

# VALIDATE PETER-LYNCH MODEL ON INDIAN STOCK MARKET

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## ABSTRACT

The concept of value investing became synonymous with Warren Buffet, the seeds of which were sown by Benjamin Graham. There many who have created a structure approach towards stock selection and investment. One of the veteran in this field Peter Lynch who managed a portfolio equal to GNP of nations like Ecuador. He insisted on few fundamental parameters like, Price Equity Ratio, Sales, Price to Earnings, Debt Equity and Price to Cashflow. This is the first time validation is done on India Equity Indices or for that matter Indian Stock Market.

## INTRODUCTION

Peter Lynch developed the PEG ratio as an effort to solve a limitation of the P/E ratio by factoring in the estimated growth rate of future earnings. If two companies are trading at 15x earnings, and one of them is growing at 3 percent but the other at 9 percent, you can classify the latter as a better bargain with a higher probability of making you a higher return. The formula for PEG is:

PEG Ratio = P/E Ratio / company's earnings growth rate

To understand the ratio, a result of 1 or lower says the stock's either at par, or undervalued based on its growth rate. If the ratio results in a number above 1, conventional wisdom says the stock is overvalued relative to its growth rate.

**Keywords:** Markets, Investment Decision, Behavioral Finance.

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Another veteran who is believed to be guru of Warren Buffet, Mr Benjamin Graham is described as the father of value investing. He offered a simple and effective formula to calculate the stock's intrinsic value. Graham's formula is used to measure an individual company's intrinsic value. We have already written a paper to study the effectiveness of Benjamin Graham's formula on BSE100 stocks, to find out if the value investing method works. This method also helps to quickly and accurately identify undervalued companies and overvalued companies. We have conducted research based on past 10 years' data to validate our findings.

## LITERATURE REVIEW

O'Neil, W. J., & Ryan, C. (1988); in this book, O'Neal teaches the science behind growth investing. He introduces us to a new abbreviation CANSLIM which could be used for stock picking.

He will also teach you the step by step approach that he and his company use to advise fund managers and other institutional money managers. Growth Investing basically advocates buying stable but fast-growing (earnings-wise) companies. This approach doesn't put much weight on valuation and financial ratios, it does, however, involve market and price chart analysis, and active trading. All of the principles that O'Neal teach in this book are backed by solid historical data and facts.

Bhatt, S. (2013) This paper examines one of the most popular method for gauging quality of select Indian Bank. In today's dynamic world trying to cope up with the aftermath of subprime crisis and the euro zone crisis we would like to revisit a technique known as CAMELS Rating System. This technique is applied on 8 listed Indian Banks SBI, Union Bank, IDBI Bank, HDFC Bank, BOB, AXIS Bank, IndusInd Bank, PNB which is a mixture of public sector and private banks. This technique evaluates banks measures banks stability on capital adequacy ratio, asset quality ratio, management quality ratio, earning ratio, liquidity ratios and sensitivity ratio. The results of this study reveal that this technique is critical in not only evaluating stability of bank but could also be used for making preliminary investment decision.

He, G., & Litterman, R. (1999) In this article we demonstrate that the optimal portfolios generated by the Black-Litterman asset allocation model have a very simple, intuitive property. The unconstrained optimal portfolio in the Black-Litterman model is the scaled market equilibrium portfolio (reflecting the uncertainty in the equilibrium expected returns) plus a weighted sum of portfolios representing the investor's views. The weight on a portfolio representing a view is positive when the view is more bullish than the one implied by the equilibrium and the other views. The weight increases as the investor becomes more bullish on the view, and the magnitude of the weight also increases as the investor becomes more confident about the view.

Bhatt, S. (2013). This research paper examines performance of top twelve Indian mutual funds by Asset Under Management(AUM). We use seven portfolio performance measurement parameters like Alpha, Beta, Standard Deviation, R Squared, Sharpe Ratio, Treynor Ratio and Jensen's Alpha. The study reveals which amongst these mutual fund is the best performer based on all these parameters and the benchmark taken for this is NIFTY Index. The mutual funds selected are HDFC Top 200 Fund, Franklin India Bluechip Fund, ICICI Prudential Focused Bluechip Equity Fund, DSPBR Top 100 Equity Fund, Birla Sun Life Equity Fund, DSPBR Top 100 Equity Fund, UTI Mastershare Fund, Reliance Equity Opportunity Fund, SBI Magnum Equity, Reliance Top 200 Fund, SBI Bluechip Fund, ICICI Prudential Top 200 Fund, Principal Large Cap Fund. This study is primarily done to evaluate performance of the select mutual funds over a period of five years.

Bhatt, S. (2014). In this paper we validate use of Piotroski F-Score analysis for identifying value stocks. Piotroski F-Score analysis devised a scale according to specific criteria found in the financial

statements which encompasses aspects like Profitability, Leverage, Liquidity, Operating Efficiency to give a holistic view of the performance and position of the company. This method proved successful in interpreting the strengths and weaknesses a company possesses and the opportunities available for the company to develop upon and the threats it faces in doing so. One aspect that is missing in this method of analysis is the time horizon applicable to the relevance of its results. Hence, this method could be made more effective if we add the time horizon applicable for the results to remain relevant. Therefore, the parameters are grouped in such a way that all the factors that are more sensitive to short term changes are made into one while the factors that are driven in long term are made into another. The sensitivities of parameters are different on the short and long term performance of the company and hence weights are assigned to each parameter in line with the effect it has on the company's performance. This exercise ensures that the factors that are more critical are given more weightage than the less critical ones. This research was applied to all the companies of Banking and Automobile sector that are a part of the Nifty Index for validating this model.

Bhatt, S. (2014). In this paper we evaluate performance of Indian Mutual Funds in ELSS(Equity Linked Savings Scheme) category. We have selected 28 out of 43 ELSS Plans available in Indian Market; the schemes that are left out are new and do not have a track record of more than 3 years at the time of study. We have attempted to measure the fund performance on Fama-French Model. We have tried to answer using this model as to whether the return generated by Fund is due to Fund Managers ability to pick stocks and diversify or due to common stock portfolio. This is demonstrated from four parameters to decode return using Fama& French Model. We have collected daily NAV for three years for the stated funds to arrive at the stated conclusion. Our study suggest that, Religare Tax Plan and Reliance Tax saver are the best performing ELSS funds on the basis of Fama-French Model, Jensen's Alpha and Sharpe Ratio over the rest of 28 funds. This is because majority of return is due to Compensation for Diversification and Net Selectivity. This is a benchmark study as it not only give reason for good return using Fama& French Model but also measures portfolio performance using Jensen's Alpha and Sharpe Ratio.

Bhatt, S. (2015). In this paper we want to validate Kisor-Whitebeck Model which uses the most fundamental parameter for valuing a company which is price earning multiple. This is a first of its kind application of Kisor-Whitebeck Model on Indian Capital Market. It uses three basic parameters i.e. Earnings growth rate, Pay-out ratio and Standard deviation of EPS. This model is applied on Indian Capital Market represented by SENSEX and its 30 stocks. We can categorise these stocks as undervalued stocks, overvalued stocks and appropriately valued stocks. This model has certain limitation like lack peer comparison, global liquidity scenario etc. which is discussed in our paper.

Bhatt, S. (2016) The objective of this paper is to have a broad understanding of the CANSLIM theory of investment and also to identify stocks using this theory and to use it as a tool for investment. The hypothesis of the study is to check if the identified stocks outperform or they are in line with the index Nifty 50 of the national stock exchange. The interpretation of the data, the values required for the seven abbreviations of the CANSLIM approach. The data collated in the excel sheet and accordingly the stocks that fulfill the CANSLIM criteria were identified. Hence the second best stocks i.e which fulfilled 5 out of 7 mandates for can slim are selected. The returns of the above selected stocks are then compared with the returns of the index nifty 50.

Bhatt, S. (2016). In this paper, we have calculated Graham Harvey Measures for top ten ELSS funds in India according to their Asset Under Management. ELSS fund are selected as they have more than 95% composition of equity component and lock in period of five years. Graham and Harvey in their research paper "Market timing ability and volatility implied in investment newsletters' asset allocation

recommendations"; discusses the methodology to predict market timing to alter their investments for portfolio managers. They introduced two new performance measures for a Fund/Portfolio. Both measures provide different relative performance valuation, with respect to Market Index's Return - Risk. Sharpe ratio, although a useful metric, suffers lack of benchmarking information. Sharpe Ratio is absolute measure of performance. Since the Graham-Harvey research is based on long-term prospect of the Portfolio investment, ELSS funds are taken for research. The performance of ELSS funds has been evaluated with the help of Graham and Harvey Measure and Sharpe Ratio. Our finding suggest that Graham and Harvey Measures are superior to Sharpe ratio for performance grading. Due to paucity of time and resources, the paper research is limited to evaluating performance of ELSS funds for period of April 2007 to December 2012 using Graham Harvey Measure.

Bhatt, S. (2018), In this paper applies the concept of Value-at-Risk (VaR) to Indian Capital Markets and examines the different computational approaches to VaR and their relative differences in measuring the downside of the risk involved in the investment of equities by applying the concept of VaR on a portfolio comprising of the stocks listed on the Indian Capital Market Index - the BSE SENSEX; by testing the model on time series data i.e. historical daily returns of the Index over a two month horizon and back testing the results of the Monte- Carlo Simulation against historically obtained VaR estimates.

## DATA ANALYSIS

Peter Lynch developed the PEG ratio as an effort to solve a limitation of the P/E ratio by factoring in the estimated growth rate of future earnings. If two companies are trading at 15x earnings, and one of them is growing at 3 percent but the other at 9 percent, you can classify the latter as a better bargain with a higher probability of making you a higher return. The formula for PEG is:

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The following are the parameter of Peter Lynch Model which we have embedded to create the matrix as shown in Annexure 1, Annexure 2 and Annexure 3.

PETER LYNCH CRITERIA
PEG Ratio < 1 AND
Sales > 500 AND
Price to Earning < 40 AND
Profit growth > 20 AND
Debt to equity < 0.2 AND
Price to Cash Flow > 5

There are six parameters on which we can give a BUY call using PETER LYNCH CRITERIA. The aim of this exercise is not only to predict value stock but validate your prediction based on coming years prediction. For example if we take stock like BHEL it gives a continuous BUY Call for 5 years with high ROE on Investments. A details result of calculation is shown in Annexure 1, 2 and 3.

## CONCLUSION

As seen if we apply Peter Lynch Model on BSE 100 stocks based on six parameters like, Price Equity Ratio, Sales, Price to Earnings, Debt Equity and Price to Cash flow we get a list of value stocks year on

year as shown in Annexure 1. Annexure 2 and Annexure 3. Also the reliability of this model is very high as it consistently beats mean return from the index. We can apply this on small cap and mid cap stocks to get a better return over a long run. We have applied this model on BSE 100 stock over a period of 12 years and we see consistency in prediction of BUY call on stocks. It is interesting to observe that the Model is skewed to measure growth in PE Multiple of value stock based on Year-on-Year growth of parameters like Price Equity Ratio, Sales, Price to Earnings, Debt Equity and Price to Cash flow. Investment strategy created using this model is seen to be highly profitable.

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**ANNEXURE 1:**

Current Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
ACC BUY	BUY	BUY	-	BUY	-	BUY	-	-	BUY	-	-	BUY	BUY
Ashok Leyland BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	-	-	-	BUY	BUY
Asial Paints	BUY	BUY	BUY	-	BUY	-	BUY	BUY	-	-	BUY	-	-
Bharat Forge BUY	BUY	BUY	-	-	-	BUY	BUY	-	BUY	BUY	-	-	BUY
Reliance Infra	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	-	-	BUY	BUY	-
Britannia Inds. BUY	BUY	BUY	BUY	-	-	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY
Exide Inds.	-	-	BUY	BUY	BUY	BUY	-	BUY	-	BUY	BUY	BUY	-
Cipla	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	-	-	-	-	-
Colgate Palm BUY	BUY	BUY	BUY	-	BUY	-	BUY	BUY	-	-	-	-	BUY
Eicher Motors BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
Nestle India BUY	-	BUY	BUY	-	BUY	BUY	-	-	-	-	BUY	BUY	BUY
Ambuja Cem. BUY	BUY	-	BUY	-	BUY	-	BUY	-	BUY	-	BUY	BUY	BUY
Grasim Inds BUY	BUY	BUY	BUY	-	BUY	-	BUY	BUY	-	-	BUY	BUY	BUY
HDFC BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY
Hero Motocorp BUY	BUY	-	BUY	-	BUY	-	BUY	-	-	BUY	BUY	BUY	BUY
ABB BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY	BUY	BUY	BUY	BUY
Hindalco Inds. BUY	BUY	BUY	-	-	BUY	-	BUY	-	-	-	-	BUY	BUY
Hind. Unilever BUY	BUY	-	BUY	BUY	BUY	-	BUY	BUY	-	BUY	-	-	BUY
ITC BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	-	-	-	BUY
Cummins India	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-
Larsen & Tourbo BUY	BUY	BUY	-	BUY	BUY	-	-	BUY	-	-	-	-	BUY
M & M BUY	BUY	BUY	-	-	BUY	BUY	-	BUY	BUY	-	-	BUY	BUY
Bosch BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY	BUY	-	BUY	BUY
Reliance Inds.	BUY	BUY	BUY	-	BUY	-	-	BUY	BUY	BUY	BUY	-	-
Vedanta BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY	-	BUY	BUY	BUY
Siemens BUY	BUY	BUY	-	BUY	BUY	BUY	-	-	BUY	BUY	BUY	-	BUY
Tata Chemicals BUY	BUY	BUY	BUY	-	-	BUY	BUY	-	-	BUY	BUY	BUY	BUY
Tata Power Co. BUY	BUY	-	BUY	BUY	BUY	BUY	-	BUY	-	BUY	BUY	BUY	BUY

**ANNEXURE 2:**

Current Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tata Powr CO. BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	BUY
Tata Global BUY	BUY	BUY	BUY	-	-	-	BUY	BUY	BUY	-	BUY	BUY	BUY
Tata Motors	BUY	BUY	BUY	BUY	BUY	-	-	-	-	-	BUY	-	-
Tata Steel Buty	BUY	BUY	BUY	-	-	BUY	-	-	BUY	-	BUY	-	BUY
Wipro	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	-
Dr. Reddy's Lab BUY	BUY	BUY	-	-	BUY	BUY	BUY	BUY	BUY	-	-	-	
Titan Compny BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	-	BUY	BUY
St Bk of India	-	BUY	BUY	BUY	BUY	-	BUY	BUY	-	BUY	-	-	-
Shriram Trans.	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY	BUY	-
Reliance Capital BUY	BUY	BUY	BUY	-	-	-	BUY	BUY	-	BUY	BUY	BUY	BUY
BPCL	-	BUY	-	-	BUY	-	-	BUY	BUY	BUY	BUY	BUY	-
SAIL BUY	-	BUY	BUY	-	BUY	-	-	-	BUY	-	-	BUY	BUY
HPCL BUY	-	BUY	-	-	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY
BHEL BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	-	-	BUY	BUY
Hind. Zinc BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
Kotak Mah. Bank BUY	BUY	-	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
UPL BUY	BUY	BUY	-	BUY	BUY	BUY	-	BUY	BUY	BUY	-	BUY	BUY
Infosys	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-
Motherson Sumi BUY	BUY	BUY	BUY	-	BUY	BUY	-	BUY	BUY	-	-	BUY	BUY
Lupin	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	-	BUY	-
Zee Entert. BUY	-	BUY	BUY	BUY	BUY	-	-	BUY	BUY	BUY	-	BUY	BUY
Dabar India	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-
Federal Bank BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	-	BUY	-	BUY	BUY
Bajaj Fin. BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
LIC Housing Fin. BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY
Sun Pharma Inds	BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	-	BUY	-	BUY	-
Aurobindo Ph. BUY	BUY	BUY	BUY	-	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY
JSW Steel BUY	BUY	BUY	BUY	-	BUY	BUY	-	BUY	-	BUY	-	BUY	BUY
HDFC Bank BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
TCS	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY	-

**ANNEXURE 3:**

Current Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
TICICI Bank BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY
IDBI Bank BUY	BUY	BUY	BUY	BUY	-	-	BUY	-	-	-	-	BUY	BUY
Power Grid Corpn BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
Bank of Baroda BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	-	-	BUY	BUY
Canara Bank BUY	-	-	BUY	BUY	BUY	BUY	-	-	-	BUY	-	BUY	BUY
Union Bank BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	-	BUY	-	BUY	BUY
Maruti Suzuki BUY	BUY	BUY	BUY	-	BUY	-	-	BUY	BUY	BUY	BUY	BUY	BUY
Indusind Bank BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
Axis Bank BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY
Bank of India B	BUY	BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	-	-	BUY	BUY
HCL Technologies BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
ONCC BUY	BUY	BUY	BUY	-	-	BUY	BUY	-	BUY	-	-	BUY	BUY
DLF	BUY	BUY	BUY	-	-	-	-	-	-	-	-	BUY	-
Punjab Natl, Bank BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	-	BUY	BUY
United Sprits	BUY	BUY	-	-	BUY	BUY	-	-	-	-	BUY	-	-
NTPC BUY	BUY	BUY	-	BUY	BUY	BUY	BUY	BUY	-	-	BUY	-	BUY
IOCL	-	BUY	BUY	-	BUY	-	-	BUY	BUY	-	BUY	BUY	-
Coal India BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY	-	BUY
NMDC BUY	BUY	-	-	-	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	BUY
Power Fin. Corpn. BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
Gail (India) BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	BUY	-	-	BUY	BUY
Mario	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-
Reliance Power BUY	BUY	BUY	BUY	-	BUY	-	-	BUY	-	-	BUY	BUY	BUY
Bharti Airtel	BUY	BUY	BUY	BUY	BUY	-	-	-	BUY	BUY	BUY	-	-
M&M Fin. Serv. BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	-	BUY
Tech Mahindra	BUY	BUY	BUY	BUY	-	-	BUY	BUY	BUY	-	BUY	-	-
Rural Elec. corp BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY
Jindal Steel BUY	BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	-	-	-	BUY
Glenmark Pharma.	-	BUY	BUY	-	BUY	BUY	-	BUY	-	-	BUY	BUY	-
Cadila Health BUY	BUY	BUY	BUY	BUY	BUY	BUY	-	-	BUY	BUY	BUY	-	BUY