



TESTING WEAK FORM EFFICIENCY OF NIFTY WITH FINANCIAL SERVICES AND BANKING SECTORS

Teena

Junior Research Fellow

Haryana School of Business

Guru Jambheshwar University of Science and Technology, Hisar, Haryana

Abstract

Stock markets and their efficiencies are the keen area of study for researchers, economists, investors, academicians, government bodies and corporate houses. This paper analyses the weak form efficiency of CNX Nifty and its three core sectors that are CNX Bank, CNX PSU Bank and CNX Financial Services by using daily closing prices logged returns and various parametric and non parametric tests like ADF test, Auto correlation, Runs test and Variance ratio test from April 2011 to September 2015. Descriptive statistics is used to test the normality of returns. The study finds that CNX Nifty and its banking and financial services sectors are weak form inefficient and require efforts to make them efficient to ensure smooth trading system and economic development.

Keywords - Weak Form Efficiency, CNX Nifty, CNX Bank, PSU Bank, Financial Services Sector.

Introduction

The concept of stock market efficiency is crucial for the understanding of its working. Stock market operating efficiency plays an important role in investment decisions relating to different sectors. Fama (1965) defined Market efficiency as - *“An efficient’ market is defined as a market where there are large numbers of rational, profit-maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, competition among the many intelligent participants leads to a situation where, at any point in time, actual prices of individual securities already reflect the effects of information based both on events*

that have already occurred and on events which, as of now, the market expects to take place in the future. In other words, in an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value.”¹

Fama (1970) “A market in which prices always ‘fully reflects’ available information is called efficient”.²

(Source: 1 & 2 <http://technical-analysis-addins.com/def-efficient-market-hypothesis.php>)

Fama (1970) suggested three forms of efficiency-

Weak form efficiency refers to the situation where current prices of stocks already reflect the past information related to prices and volumes of stocks. Here technical analysis does not work to predict the future price of stocks. Semi- strong form efficiency refers to the situation where current prices of stocks quickly adjust to and reflect the publically available information. Investor can't predict the future returns of stocks so fundamental analysis and technical analysis has no use in this form. Strong form efficiency refers to the situation where current stock prices quickly adjust according to past information, publically available information and company insider information that is available only to company insiders. Thus prices incorporate all type of information in this situation and investors can get abnormal returns till the time that insider information is not disclosed.

Efficient market provides Investors to diversify their assets classes and opportunities of recourse allocations to Government bodies and corporate houses in different sectors because in an efficient market assets are priced in such a way that problems of overvalued and undervalued securities are solved. Thus, in an efficient stock market appropriately priced assets offer optimal rewards for risks. Efficient capital market is the sign of developed market.

In present paper weak form efficiency has been analysed with respect to CNX Nifty and CNX Bank, CNX PSU Bank and CNX Financial Services indices.

CNX Nifty- The CNX Nifty is a well-diversified 50 stock index accurately reflecting overall market conditions. The reward-to-risk ratio of CNX Nifty is higher than other leading indices, making it a more attractive portfolio hence offering similar returns, but at lesser risk. CNX Nifty Index is computed using free float market capitalization method.

CNX Bank- The CNX Bank Index is an index comprised of the most liquid and large capitalized Indian Banking stocks. It provides investors and market intermediaries with a benchmark that captures the capital market performance of the Indian banks. The Index has 12 stocks from the banking sector, which trade on the National Stock Exchange (NSE). CNX Bank Index is computed using free float market capitalization method. It includes Axis, BOB, BOI, Canara, Federal, HDFC, ICICI, IndusInd, Kotak Mahindra, PNB, SBI and YES Bank Ltd.

CNX PSU Bank- The CNX PSU Bank Index captures the performance of the PSU Banks. The Index comprises of 12 companies listed on National Stock Exchange (NSE).CNX PSU Bank Index is computed using free float market capitalization method. It includes Allahabad, Andhra, BOB, BOI, Canara, IDBI, Indian overseas, OBC, PNB, SBI, UBI and Syndicate Bank.

CNX Financial services- The CNX Financial Services Index is designed to reflect the behaviour and performance of the Indian financial market which includes banks, financial institutions, housing finance and other financial services companies. The CNX Financial Services Index comprises of 15 stocks that are listed on the National Stock Exchange (NSE).CNX Financial Services Index is also computed using free float market capitalization method. It includes Axis Bank, ICICI, Kotak Mahindra, HDFC, SBI, Bajaj Finance Ltd., Bajaj Finserv Ltd., LIC Housing Finance Ltd., Power Finance Corporation Ltd., Reliance Capital Ltd., Rural Electrification Corporation Ltd., Shriram Transport Finance Co. Ltd., Sundaram Finance Ltd., Rural Electrification Corporation Ltd., Mahindra and Mahindra Financial Services Ltd. and Housing Development Finance Corporation Ltd. (IISL, 2015).

The finance and banking are most prominent sectors which have more weight-age in NSE CNX Nifty. Movement of these sectors have more impact on Nifty. So checking weak form efficiency of these sectors becomes more important for all relevant investors and bodies.

The paper is organised as follows: Introduction, Review of literature, Objective and relevance, Research Methodology, Analysis and Interpretation and Conclusion.

Review of Literature

A number of studies have been conducted on efficiency of stock markets. This section explores few research works on weak form efficiency of foreign and Indian stock market.

Rawashdeh and Squalli (2006) tested market efficiency of 4 sectors (Banking, Industry, Insurance and Service) from Amman stock exchange for the period of 1992 to 2004 and found that all 4 sectors were not Weak Form Efficient during study period. Benjelloun and Squalli (2008) analysed the General Index and sectoral indexes of equity market of Jordan, Qatar, Saudi Arabia and UAE and conformed that despite the random walk and weak form efficient sectors in Jordan, Qatar and UAE, General index of these countries portray them as weak form inefficient. Gupta (2010) checked the efficiency of Indian Stock Market by taking 4 samples of indices from BSE and NSE and concluded that there exist of weak form efficiency in Indian stock market during the study period. Ramkumar *et al.* (2011) tested the market efficiency of banking sector companies listed in BSE by using daily closing share prices from 2006 to 2009 and conformed that banking sector was efficient during the study period. Misra *et al.* (2012) analysed the S&P CNX Nifty of India from 2001-2011 and conformed that Indian market was

not efficient during the study period. Kumar and Singh (2013) tested the SandP CNX Nifty and CNX Nifty Junior for the period of 2000 to 2013 and conformed that there was absence of normality and Randomness. Finally stock market was Weak Form Inefficient. Jain and Jain (2013) examined the EMH of BSE Sensex and concluded DF test as better tool that Indian market was weak form efficient during study period. Maxim *et al.* (2013) tested the Weak form efficiency of DSE before (2009-10) and after (2011-12) the market crash of December, 2010 and indicated that returns were not random before crash but random after crash. Kapusuzoglu (2013) examined the weak form efficiency of Istanbul stock exchange and found that market was not weak form efficient during study period. Jethwani and Achuthan (2013) tested the Weak Form Efficiency of Indian stock market by taking SandP CNX Nifty from January 1996 to December 2012, dividing the period in before, during and after financial crisis. Results indicated that Indian stock market is not Weak form efficient in all periods however after 2002 it exhibits some signs of efficiency. (2013) investigated the weak form efficiency of NSE of India by taking daily closing price of the 4 sectoral indices of IT, Finance, FMCG and Energy and observed that Indian NSE is weak form inefficient during study period. Ayyappan *et al.* (2013) tested the Weak Form Efficiency of National Stock Exchange by taking its 9 broad indices as sample and concluded that broad indices of NSE were not efficient. Rajamohan and Muthukamu (2014) examined the Banking sector index and other sectoral indices of NSE during the bear (Jan 2008 to Oct. 2008) and bull (Oct. 2008 to Dec 2013) phase and found that bank nifty index was positively influencing almost all the sectoral indices. Shafi (2014) tested the Weak form efficiency of Nifty by taking the period of 2003-2013 and conformed that Indian stock market was inefficient during study period. Tripathi and Kumar (2014) examined the sectoral efficiency of Indian Stock Market by taking daily data of 11 sectoral indices of NSE in pre (04-07) and post crisis (07-14). It was found that overall Indian Stock market was weak form efficient but different sectors were not during study period. Hemalatha and Nedunchezian (2014b) tested the Weak Form Efficiency in National Stock Exchange by taking companies from CNX Media sector and found that companies listed in CNX Media sector of NSE were not efficient during study period that is January 2013 to December 2014. Gilani *et al.* (2014) found that Islamabad Stock Exchange market was efficient at some periods and at some periods it was not efficient. Hemalatha and Nedunchezian (2014a) examined the Weak Form Efficiency and volatility of FMCG sector of NSE India and concluded that companies listed in FMCG were not Weak Form Efficient. Hemalatha and Nedunchezian (2015) analysed NSE by taking sectoral indices to examine weak form efficiency of sectoral indices and study concluded that

there was no asymmetries effect in CNX FMCG and Pharma index. Ramkumar *et al.* (2015) conformed that sectoral indices of both BSE and NSE were not invest.

Objective and Relevance

The primary objective of this study is to examine the weak form efficiency of CNX Nifty with its Banking (CNX bank and CNX PSU bank) and Financial (CNX Financial Services) sectors.

To achieve this objective the following hypotheses have been formulated:

H₀₁ - Nifty and its financial and banking sectors return series are non stationary.

H₀₂ - Nifty and its financial and banking sectors return series are not following random walk.

H₀₃- Nifty and its financial and banking sectors Returns are not serially dependent.

H₀₄- Nifty and its financial and banking sectors are not weak form efficient.

This study will help specially the concerned sectors corporate bodies who are involved in their operation and growth. It will help investors to diversify their stock in these sectors. It will also help policy makers to allocate resources to these sectors and to maintain their growth.

Research Methodology

This study is mainly based on secondary data taken from NSE website. Daily returns have been calculated from daily closing prices of indices. CNX Nifty has been taken with its 3 sectoral indices that are CNX Bank, CNX PSU Bank and CNX Financial Services as sample for the study. Study covers the period from 1-4-2011 to 30-9-2015. Tools for analysis include:

- (a) Descriptive statistics- To check the normality of return series of indices- Mean, standard deviation, Jarque bera, variance, kurtosis, skewness and range are used.
- (b) Statistical tools for analysis- Parametric test like ADF test and autocorrelation and non parametric tests like Runs test and variance ratio test are used in the study.
(Eviews 8 and SPSS 20 are used for analysis of the data.)

Analysis and interpretation

Descriptive statistics is used to check the normality of the distribution. Data is said to be normally distributed when skewness=0, Kurtosis=3, Jarque Bera P value does not exceeds significance level. In Table 1 except Nifty all indices returns are positively skewed and having value near about to zero. Kurtosis value is more than 3 in all indices showing its peakedness or leptokurtic shape and Jarque bera P value is zero indicating that returns of all indices are not normally distributed.

Table -1 Descriptive Statistics

Description	CNX Nifty	CNX Bank	CNX Financial Services	CNX PSU Bank
Mean	0.033325	0.047120	0.048622	-0.012754
Median	0.026181	0.036251	0.029651	0.022414
Maximum	3.808711	9.458214	7.821947	8.660535
Minimum	-5.915096	-6.896972	-6.546787	-9.351921
Std. Dev.	1.060636	1.588103	1.483840	1.988172
Skewness	-0.137226	0.194062	0.095549	0.168473
Kurtosis	4.608625	5.094689	4.735621	4.517908
Jarque-Bera	123.940300	211.223000	141.900900	112.518000
Probability	0.000000	0.000000	0.000000	0.000000
Sum	37.224310	52.632540	54.311160	-14.246750
Sum Sq. Dev.	1255.44200	2814.63100	2457.187000	4411.358000
Observations	1117.00000	1117.00000	1117.000000	1117.000000

Source: Data Analysis

ADF Test is conducted to test the stationarity of the data. From Table-2 all test values are less than critical values at different levels. p values are also less than 0.01, 0.05 and 0.10 level of significance. It indicates that H_{01} of unit root or non stationary is rejected and concludes that all indices returns series are Stationary. Hence it doesn't support Random walk and weak form efficiency.

Table – 2 Unit Root Test (ADF Test)

Indices	Significance level	ADF t-Statistics	Probability
CNX Nifty		-30.58367	0.0000
CNX Bank		-29.96324	0.0000
CNX PSU Bank		-29.95989	0.0000
CNX Financial Services		-30.43468	0.0000
Test critical values	1% level	-3.435993	0.01
	5% level	-2.863920	0.05
	10% level	-2.568088	0.10

Source: Data Analysis

Runs test is used to find out whether the change in returns series is serial or random. From Table 3 (a and b) in all indices except CNX Financial services has p values less than 0.05 and Z values outside the limit of ± 1.96 . It means that H_0 of no random walk is accepted for all indices because there is no Random walk in these indices except CNX Financial Services.

Table – 3 Runs Test

(a) Median Base

	CNX Nifty	CNX Bank	CNX PSU Bank	CNX Financial Services
Test Value ^a	.02618	.03625	.02241	.02965
Cases < Test Value	558	558	558	558
Cases >= Test Value	559	559	559	559
Total Cases	1117	1117	1117	1117
Number of Runs	508	515	515	535
Z	-3.083	-2.664	-2.664	-1.467
Asymp. Sig. (2-tailed)	.002	.008	.008	.142

(b) Mean Base

	CNX Nifty	CNX Bank	CNX PSU Bank	CNX Financial Services
Test Value ^a	.0333253	.0471195	-.0127546	.0486224
Cases < Test Value	561	560	550	565
Cases >= Test Value	556	557	567	552
Total Cases	1117	1117	1117	1117
Number of Runs	510	517	511	531
Z	-2.963	-2.544	-2.897	-1.702
Asymp. Sig. (2-tailed)	.003	.011	.004	.089

Source: Data Analysis

Autocorrelation Test – This test is conducted to determine whether the successive returns have any dependency or not on previous returns. In this test it is found that if correlation coefficient is significantly different from zero and it is greater than 3 times of standard error at any lag than it means there is dependency in successive returns of series and autocorrelation exists. If Ljung p values are less than 0.05 than AC exist. In Table 4 it can be observed by seeing AC values that autocorrelation exist at lag 1 and p values indicates that upto lag 5 autocorrelation exist in all indices. Hence the H_{03} of no serial correlation in return series is rejected.

Table – 4 Autocorrelation Test

Indices	Lags	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CNX NIFTY	AC	.09	-.03	-.05	-.02	.01	.01	.02	-.01	.02	-.02	-.06	-.01	-.01	.04	-.02	-.06
	Std. error	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	Q-Stat.	8.36	9.41	11.69	12.24	12.49	12.72	13.26	13.52	13.97	14.33	18.15	18.34	18.51	20.58	20.84	25.13
	Prob.	.00	.01	.01	.02	.03	.05	.07	.10	.12	.16	.08	.11	.14	.11	.14	.07
CNX BANK	AC	.11	-.06	.00	-.01	-.01	.02	.01	-.01	.03	-.01	-.03	.01	-.02	.01	.02	-.02
	Std. error	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	Q-Stat.	12.97	16.39	16.40	16.52	16.55	17.04	17.20	17.29	18.12	18.23	19.37	19.58	19.90	20.05	20.39	20.65
	Prob.	.00	.00	.00	.00	.01	.01	.02	.03	.03	.05	.05	.08	.10	.13	.16	.19
CNX PSU BANK	AC	.11	.00	.02	.00	-.02	-.01	-.03	.02	.10	.00	-.04	-.02	.00	.02	.02	.01
	Std. error	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	Q-Stat.	12.89	12.89	13.39	13.39	14.04	14.10	15.14	15.66	27.55	27.57	29.14	29.53	29.53	30.08	30.40	30.64
	Prob.	.00	.00	.00	.01	.02	.03	.03	.05	.00	.00	.00	.00	.01	.01	.01	.01
CNX FINANCIAL SERVICES	AC	.09	-.06	-.02	-.01	.01	.01	.02	-.01	.01	-.02	-.04	.00	.00	.02	.01	-.02
	Std. error	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	Q-Stat.	9.49	13.55	13.94	14.03	14.20	14.33	14.73	14.90	15.00	15.69	17.92	17.95	17.95	18.22	18.33	18.97
	Prob.	.00	.00	.00	.01	.01	.03	.04	.06	.09	.11	.08	.12	.16	.20	.25	.27

Source: Data Analysis

Variance ratio test is a powerful test used to detect dependency of successive returns on previous returns in a stock return series. If the value of variance ratio is equal to 1 it indicates that random walk is there in return series. $VR > 1$ indicates positive autocorrelation and $VR < 1$ indicates negative autocorrelation. From Table 5 Lo Mackinlay parametric test results are given. If VR ratio is not equal to 1 and z statistics under hetrokedastic and homoskedastic assumptions do not fall between ± 1.96 in all 4 indices hence Random walk is not conformed in return series. So H_{02} of no random walk and H_{04} of weak form inefficiency are accepted.

Table- 5 Variance Ratio Test (Lo Mackinlay test)

Indices	lags	VR (q)	Z (Heteroskedastic)	Z*(Homoskedastic)
CNX Nifty	2	0.564653	-10.31510	-14.54345
	4	0.280890	-9.833321	-12.84085
	8	0.139803	-7.909601	-9.714619
	16	0.073665	-5.936208	-7.030391
CNX Bank	2	0.591900	-9.867526	-13.63324
	4	0.284403	-9.830034	-12.77811
	8	0.142385	-8.034787	-9.685466
	16	0.072262	-6.042099	-7.041036
CNX PSU Bank	2	0.560458	-10.65494	-14.68359
	4	0.281090	-10.00012	-12.83726
	8	0.138253	-8.099225	-9.732127
	16	0.070332	-6.165907	-7.055686
CNX Financial services	2	0.584354	-10.18540	-13.88531
	4	0.278974	-9.986223	-12.87505
	8	0.140339	-8.058730	-9.708576
	16	0.071589	-6.062532	-7.046141

Source: Data Analysis

Table 6 Overall result

TEST→ INDICES ↓	Unit root test	Runs test	Autocorrelation	Variance ratio
CNX Nifty	Weak form inefficient	Weak form inefficient	Weak form inefficient	Weak form inefficient
CNX Bank	Weak form inefficient	Weak form inefficient	Weak form inefficient	Weak form inefficient
CNX PSU Bank	Weak form inefficient	Weak form inefficient	Weak form inefficient	Weak form inefficient
CNX Financial Services	Weak form inefficient	<i>Weak form efficient</i>	Weak form inefficient	Weak form inefficient

Source: Data Analysis

Conclusion

The present study examined the weak form efficiency of Indian CNX Nifty and its banking and financial services sectors indices. From overall result table 6 it can be seen that Unit root test Autocorrelation test and Variance ratio test shows that these indices are not weak form efficient. Runs test shows that all indices are weak form inefficient except financial services sector.

Banking sectors shows inefficiency reflected by Nifty index while financial services sector shows some signs of efficiency as compared to Nifty. So investors can gain extra benefit by diversifying their stocks in these sectors. Banking sector efficiency requires disposition of NPAs, Increase in Capital adequacy ratio, effective risk management policies and audit etc. To support efficiency of these sectors of stock market, regulatory bodies should provide an efficient Information system in such a way that transaction cost can be reduced and information can be easily available to all investors. This will lead to enhanced trading system instead hindered trading system.

References

- Ayyappan, S., Nagarajan, S., Sakthivadivel, M., & Prabhakaran, K. (2013). Empirical analysis of weak form efficiency evidence from national stock exchange of India Ltd. *Beykent University Journal of Social Science*, 6(2), 125-137.
- Benjelloun, H., & Squalli, J. (2008). Do general indexes mask sectoral efficiencies?. *International Journal of Managerial Finance*, 4(2), 136-151.
- Fama, E. F. (1965). The behavior of stock market prices. *Journal of Business*, 38, 34-105.
- Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383-417.
- Gilani, S. T. R., Nawaz, M., Shakoor, M. I., & Asab, M.Z. (2014). Testing the weak form efficiency of Islamabad stock exchange (ISE). *IISTE developing country studies*, 4(11), 79-86.
- Gondaliya, V. (2013). An empirical study on weak form of market efficiency on NSE. *International Journal of Research in Commerce, IT and Management*, 3(6), 89-93.
- Gupta, A. (2010). A critical analysis of weak form efficiency in Indian stock market. *Asian journal of Management Research*, 657-665. Retrieved on June 12, 2015 from: ipublishing.co.in/ajmrvol1no1/EIJMRS1049.pdf.

- Hemalatha, K., & Nedunchezian, V. R. (2014a). Testing on weak form efficiency and volatility of FMCG sector: The evidence from NSE. *International Journal on Recent and Innovation trends in Computing and Communication*, 2(9), 2656-2661.
- Hemalatha, K., & Nedunchezian, V.R. (2014b). Testing the weak-form efficient market hypothesis: using CNX Media from the emerging National stock exchange. *International Journal of Engineering Sciences and Research Technology*, 3(3), 1606-1610.
- Hemalatha, K., & Nedunchezian, V. R. (2015). An Analysis of weak form efficiency in sectoral indices: A study with a special reference to National stock exchange in India. *Indian Journal of Applied Research*, 5(3), 197-200.
- Jain, K., & Jain, P. (2013). Empirical study of the weak form of EMH on Indian stock market. *International Journal of Management and Social Sciences Research*, 2(11), 52-59.
- Jethwani, K., & Achuthan, S. (2013). Stock market efficiency and crisis: Evidence from India. *Asia-Pacific Finance and Accounting Review*, 1(2), 35-43.
- Kapusuzoglu, A. (2013). Testing weak form market efficiency on the Istanbul stock exchange (ISE). *International Journal of Business Management and Economic Research*, 4(2), 700-705.
- Kumar, S., & Singh, M. (2013). Weak form of market efficiency: A study of selected Indian stock market indices. *International Journal of Advances Research in Management and Social Sciences*. 2(11), 141-150.
- Maxim, M. R., Miti, T. A., & Arifuzzaman, S. M. (2013). Is Dhaka stock exchange efficient? A comparison of efficiency before and after the market crisis of 2010. *Asian Business Review*, 3(6), 78-81.
- Misra, V., Misra A. K., & Rastogi, S. (2012). Testing efficient capital market model in Indian sub-continent. *Ganpat University-Faculty of Management Studies Journal of Management and Research GFJMR*, 5, 1-14.
- Rajamohan, S., and Muthukamu, M. (2014). Bank Nifty index and other sectoral indices of NSE- A comparative study. *Indian Journal of Research*, 3(4), 147-149.
- Ramkumar, R. R., Selvam, M., & Indhumathi, G. (2011). Analysis of sectoral market efficiency - A study on banking sector. Retrieved on August 8, 2015 from: <http://ssrn.com/abstract=1940886>.
- Ramkumar, R. R., Selvam, M., Raja, M., Lingaraja, K., & Vasant, V. (2015). Efficiency of sectoral indices: A comparative study on BSE and NSE Ltd. *International Business Management*, 9(3), 258-266.

- Rawashdeh, M., & Squalli, J. (2006). A sectoral efficiency analysis of Amman stock exchange. *Applied Financial Economics Letters*, 2(6), 407-411.
- Shafi, M. (2014). Testing of market efficiency in the weak form taking CNX Nifty as a benchmark Index: A study. *Research Journal's Journal of Finance*, 2(2), 1-20.
- Tripathi, V., & Kumar, A. (2014). Sectoral efficiency of the Indian stock market and the impact of global financial crisis. *Journal of Commerce and Accounting Research*, 3(4), 15-27.
- IISL Nifty 50. (2015, 30 October). Retrieved from http://www.nseindia.com/content/indices/ind_nifty50.pdf.
- IISL Nifty Bank. (2015, 30 October). Retrieved from http://www.nseindia.com/content/indices/ind_nifty_bank.pdf.
- IISL Nifty Financial Services. (2015, 30 October). Retrieved from http://www.nseindia.com/content/indices/ind_Nifty_Financial_Services.pdf.
- IISL Nifty PSU Bank. (2015, 30 October). Retrieved from http://www.nseindia.com/content/indices/ind_nifty_psu_bank.pdf.