Examining the Performance & Relationship between Bank ETFS and their underlying Index in India

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INTRODUCTION

ETFs are one of the most innovative and successful products introduced on exchanges and have grown tremendously over the years. Many people have an interest in a sector like the banking industry, a bank ETF may be the way to go for investment. Due to its high volatility and liquidity, bank ETFs can be easily traded on margins. Smaller or big traders can easily track the price movements and go short or long depending on the favorable situations. There are various bank ETFs to choose for investing strategy. In 2010 the bank ETF sector has shown some growth while the rest of the financial sectors have either remained flat or have experienced losses.

LITERATURE REVIEW

Jonne M. Hill and Barbara Mueller (2001) made a research on ETFs and they concluded that Tracking errors and returns based on fund NAV relative to the index reflect some factors characteristic of the product structure.

Joel T. Harper, Jeff Madura and Oliver Schnusenberg(2006).Results indicate that ETFs exhibit higher mean returns and higher Sharpe ratios than foreign closed-end funds, while CEFs exhibit negative alphas. This indicates that a passive investment strategy utilizing ETFs may be superior to an active investment strategy using CEFs.

OBJECTIVES OF THE STUDY:-

(a) To compare the performance of the Bank ETFs with its benchmark and to analyse the risk profile of selected Bank ETFs.

(b) To find out Long term relationship between CNX BANK /PSU BANK & BANK ETFS/PSU BANK ETFS, by using co integration test.

(c)To find out how much the BANK Indices& PSU indices explain BANK ETFS/PSU BANK ETFS (VAR Method- Forcast error varaince method)

RESEARCH METHODOLOGY

The study is analytical in nature. It is based on the secondary data. The scope of the study is limited to the evaluation of the entire bank ETFs available in India. At present, there are four bank ETFs in India i.e. Kotak PSU Bank ETF, Reliance Banking ETF, PSU BANK BeES, and Bank BeES. The data for the study consists of daily closing prices of Bank ETFs i.e. Kotak PSU Bank ETF, Reliance Banking ETF, PSU BANK BeES, and Bank BeES for the period from 1st April 2008 to 28th March 2013 and Bank index for the period 1st April 2008 to 28th March 2013.

The data for Bank ETFs and Bank index is collected from the website of National Stock Exchange. The collected data has been analyzed on the basis of returns over various periods i.e. one month, four months, one year, and return for 5 years. The performance of the funds has been evaluated in comparison to the average performance of similar category funds, and its benchmark i.e. CNX PSU Bank Index & CNX

Bank Index. The study will examine return and risk relating to the funds in the light of mean, standard deviation, Beta, Sharpe ratios and Treynor ratios.

Later use the standard Augmented Dickey-Fuller test (ADFt). First, test for the unit roots in the cases when intercept and trend is present in the regression, then when there is the intercept only, and finally without intercept and trend. If not able to reject the null hypothesis about the unit root run the ADFt on the first differences of the original time series. In this step, one can reject the null hypothesis about the unit root in order to be able to conclude that the original time series are I(1).Cointegration Test

With the previous results of Unit Root tests, i.e., two *I* (1) variables one can test whether there is a

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long-run relationship between Bank ETFs and Bank Index. This paper implements the regression-based Engle-Granger (1987) methodology. Following Engle and Granger (1987), the cointegration test is based on the following equations,

$$ETFt = \alpha + \beta BIt + et \quad (1)$$

$$\Delta et = \beta et\text{-}1 + \sum_{j=1}^{k} \Delta e_{t-j} \quad (2)$$

Where ETF is the Bank ETF and BI is the Bank index, and $\sum \Delta e_{t-j}$ is an error term. If the error term (e) is stationary, two variables are cointegrated. By applying the ADF test to check the stationarity of the residual series (e). Estimate the error-correction model (ECM).

Vector Auto Regression (VAR)

Next the study applies methodology of Vector Auto Regression (VAR) developed by Sims. Hence for each of the ETFs and underlying asset first logarithmic returns have been computed. The model thus can help in identifying main channels of interactions and simulates the responses of a given market to innovations in other markets. Using VAR model important questions related to integration of two markets can be answered – how much of movements in one market can be explained by innovations in other market. The question can be answered by computing forecast error variance decompositions (FEVD).

ANALYSIS OF PERFORMANCE OF BANK ETFS

Analysis of Performance of Bank ETFS

Table 1: Performance (% Age) Of Selected Bank Exchange Traded

ETFs/ Index	Monthly	Quarterly	Yearly	5 years
PSU Bank BeES	6.02	12.29	5.63	0.06
CNX PSU BANK	*5.3*	*12.66*	*5.62*	*0.16*
Kotak PSU ETF	8	16.5	7.79	0.96
CNX PSU BANK	*5.3*	*12.66*	*5.62*	*0.16*
Reliance Bank ETF	-5.24	5.64	-5.16	-1.65
CNX BANK	*11.4*	*8.78*	*-3.72*	*-1.95*
Bank BeES	-2.89	8.62	-3.63	-2.08
CNX BANK	*11.4*	*8.78*	*-3.72*	*-4.07*

Source: Authors compilation

The performance of the Bank ETFs is depicted in Table 1. It shows 1 month, 4 month, 1 year and last 5 years return of the selected Bank ETFs. Analysis of table 1 reveals that one month return of the selected bank ETFs ranges between -5.24 percent and 8 percent. Kotak PSU Bank ETFs has registered a highest growth of 8 percent, it is followed by PSU Bank BeES with a growth of 6.02 percent, and the lowest growth of -5.24 has been shown by Reliance Banking ETF also Bank BeES has shown a lower growth of -2.89. Comparing average monthly performance of CNX PSU BANK index with all PSU bank ETFs table 1 reveals that PSU Bank bees depicts similar returns to the benchmark index ie CNX PSU BANK where as others have outperformed or underperformed the benchmark index.

The return of last 4 months of the entire bank ETFs falls between 5.64 percent and 16.5 percent. Kotak PSU has shown highest positive return of 16.5 percent, and the lowest return of 5.64 percent has been depicted by Reliance Banking ETF. PSU bank BeES has shown positive return of 12.29 percent & Bank BeES with a positive return of 8.62 percent. The comparison depicts that 3 out of 4

bank ETFs (75 percent) have outperformed. However, the PSU bank BeES has been able to give similar returns as compared to CNX PSU Bank Index of 12.66 percent. Also Bank BeES has given similar returns as compared to CNX Bank Index of 8.78 percent.

Further, all the Bank ETFs have shown a negative & positive performance as for as last one year return. Last one year returns are -3.63 percent, 7.79 percent, and 7.79 percent for Kotak PSU Bank ETF, 5.63 percent for PSU Bank BeES, and -3.63 percent for Bank BeES respectively. Reliance Banking ETF has also shown negative return about -5.16 percent. It is observed that the performance of PSU Bankbees and CNX PSU Bank index is similar 5.62 percent. Similar in case of Bank BeES, where as the average yearly returns are similar to that of CNX BANK INDEX.

It is found that for the last 5 years the return for Kotak PSU Bank ETF, PSU Bank BeES, Bank BeES, Reliance Banking ETF are 0.96 percent, 0.06 percent, -2.08percent, and -1.65 percent respectively. It clearly shows that last 5 years return of 2 out of 4 bank ETFs (50 percent) are negative. On the basis of last 5 years return it can be stated that the performance of Kotak PSU Bank ETF & PSU Bank BeES are the best whereas the remaining bank ETFs have shown a negative performance.

The table depicts that the average performance of PSU Bank BeES are similar to its benchmark i.e, CNX PSU BANK whereas the remaining bank ETFs have outperformed or underperformed the benchmark index. In case of Bank BeES the average performance is same to its benchmark ie CNX BANK index. Hence for further comparative study the two bank ETFs can be used as they follow the benchmark index and will help to give better results.

ANALYSIS OF RISK & RETURN

Table 2: Risk-Return Profile of Selected Bank Exchange Traded Funds (Etfs)

ETFs	Mean	Standard Deviation	Beta	SharpeRatio	TreynorRatio	JensonsRatio	Tracking Error
PSU BankBeES	0.06	2.29	0.73	-0.04	-0.12	0.15	-0.09
Kotak PSU	0.9	2.64	0.5	-0.03	-0.16	0.13	0.8
Rel bank	-1.6	2.52	0.2	-0.04	-0.51	0.12	2.41
Bank BeES	-2	2.1	0.94	-0.05	-0.12	0.19	-0.13

Source: Authors compilation

Mean Return: All the selected bank exchange traded funds in Table 2 have shown a negative or positive mean return over the period of study. The mean return of the selected ETFs varies between 0.9 percent to -2 percent. Kotak PSU banking ETF has registered a minimum mean positive growth of 0.9 percent and Bank Bees has depicted a highest mean negative growth of -2 percent. Hence, Kotak PSU banking ETF has revealed a reasonable resilience in the time of decline in market in comparison to other selected banking ETFs.

Standard Deviation: It measures the total risk from the average return. It is observed that the standard deviation of the bank ETFs ranges between 2.10 and 2.64. Analysis reveals that total risk is highest for the Kotak PSU Bank ETF (2.64) followed by Reliance Banking ETF (2.52), whereas it is lowest for the Bank BeES (2.10). Hence, on the basis of standard deviation of the selected schemes, it is observed that Kotak PSU Bank ETF are most volatile and Bank BeES are least volatile among the selected ETF schemes.

Beta: Systematic risk is measured in terms of beta which indicates the sensitivity of a scheme return in relation to market index. The beta value of an index itself is taken as one. If a scheme's beta is less than 1, it is considered to be defensive. If a scheme's beta is more than 1, it is considered to be aggressive. Analysis of table 2 points out that the beta value for the selected Bank ETFs ranges between 0.40 and 0.94. Beta values for the entire bank ETFs are less than one which indicates that all the selected ETFs are defensive in nature. The value of beta is highest for Bank BeES (0.94), it is followed by PSU Bank BeES (0.73), for Kotak PSU Bank ETFs (0.5) and it is lowest for Reliance

Banking ETF (0.2). On the basis of beta value, it is found that that Bank BeES is the most aggressive ETF amongst the entire banking exchange traded funds.

Sharpe Ratio: Sharpe ratio is a useful measure of risk adjusted return. It reflects the returns generated per unit of total risk. Higher the Sharpe ratio, the better is the performance of the fund under analysis. Analysis of Sharpe ratio in table 2 depicts that its value for the selected Bank ETF schemes varies between -0.03 and -0.05. All the selected schemes have shown a negative return per unit of risk. It indicates that the risk premium generated by the selected funds for the assumption of total risk by the investors is not only insufficient but also negative. Kotak PSU Bank ETF has shown a moderately negative return of -0.03 per unit of total risk. This ratio is highest to the extent of -0.05 for Bank BeES. It is -0.04 for Reliance Banking ETF and PSU Banking BeES. Hence, on the basis of reward to variability ratio it is clear that the variability in the return is moderately high in case of Bank BeES, and variability is reasonably low for Kotak PSU Bank ETF and PSU Banking BeES.

Treynor Ratio: The Treynor Ratio helps analyse returns in relation to the market risk of the fund. Higher the Treynor Ratio, the better is the performance of fund under analysis. It has been observed that Treynor ratio of the selected bank ETFs varies between -0.12 and -0.51. The entire bank ETFs have shown a negative performance after adjusting for market risk. This ratio is lowest i.e. -0.12 for PSU Bank bees, and highest for Reliance Banking ETF i.e. -0.51. It is clear on the basis of analysis that PSU Bank BeES is least affected by the systematic risk, and Reliance Banking ETF is most affected by the market/systematic risk.

Jensen's: The basic idea is that to analyze the performance of a fund you must look not only at the overall return of a portfolio, but also at the risk of that portfolio. Jensen's measure is one of the ways to help determine if a portfolio is earning the proper return for its level of risk. If the value is positive, then the fund is earning excess returns. In other words, a positive value for Jensen's alpha means a fund has capacity to "beat the market". The table depicts that PSU Bank BeES earns +ve returns at 0.15, Kotak PSU Bank ETF & Reliance Banking ETF earn similar +ve returns ie 0.13& 0.12. But he highest is of Bank BeES ie 0.19. Hence Bank BeES is earning excess returns to the market.

Tracking Error: It is defined as the annualised standard deviation of the difference in returns between the Index fund and its target Index. In simple terms, it is the difference between returns from the ETF to that of the Index.

$TE_{ETF} = RETURN_{ETF} - RETURN_{BENCHMARK}$

It is found the tracking error in Reliance Banking ETF i.e. 2.41 and Kotak PSU Bank ETF is 0.8 whereas it is very low in PSU Bank bees i.e. -0.09 & Bank BeES -0.13. It shows that the tracking error is very high in Kotak PSU Bank ETF & Reliance Banking ETF. Lower the tracking error, closer are the returns of the ETF to that of the target Index. Hence PSU Bank bees & Bank BeES have returns closer to their Benchmark Index.

After analyzing all the parameter in table 2, the observation states that *PSU Bank bees* & *Bank BeES* give similar returns to its benchmark and the Risk is also less since they replicate the Index, thus for further comparison the 2 ETFs shall be used.

Regression Analysis

Table 3: Correlation Structure between ETF and Underlying Assets

Variable	LPSUBEES	Variable	LBANKBEES
LPSUBEES	1.0000	LBANKBEES	**1.0000**
LCNXPSUBANK	0.9975776	LCNXBANK	0.9995398

Source: Authors compilation

The correlation structure between the LPSUBEES and CNXPSUBANK is the simplest indicator of the underlying relationship between the two variables. Table 3 also presents correlation structure for LBANKBEES & LCNXBANK. It can be seen that the correlation between LPSUBEES and LCNXPSUBANK is strong (0.9975776). LBANKBEES & LCNXBANK also have high correlation ie (0.9995398). Thus there is strong +ve correlation between the variables.

Stationarity of Variables (Unit Root Test):

H_0- Has a unit root (i.e., the data is non stationary)
H_1- Does not have a unit root (i.e., the data is stationary)

Table 4: Lag Order Selection Criteria

Endogenous variables: LPSUBEES LCNXPSUCLOSE

Lag	LogL	LR	FPE	AIC	SC
0	2671.946	NA	3.57e-05	-4.564010	-4.555353
1	6112.869	6864.200	1.00e-07	-10.43909	-10.41312
2	6181.868	137.4085	8.98e-08	-10.55020	-10.50691
3	6219.558	74.92862	8.48e-08	-10.60779	-10.54719*

Endogenous variables: LBANKBEES LCNXBANKCLOSE

Lag	LogL	LR	FPE	AIC	SC
0	3700.047	NA	8.39e-06	-6.013084	-6.004767
1	7204.718	6992.246	2.83e-08	-11.70523	-11.68028
2	7256.102	102.3507	2.62e-08	-11.78228	-11.74070
3	7293.762	74.89207	2.48e-08	-11.83701	-11.77880*

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

Source: Authors compilation

The results of ADF test for presence of unit root in time series of variables are presented in Table 4. The test results indicate that all the return series are stationary at levels or integrated of 1st Difference i.e. I(1).

*Hence reject null hypothesis (Ho) and accept the alternative hypothesis (H_1)

(a) Lag selection for ADF test is automatic based on SIC (Schwartz Information Criterion)

(b) MacKinnon (1996) one-sided p values use for rejection of hypothesis of unit root.

(c) Test t values are -3.026086, -3.022347, -2.049357 & -2.094551 for 1%, 5% and 10%.

Hence reject the null Hypothesis and accept the alternative hypothesis

Cointegration Tests

Table 5: PSUBANKBEES & CNXPSUBANK – Cointegration Test

Dependent Variable: PSUBANKBEES

Method: Least Squares

Sample (adjusted): 6/27/2008 9/17/2011

Included observations: 1178 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CNXPSUBANK	0.100491	0.000223	450.1496	0.0000
C	4.686120	0.741188	6.322444	0.0000
R-squared	0.994230	Mean dependent var		327.1352
Adjusted R-squared	0.994225	S.D. dependent var		85.99327
S.E. of regression	6.534904	Akaike info criterion		6.593889
Sum squared resid	50221.04	Schwarz criterion		6.602499
Log likelihood	-3881.800	F-statistic		202634.7
Durbin-Watson stat	0.540340	Prob(F-statistic)		0.000000

Null Hypothesis: RESID01 has a unit root

Exogenous: Constant				
Lag Length: 3 (Automatic based on SIC, MAXLAG=22)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-6.659092	0.0000
Test critical values:	1% level		-3.435705	
	5% level		-2.863793	
	10% level		-2.568020	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(RESID01)				
Date: 08/17/12 Time: 13:43				
Sample (adjusted): 7/01/2008 9/17/2011				
Included observations: 1174 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-0.143285	0.021517	-6.659092	0.0000
D(RESID01(-1))	-0.394976	0.032261	-12.24315	0.0000
D(RESID01(-2))	-0.237368	0.032384	-7.329815	0.0000
D(RESID01(-3))	-0.105438	0.029178	-3.613537	0.0003
C	0.004974	0.122970	0.040448	0.9677
R-squared	0.234551	Mean dependent var		0.002204
Adjusted R-squared	0.231932	S.D. dependent var		4.807632
S.E. of regression	4.213384	Akaike info criterion		5.718659
Sum squared resid	20752.80	Schwarz criterion		5.740244
Log likelihood	-3351.853	F-statistic		89.55214
Durbin-Watson stat	2.005219	Prob(F-statistic)		0.000000

Source: Authors compilation

Table 6: BANKBEES & CNXBANK – Cointegration Test

Dependent Variable: BANKBEES				
Method: Least Squares				
Sample (adjusted): 4/01/2008 12/27/2012				
Included observations: 1238 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CNXBANK	0.100532	9.66E-05	1040.282	0.0000
C	0.968529	0.909083	1.065391	0.2869
R-squared	0.998859	Mean dependent var		915.4126
Adjusted R-squared	0.998858	S.D. dependent var		241.3715
S.E. of regression	8.155898	Akaike info criterion		7.036974
Sum squared resid	82217.09	Schwarz criterion		7.045247
Log likelihood	-4353.887	F-statistic		1082187.
Durbin-Watson stat	0.916660	Prob(F-statistic)		0.000000

Null Hypothesis: RESID02 has a unit root				
Exogenous: Constant				
Lag Length: 2 (Automatic based on SIC, MAXLAG=22)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-10.50213	0.0000
1% level		-3.435432		
5% level		-2.863672		
10% level		-2.567955		
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(RESID02)				
Method: Least Squares				
Date: 08/17/12 Time: 13:48				
Sample (adjusted): 4/04/2008 12/27/2012				
Included observations: 1235 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID02(-1)	-0.292328	0.027835	-10.50213	0.0000
D(RESID02(-1))	-0.341872	0.032089	-10.65376	0.0000
D(RESID02(-2))	-0.140192	0.028245	-4.963444	0.0000
C	-0.005833	0.187042	-0.031187	0.9751
R-squared	0.294251	Mean dependent var		-0.008519
Adjusted R-squared	0.292531	S.D. dependent var		7.814809
S.E. of regression	6.573129	Akaike info criterion		6.607091
Sum squared resid	53186.61	Schwarz criterion		6.623670
Log likelihood	-4075.878	F-statistic		171.0819
Durbin-Watson stat	2.016455	Prob(F-statistic)		0.000000

The test results in the Table 5 and 6 suggest that the long-run relationship holds, so one cannot reject the null hypothesis about the unit root in the case of the residuals. So the study concludes that PSUBEES & CNXPSUBANK are CI (1,1), and cointegration is identified in Table 5. From the economic view, a positive relationship between PSUBEES & CNXPSUBANK which is according to the prior expectations made in the paper. The reported t-test statistic Table 5 for β is -6.659092. The critical values are -3.435705, -2.863793 & -2.568020 at the 1 percent, 5 percent, and 10 percent level, respectively. Therefore, the null hypothesis of no cointegration is rejected.

Table 6 represents that BANKBEES are significantly cointegrated with CNXBANK at CI (1,1). From the economic view, the study found a positive relationship between BANKBEES & CNXBANK. The reported t-test statistic for β is 10.50213. The critical values are -3.435705, -2.863793 & -2.568020 at the 1 percent, 5 percent, and 10 percent level, respectively. Therefore, the null hypothesis of no cointegration is rejected. And accept the alternative hypothesis that there is cointegration between the variable. Hence there exists a long term relationship between Bank ETFs & Bank Index.

Vector Autoregressions: Forecast Error Variance Decomposition (FEVD) :

Table 7: Results of Forecast Error Variance Decomposition (FEVD) for CNXPSUBANK and LPSUBEES

Variance Decomposition of LPSUBEES:			
Period	S.E.	LPSUBEES	LCNXPSUBANK
1	0.020702	100.0000	0.000000
2	0.031288	89.89003	10.10997
3	0.039787	84.74096	15.25904

4	0.046702	83.37422	16.62578
5	0.052738	82.86425	17.13575
6	0.058285	82.02317	17.97683
7	0.063377	81.26656	18.73344
8	0.068079	80.68510	19.31490
9	0.072486	80.17927	19.82073
10	0.076659	79.69850	20.30150
Variance Decomposition of LCNXPSUBANK:			
Period	S.E.	LPSUBEES	LCNXPSUBANK
1	0.022559	61.95966	38.04034
2	0.033656	60.97332	39.02668
3	0.042202	60.90079	39.09921
4	0.049464	61.45885	38.54115
5	0.055858	61.80890	38.19110
6	0.061607	62.07424	37.92576
7	0.066847	62.34149	37.65851
8	0.071688	62.60722	37.39278
9	0.076215	62.85218	37.14782
10	0.080478	63.08070	36.91930
Cholesky Ordering: LPSUBEES LCNXPSUBANK			

Source: Authors compilation

Table 8: Results of Forecast Error Variance Decomposition (FEVD) for LCNXBANK and LBANKBEES

Variance Decomposition of LBANKBEES:			
Period	S.E.	LBANKBEES	LCNXBANKCLOSE
1	0.020100	100.0000	0.000000
2	0.030727	96.45503	3.544972
3	0.038462	94.49490	5.505103
4	0.045262	94.48102	5.518983
5	0.051177	94.38778	5.612223
6	0.056470	94.07802	5.921982
7	0.061360	93.87560	6.124397
8	0.065906	93.73370	6.266303
9	0.070160	93.58678	6.413219
10	0.074182	93.45067	6.549334

Variance Decomposition of LCNXBANKCLOSE:			
Period	S.E.	LBANKBEES	LCNXBANKCLOSE
1	0.021913	87.34416	12.65584
2	0.032845	88.27522	11.72478
3	0.040999	87.80173	12.19827

4	0.047784	88.32718	11.67282
5	0.053799	88.62170	11.37830
6	0.059160	88.79679	11.20321
7	0.064076	88.97011	11.02989
8	0.068623	89.14385	10.85615
9	0.072875	89.28771	10.71229
10	0.076882	89.41633	10.58367
Cholesky Ordering: LBANKBEES LCNXBANKCLOSE			

Source: Authors compilation

Table 7 and Table 8 presents the results of FEVD based on VECM analysis of variables under study. Table 1.13 indicates that forecast error variance in PSUBEES is significantly explained by CNXPSUBANK. On day 1, 100% of error variance in PSUBEES explained by innovations in PSUBEES itself. On the other days also, the contribution of CNXPSUBANK in explaining forecast error variance in PSUBEES remains lower at about 20.3%. On the other hand, on day 1, more than 61.95% of error variance in CNXPSUCLOSE is contributed by PSUBEES. On the remaining days, even though the contribution of PSUBEES declines, it remains at significantly higher at 63%. About 38% of error variance in CNXPSUBANK is explained by its own innovations, i.e. developments within the market.

The similar situation, however, does not exist in case of BANKBEES. As can be seen from Table 8 the forecast error variance in BANKBEES is explained largely by its own innovations (from about 93% to 100% on various days), the innovations in CNXBANK play significant role in determining movements in BANKBEES. The innovations in BANKBEES for contributes to 87.34% of error variance in CNXBANK on day 1 which further increases upto 89.41% during subsequent days. On the other hand, innovations in CNXBANK contribute about 10.58% to 12.65% of error variance in BANKBEES. This is in contrast with the observations made in case of ETF based on equity index above where the underlying asset is able to explain significant of variance in ETF.

FINDINGS

On the basis of analysis it is found that the entire banking ETFs are not aggressive in nature. The performance of the Kotak PSU is best among the entire selected bank ETFs. It is clear on the basis of analysis that PSU Bank BeES and Kotak PSU Bank ETF is the banking ETF which has registered a positive returns since last 5 years. Further, Bank BeES & PSU Bank BeES has shown resilience in the time of declining market and its negative mean returns are lowest amongst the selected funds. It is a good fund for aggressive investors as its beta is highest among all banking ETFS. An investor can invest in exchange traded funds for short term. However, past experiences have shown that these funds outperform average industry performance as well benchmark indices in the long run. Hence it is suggested that an investor should do investment with long term horizon for higher returns.

In this paper an attempt has been made to examine the relation between Bank ETFs and Bank Index. The ADF test has been performed to check the stationarity of two variables. Then the test for cointegration between two variables using the regression-based Engle-Granger procedure is performed. Based on the residuals from the Engle-Granger regression, two variables are cointegrated.

From further discussion it can be concluded that underlying Index does contribute to movements in prices in ETF market. However, significant difference exists between such contributions with respect to Bank ETFs and PSU Bank ETFs. A closer relationship exists between CNX Bank and Bank BeES as compared to that observed between physical CNX PSU Bank and PSU BeES. Thus, returns on Bank BeES may be closer to those on CNX Bank itself and therefore passive investment style may be advisable for investors dealing in Bank BeES. On the other hand, investors need to monitor PSU Bank ETFs market closely since developments in CNX PSU Bank Index, are found to be more significant in explaining movements in PSU BeES. Thus, here active investment style may be more useful.

Future research can be directed towards identifying the factors influencing the returns on Bank ETF. It is concluded that ETFs have given better opportunity for the small investors in terms of diversified portfolio with a small amount of money, low expense ratio, reduced tracking error, lower risk and volatility as compared to Index Funds. The ETFs can become a best investment alternative, provided, awareness is created among the investors.

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ANNEXURES

I- Constituents list of CNX BANK

Company Name	Industry	Symbol	Series	Market Cap(Cr)	% of MC
Axis Bank Ltd.	BANKS	AXISBANK	EQ	66,931.66	9.69
Bank of Baroda	BANKS	BANKBARODA	EQ	29,181.11	4.22
Bank of India	BANKS	BANKINDIA	EQ	19,685.56	2.85
Canara Bank	BANKS	CANBK	EQ	18,718.97	2.71
HDFC Bank Ltd.	BANKS	HDFCBANK	EQ	1,60,326.90	23.20
ICICI Bank Ltd.	BANKS	ICICIBANK	EQ	1,29,504.41	18.74
IndusInd Bank Ltd.	BANKS	INDUSINDBK	EQ	11,521.62	1.67
Kotak Mahindra Bank Ltd.	BANKS	KOTAKBANK	EQ	49,943.81	7.23
Punjab National Bank	BANKS	PNB	EQ	7,768.11	1.12
State Bank of India	BANKS	SBIN	EQ	27,093.48	3.92
Union Bank of India	BANKS	UNIONBANK	EQ	1,57,302.96	22.76
Yes Bank Ltd.	BANKS	YESBANK	EQ	13,042.53	1.89
TOTAL				6,91,021.12	100.00

Source: Authors compilation

II-Constituents list of CNX PSU BANK

Company Name	Industry	Symbol	Series	M Cap(Cr)	MC %
State Bank of India	BANKS	SBIN	EQ	156917.39	50.61
Bank of Baroda	BANKS	BANKBARODA	EQ	28999.28	9.35
Punjab National Bank	BANKS	PNB	EQ	27095.5	8.74
Bank of India	BANKS	BANKINDIA	EQ	19676.69	6.35
Canara Bank	BANKS	CANBK	EQ	18738.9	6.04
Union Bank of India	BANKS	UNIONBANK	EQ	14114.18	4.55
Industrial Development Bank of India Ltd.	BANKS	IDBI	EQ	11494.95	3.71
Oriental Bank of Commerce	BANKS	ORIENTBANK	EQ	7778.35	2.51
Syndicate Bank	BANKS	SYNDIBANK	EQ	7057.86	2.28
Allahabad Bank	BANKS	ALBK	EQ	6912.86	2.23
Indian Overseas Bank	BANKS	IOB	EQ	6052.82	1.95
Andhra Bank	BANKS	ANDHRABANK	EQ	5234.87	1.69
				310073.65	100.00

Source: Authors compilation

III-Portfolio Holdings - PSU Bank BeES

Equity	Sector	Qty	Value (Rs cr)	%
SBI	Banking & Financial Services	20,313.00	4.23	49.88
Bank of Baroda	Banking & Financial Services	13,259.00	0.92	10.89
PNB	Banking & Financial Services	10,485.00	0.83	9.78
Canara Bank	Banking & Financial Services	11,268.00	0.47	5.53
Bank of India	Banking & Financial Services	14,703.00	0.47	5.52
Union Bank	Banking & Financial Services	17,739.00	0.38	4.44
Oriental Bank	Banking & Financial Services	9,656.00	0.27	3.13
IDBI Bank	Banking & Financial Services	27,057.00	0.24	2.81
Allahabad Bank	Banking & Financial Services	15,759.00	0.22	2.57
Andhra Bank	Banking & Financial Services	18,517.00	0.17	1.99
Syndicate Bank	Banking & Financial Services	13,790.00	0.16	1.9
IOB	Banking & Financial Services	16,642.00	0.12	1.37

Source: moneycontrol.com

IV-Portfolio Holdings - Kotak PSU Bank ETF

Equity	Sector	Qty	Value (Rs cr)	%
SBI	Banking & Financial Services	23,380.00	4.85	51.1
Bank of Baroda	Banking & Financial Services	15,261.00	1.03	10.87
PNB	Banking & Financial Services	12,068.00	0.87	9.13
Bank of India	Banking & Financial Services	16,958.00	0.51	5.41
Canara Bank	Banking & Financial Services	12,969.00	0.5	5.25
Union Bank	Banking & Financial Services	20,417.00	0.45	4.69
Oriental Bank	Banking & Financial Services	11,114.00	0.28	2.95

IDBI Bank	Banking & Financial Services	31,206.00	0.25	2.64
Allahabad Bank	Banking & Financial Services	18,139.00	0.23	2.42
Andhra Bank	Banking & Financial Services	21,313.00	0.2	2.13
Syndicate Bank	Banking & Financial Services	15,872.00	0.17	1.84
IOB	Banking & Financial Services	19,155.00	0.12	1.31

V-Portfolio Holdings - Bank BeES

Equity	Sector	Qty	Value (Rs cr)	%
ICICI Bank	Banking & Financial Services	1,22,862.00	12.78	28.28
HDFC Bank	Banking & Financial Services	1,94,776.00	12.18	26.95
SBI	Banking & Financial Services	27,467.00	5.72	12.65
Axis Bank	Banking & Financial Services	33,530.00	4.51	9.97
Kotak Mahindra	Banking & Financial Services	40,061.00	2.64	5.85
IndusInd Bank	Banking & Financial Services	44,445.00	1.83	4.05
Yes Bank	Banking & Financial Services	28,309.00	1.34	2.96
Bank of Baroda	Banking & Financial Services	17,928.00	1.25	2.76
PNB	Banking & Financial Services	14,177.00	1.12	2.48
Canara Bank	Banking & Financial Services	15,236.00	0.63	1.4
Bank of India	Banking & Financial Services	19,882.00	0.63	1.4
Union Bank	Banking & Financial Services	23,985.00	0.51	1.13

Source: moneycontrol.com

VI-Portfolio Holdings - Reliance Banking Exchange

Equity	Sector	Qty	Value (Rs cr)	%
ICICI Bank	Banking & Financial Services	29,239.00	3.06	29.6
HDFC Bank	Banking & Financial Services	45,636.00	2.85	27.64
SBI	Banking & Financial Services	6,541.00	1.36	13.13
Axis Bank	Banking & Financial Services	6,508.00	0.85	8.2
Kotak Mahindra	Banking & Financial Services	9,401.00	0.61	5.95
IndusInd Bank	Banking & Financial Services	8,777.00	0.36	3.44
Bank of Baroda	Banking & Financial Services	4,281.00	0.29	2.8
Yes Bank	Banking & Financial Services	6,075.00	0.26	2.52
PNB	Banking & Financial Services	3,376.00	0.24	2.35
Bank of India	Banking & Financial Services	4,735.00	0.14	1.39
Canara Bank	Banking & Financial Services	3,628.00	0.14	1.35
Union Bank	Banking & Financial Services	5,572.00	0.12	1.18

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