for transport operators has been declining continuously. The transport operator received a meager amount of loan during the period. The share of personal loan to the total amount although declined, its share remained around 13.42 per cent in 2010. The trade and finance together constitute approximately 12 per cent of total credit of RRBs in the year 2010.

In order to understand the extent of credit allocation of RRBs into various occupations, correlation analysis is employed. The correlation of total bank credit (a) with agriculture (b) industry credit (c) transport operators (d) professional and other services (e) personal loans (f) trade (g) finance (h) all others (i) during 2000-2010 is shown in table-8.

Table 8 : Correlation Analysis of Total Credit with Credit to Various Occupations of RRBs

Variables	Correlation value	Calculated 't' value
r_{ab}	0.99	21.06
r_{ac}	0.89	5.80
r_{ad}	0.51	1.78
r_{ae}	0.97	12.13
r_{af}	0.92	7.08
r_{ag}	0.98	14.70
r_{ah}	0.75	3.41
r_{ai}	0.79	3.82

Source : Self calculated by the researcher

$t_{0.05}$ (9 df.)=1.833 & $t_{0.01}$ (9 df.)=2.821

It is found that almost all the 'r' values are statistically significant both at 5 per cent and 1 per cent level of significance at 9 df. except the total bank credit with transport operators. It indicates that except the transport operators all other occupation groups are getting adequate credit along with the increase of total bank credit of the RRBs in the country. The correlation between total bank credit and transport operator is 0.51 which is not statically significant at 5 per cent and 1 per cent level of significance. This clearly designated that transport operator is getting comparatively less amount of loans for developmental purpose which might perhaps resultant the severe infrastructural backwardness that persist in rural areas of the country. Hence an immediate step is necessary to enhance the adequate amount of credit to the transport operators.

VI. Main Findings

1. The study found that new branches of RRBs have been opened up in the under-banked districts of the country. The population served per branch of RRBs is interestingly high ie, roughly 77.3 thousand populations served per branch in 2010-11. The scenario is extremely terrible while compared with the population per branch of commercial banks as a whole which covered 18 thousand populations by each branch during 2010-11.
2. The number of employee per branch found to be very low ie, around 4 to 5 persons throughout the period. In 2000-01, the average number of employee per office was 4.90 which has declined to 4.14 during the year 2010-11. This decrease in average number of employee per branch may be due to computerization strategies of certain branches of RRBs.
3. The scenario of per capita deposit in RRBs is also very low; the figure for the same was Rs. 0.31 thousands in 2000-01, increased to Rs. 1.35 thousands in 2010-11. It could thus be inferred that the reform measures have positive impact in mobilizing the rural deposits as reflected from the increase in deposit per branch of RRBs. But the fact remained that the RRBs failed to maintain the deposit performance of commercial banks of the country.
4. The study found that RRBs are not in a position deploy credit for socio economic development alike commercial banks in India as the credit per office of RRBs is much lower while compared the figure for credit per commercial bank in India throughout the period.
5. The RRBs have failed to maintain the C/D ratio of commercial banks of the country during the period. The reason of significantly low C/D ratio of RRBs may be attributed to nature of loans sanctioned, non-recovery of loans, stubborn cheaters, lack of direction of end use of bank credit, lack of implementation of bankable schemes and so on.
6. The econometric analysis relating to the deposit per office and advances per office validated the fact that along with the increase of deposits, loans and advances has increased at the same proportion. This implies that the RRBs deploying credit at the same rate what they have mobilized for this purpose although they have not attained the stipulated norms of credit deposit ratio.
7. It is found that except the transport operators all other occupation groups are getting adequate credit along with the increase of total bank credit of the RRBs in the country. The correlation between total bank credit and transport operator is 0.51 which is not statistically significant, indicated that transport operator is getting comparatively less amount of loans for developmental purpose which might perhaps resultant the severe infrastructural hazards that persist in rural areas of the country.

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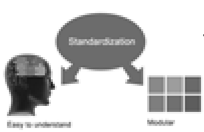

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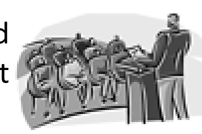

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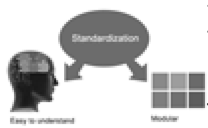

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	A-B	**C-D**	**E-F**
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Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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