

# Can Investment In BSE Indices Provide Adequate Diversification Benefit For Simple Investment Strategy?

## (A Study of Simple Techniques in Selected BSE Indices)

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**Abstract:** *In the present study we take the following indices for preparing the portfolio. Sensex is considered as the bench mark while the other indices are; Auto, All Cap, Bankex, cdgs, Capital Goods, Basic Material. The assets are analysed to find the best assets to invest for better investment return as compared to the volatility risk and better diversification benefit.*

### Introduction

It has been a major concern of the common investor to create investment strategies which can lead to better investment returns and lesser risk, or creation in terms of Investment with “efficient portfolio”.

In the present study we take the following indices for the collective evaluation of some simple techniques for investment which can create better investment without the use of “rocket science” in creation of the portfolio. We do so in the environment of investment where the cutting edge technology<sup>i</sup> has so much advanced that out of total trading<sup>ii</sup> 95 % trading in Indian financial market now trade and invest through the algorithmic computation science or what is known as HFT (High Frequency Trading). These rather advance and often very expensive methods of investment are not available to retail investors or common investors. Yet the fancy of self-driven strategies of investment has much caught the attention of the general investor. It is this area which is explored by the present article to present methods which can be easily explored by any investor.

### Literature Review

In the search of the simple heuristics of Investment one of the first mention is that of Benjamin Graham. In his book “Intelligent Investor” and “Security Analysis” Benjamin Graham<sup>iii</sup> has shown that how certain methods of buying such equity

shares which are trading at deep discounts lead to better investment. The application of the beta used technique of “Capital Asset Price Model” (William Sharpe and others<sup>iv</sup>) has also been a simplified method of investment which lead to its immense popularity (Kaplan<sup>v</sup>). While the beta came under intensive scrutiny by researchers leading to some important land miles in the investment research such as Fama and French<sup>vi</sup> yet the simplified heuristics became overtly intense in their explanation. This has by and large led to the isolation of the common investor (such as Heiko and others<sup>vii</sup>). A more user friendly approach has been the use of certain popular ratios. Some of these are Jensen Ratio<sup>viii</sup>, Treynor Ratio<sup>ix</sup>, Sharpe Ratio<sup>x</sup> etc. What is lacking is the simple evaluation of the risk in terms of variance and the investment asset and the risk adjusted return<sup>xi</sup> (Herring, Richard and others)

### Methodology

For the analysis 125 months return are taken for all the indices under study with sensex<sup>xii</sup>. The data is from September 2005 to January 2016. The data points are such that all the indices are not from the same date as different indices had been started at different point of time. This also obstructs the study of all the indices put together which becomes more mathematically inclined evaluation, which is not the focus of present study.

### Analysis

I proceed with finding the correlation of all the assets under consideration to make the portfolio with such assets which are having negative correlation. It has been shown by Henry Markowitz<sup>xiii</sup> that how the negative correlation assets are able to provide such portfolio's which can give least volatility. The correlation for the assets was calculated:-

	Sensex	Allcap	Auto	Bankex	Basic Material	C goods	cdgs
Sensex	1						
Allcap	0.134532	1					
Auto	0.120882	0.864432	1				
Bankex	0.112587	0.903621	0.746445	1			
Basic Material	0.164004	0.934536	0.818642	0.809916	1		
C goods	0.218583	0.895433	0.743293	0.832801	0.833304	1	
cdgs	0.157283	0.956237	0.884282	0.8611	0.889189	0.839523	1

The correlation matrix as the lowest r of 0.11 between bankex and senssex and highest of 0.88 between cdgs and basic material.

Next is to check if the indices do comprise to be effected by same set of variables( which are exogenous ) For this ANOVA is used to see if the data set is from the same sample or not.

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.003823	6	0.000637	0.079469	0.998098	2.109093
Within Groups	6.902553	861	0.008017			
Total	6.906375	867				

As the F critical is more then F value hence the null hypothesis is accepted. There does not exist significant difference in the seven indices. They all are being governed from the same factors.

### Indices Investment returns as compared to senssex.

A simple strategy to earn a better return than taking on the risk of the equity market is the bench mark of senssex or the “market”. How well the asset has performed in terms of the risk free rate of return (Government 10 year bonds) is the lowest return an investor should consider if he/she does not want to take on the risk at all. For the equity market the starting point is the basic index – Senssex of Bombay stock exchange or nifty of NSE. To compare the indices under study we first study the return superiority of the indices over senssex. The return of senssex was deducted from the return of each indices.( the return were calculated on monthly basis and covered to annual returns.

Indices	Sensex	Allcap	Auto	Bankex	Basic Material	C goods	cdgs
Annual Returns	14.53	13.42	18.83	17.73	10.82%	15.76	13.72

	%	%	%	%		%	%
Return over senssex	0.00%	1.11%	4.29%	3.20%	-3.71%	1.23%	0.81%

The three indices which perform poorly as against the bench mark of BSE senssex are Auto, Bank index and Capital goods respectively. The superiority of the returns over senssex being higher by 4.23%,3.20% and 1.23% respectively. Senssex has given better returns against All Cap, basic material and cdgs.

The risky investment evaluation is however more justified to be measured as against the volatility against which it should compensate the investor. The ranking also is required to be performed against the volatility each index provides. The table below is the ranking and the return per standard deviation or volatility for each index. (The returns and standard deviation were annualized for the 125 moths of return of each index)

Indices	Sensex	Allcap	Auto	Bankex	Basic Material	C goods	cdgs
Return per SD	61%	52%	67%	51%	31%	42%	46%
Ranking	2	3	1	4	7	6	5

As we can see that the best return is being given by Auto sector followed by senssex.

Index	Auto	Sensex	Allcap	Bankex	cdgs	C goods	Basic Material
Ranking	1	2	3	4	5	6	7

### Equal weight all asset portfolio performance

Equal weight all asset portfolios were created to see if the returns were superior. The portfolio gave return of 14.97% and volatility of 20%. This means per standard deviation the returns are 74.7%. This is the highest among all the assets stand alone.

To find the ideal percentage of investment for each asset mathematical evaluation can also be used which can become complex for the naïve investor.

### Conclusion

In the present study it becomes clear that the best investment with these seven assets portfolio will be to invest equally. If some assets are to be selected among the assets then the preference should be given to the per volatility return.

### Limitations

The mathematical proofs are not used which can be more explanatory in the present evaluation. The impact of short sale has further limited the study. The study limits itself to only academic impact rather than the actual use of the methods or the data. It is only the stepping stone for further evaluation method in finding simplicity in complex methodology. No comparison has been made both in terms of mathematical and methodological proofs with other diversification methods. This would again make the whole article more complex. Neither the proof of the method has been checked by changing the investment markets, asset class and also the time frame (different time chunks in the past and future reference)

The present study in no way is for the purpose of investment and is only an endeavour for purely academic purpose. Risk pertaining to investment are immense and to be evaluated by the reader on their own.

<sup>i</sup> <https://www.quantinsti.com/blog/algorithmic-trading-india/>

<sup>ii</sup>

<http://www.livemint.com/Money/VKmE9hw81IJcPXHJgdsxDJ/New-norms-on-algorithmic-trading-by-end-of-2016-Sebi.html>

<sup>iii</sup>

<http://webcontent.harpercollins.com/text/excerpts/pdf/0060583282.pdf>

<sup>iv</sup>

[https://en.wikipedia.org/wiki/Capital\\_asset\\_pricing\\_model](https://en.wikipedia.org/wiki/Capital_asset_pricing_model)

<sup>v</sup> <http://cdar.berkeley.edu/wp-content/uploads/2017/01/Kaplan-Popularity-Asset-Pricing-Model.pdf>

<sup>vi</sup> <sup>□</sup> [Fama, E. F.; French, K. R. \(1993\). "Common risk factors in the returns on stocks and bonds". \*Journal of Financial Economics\*, 33: 3.](#)

[CiteSeerX 10.1.1.139.5892](#) <sup>□</sup> [doi:10.1016/0304-405X\(93\)90023-5.](#)

<sup>□</sup> <sup>□</sup> [Fama, E. F.; French, K. R. \(1992\). "The Cross-Section of Expected Stock Returns". \*The Journal of Finance\*, 47 \(2\): 427. doi:10.1111/j.1540-6261.1992.tb04398.x. JSTOR 2329112.](#)

<sup>□</sup> <sup>□</sup> [Griffin, J. M. \(2002\). "Are the Fama and French Factors Global or Country Specific?" \(PDF\). \*Review of Financial Studies\*, 15 \(3\): 783–803. doi:10.1093/rfs/15.3.783. JSTOR 2696721.](#) <sup>[permanent dead link]</sup>

<sup>□</sup> <sup>□</sup> [Fama, E. F.; French, K. R. \(2012\). "Size, value, and momentum in international stock returns". \*Journal of Financial Economics\*, 105 \(3\): 457. doi:10.1016/j.jfineco.2012.05.011.](#)

<sup>□</sup> <sup>□</sup> [Cakici, N.; Fabozzi, F. J.; Tan, S. \(2013\). "Size, value, and momentum in emerging market stock returns". \*Emerging Markets Review\*, 16 \(3\): 46–65. doi:10.1016/j.ememar.2013.03.001.](#)

<sup>□</sup> <sup>□</sup> [Hanauer, M.X.; Linhart, M. \(2015\). "Size, Value, and Momentum in Emerging Market Stock Returns: Integrated or Segmented Pricing?". \*Asia-Pacific Journal of Financial Studies\*, 44 \(2\): 175–214. doi:10.1111/ajfs.12086.](#)

<sup>□</sup> <sup>□</sup> [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2742170](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2742170)

<sup>□</sup> <sup>□</sup> [Fama, E. F.; French, K. R. \(2015\). "A Five-Factor Asset Pricing Model". \*Journal of Financial Economics\*, 116: 1–22.](#)

[doi:10.1016/j.jfineco.2014.10.010.](#)

<sup>□</sup> <sup>□</sup> [Gibbons M; Ross S; Shanken J \(September 1989\). "A test of the efficiency of a given portfolio". \*Econometrica\*, 57 \(5\): 1121–1152.](#)

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<sup>□</sup> <sup>□</sup> <https://www.aqr.com/cliffs-perspective/our-model-goes-to-six-and-saves-value-from-redundancy-along-the-way>

<sup>□</sup> [Carhart, M. M. \(1997\). "On Persistence in Mutual Fund Performance". \*The Journal of Finance\*, 52: 57–82. doi:10.1111/j.1540-6261.1997.tb03808.x. JSTOR 2329556.](#)

<sup>vii</sup>

<https://poseidon01.ssrn.com/delivery.php?ID=424069105013092070071026091007107112050024004033095068067067014076106066117079110022028097000118014120007089119111077109099005029055059029004092119082106125004091069014039053001066088016072112105081071122122084126023119004023122003017116092030125014116&EXT=pdf> article How should individual investors diversify? An empirical evaluation of alternative asset allocation policies Heiko Jacobs, Sebastian Müller, Martin Weber

<sup>viii</sup> Jensen, M.C., "The Performance of Mutual Funds in the Period 1945-1964," *Journal of Finance* 23, 1968, pp. 389-416.

<sup>ix</sup> • [Brown, Keith C.; Frank K. Reilly. "25". \*Analysis of Investments and Management of Portfolios \(9th International ed.\)\*. Cengage Learning. p. 941. • "Treynor Ratio". Retrieved 20 February 2010.](#)

<sup>x</sup> [https://en.wikipedia.org/wiki/Sharpe\\_ratio](https://en.wikipedia.org/wiki/Sharpe_ratio)

<sup>xi</sup> [Herring, Richard; Diebold, Francis X.; Doherty, Neil A. \(2010\). \*The Known, the Unknown, and the Unknowable in Financial Risk Management\*:](#)

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xii

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<sup>xiii</sup> *Markowitz, H.M. (March 1952). "Portfolio Selection". The Journal of Finance 7 (1): 77-91.*  
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*The study is from the articles and research material as available through internet and www basis*