**JOURNAL OF**
**BUSINESS AND MANAGEMENT**
Vol. 5, No. 6, 2016: *773-782*

# THE IMPLEMENTATION OF BENJAMIN GRAHAM CRITERIA (A CASE IN INDONESIA MARKET )

Mohammad Fahmi Rachmattulah and Taufik Faturohman
School of Business and Management
Institut Teknologi Bandung, Indonesia
mohammad.fahmi@sbm.itb.ac.id

*Abstract. Utilizing data of publicly listed companies on the Indonesian Stock Exchange for the period spanning from 2006 to 2015, the present study examines the profitability of stock selection criteria of Benjamin Graham in the Indonesian capital market. The different risk-reward combinations of the 10 Benjamin Graham Criteria and the minimum number of criteria to be fulfilled by a stock in order to provide excess returns to the investor are examined using independent sample T-test, Sharpe ratio, Treynor ratio and the capital asset pricing model (CAPM). The results show ample evidence that almost all of the risk-reward combinations proposed by Benjamin Graham can be used by investors in order to obtain excess returns except for the combination of discount to net current asset value (NCAV) and consistent past earnings growth. Furthermore, stocks which meet at least two Graham criteria can yield excess returns to investors if such stocks are held for the period of 24 months. Additionally the more Graham criteria which a stock fulfill, the more likely that the stock will generate positive excess return to the investor.*

*Keywords: Benjamin Graham, value investing*

## Introduction

In recent years, Capital market has become increasingly popular as an investment instrument in Indonesia. In 2015, it was estimated that the percentage of stock investors have grown up to 43%. Consequently, the number of local investors in Indonesia reach to 420 thousand investors (IDX, 2015). One of the most well-known investment instruments in the capital market is stocks. From investing in stocks, stock investors can enjoy capital gains and dividends. In Indonesia, the main stock exchange is the Indonesian Stock Exchange, which is a product of the merger between the Jakarta Stock Exchange and the Surabaya Stock Exchange in 2007.

However, a high return on stocks investing is accompanied by high level of risk as well. From 2007-2013 using data in the Indonesian Stock Exchange, the Jakarta Composite Index has an average standard deviation of 15.97% and a compounded annual growth rate of 9.32%. (Invovesta, 2016). This indicates that if an investor placed his money on the Jakarta Stock Index from 2008 to 2012, there was a chance that the investor would get a return in the range of -6.35% (9.42% - 15.77%) up to 27.59% (8.62% + 18.97%) (Viliawati, 2013). On the other hand, reason investment managers, academicians and individual investors have formulated various investment strategies to be able to get substantial returns while minimizing the risks involved in stock investing. One of the most well-known investing strategies is the value investing strategy. Benjamin Graham was the professor in Columbia Business School and mentor to the giant investor/business person Warren Edward Buffet, first introduced the concept of value investing with his protégé David L. Dodd in 1934, and with it a set of criteria for selecting underpriced stocks, or the so-

called value stocks (Graham & Dodd, Security Analysis, 1934). Although value investing has proven to be a successful investment strategy internationally, especially in the US market, the concept has not been researched much outside the US market. Klerck and Maritz (1997), Chang (2011), and Singh and Kaur (2014) conducted researchers outside the US stock market, namely in South African stock market, Malaysian stock market and Indian stock market respectively, and discovered similar results, that value investing strategies significantly beat the market returns. To the best of the author 's knowledge, no attempt has been made as of current to investigate the relevance of stocks selection criteria of Benjamin Graham in the Indonesian stock market.

**Problem statement**

This research is aimed to answer the following research questions:

1. Do portfolio of stocks created based on Benjamin Graham 's stock selection criteria combinations generate significant positive excess returns compared to the market returns from 2006 to 2015?
2. Do portfolio of stocks fulfilling more than 2 Benjamin Graham criteria beat the market returns from 2006 to 2015?

Listed are the objectives of this research:

- To examine the market-adjusted and risk-adjusted performances of portfolio of stocks meeting Benjamin Graham 's criteria combinations in the Indonesian Stock Exchange from 2006 to 2015 in order to investigate whether portfolio of stocks created based on Benjamin Graham's stock selection criteria generate significant positive excess returns compared to the market returns from 2006 to 2015.
- To examine the market-adjusted and risk-adjusted performances of portfolio of stocks meeting more than two of Benjamin Graham's criteria in the Indonesian Stock Exchange from 2006 to 2015 in order to investigate whether portfolio of stocks created based on Benjamin Graham's stock selection criteria generate significant positive excess returns compared to the market returns from 2006 to 2015.

**Literature Review**

Value investing is defined by Graham and Dodd as the process of finding and purchasing securities that are selling below their true value (or intrinsic value), based upon fundamental analysis (Graham & Dodd, 1934). Graham defined stocks which trade below their intrinsic value as ‗value' stocks (Graham & Dodd, 1934). Graham & Dodd argued that value stocks are traded below its intrinsic value in the market may be due to poor performance in the past in which the expectation from majority of investors arises that this performance will continue in the future (Graham& Dodd, 1934). As a result, these stocks became ‗out-of-favor' stocks in the market (De Bondt & Thaler, 1985). Graham believed that these stocks became out-of-favor due to the prevailing market sentiments and that in time, quality stocks will rise again in value. Thus, Graham recommended investors to invest in stocks which have significant gap in its market price and the intrinsic value so that the margin of safety can protect the investor in the event of a market downturn (Graham & Dodd, 1934).

Most significantly, Graham and Dodd proposed 10 criteria for screening for value stocks. The 10 criteria are (Graham & Dodd, 1934; Blustein, 1977):

1. An earnings-to-price yield at least twice the AAA bond yield.
2. A price-earnings ratio less than 40 per cent of the highest price-earnings ratio the stock had over the past five years.
3. A dividend yield of at least two-thirds the AAA bonds yield.

4. Stock price below two-thirds of tangible book value per share.
5. Stock price below two-thirds "net current asset value."
6. Total debt less than book value.
7. Current ratio greater than two.
8. Total debt less than twice "net current asset value."
9. Earnings growth of prior 10 years at least at a 7 percent annual (compound) rate.
10. Stability of growth of earnings in that no more than two declines of 5 per cent or more in year-end earnings in the prior 10 years are permissible.

Fama and French (1992), on the other hand, took a position as a proponent of the efficient market hypothesis and attributed the higher returns of value investing to increased risk in investing in value stocks. Chen and Zhang (1998) and Black and Macmillan (2006) shared Fama and French's viewpoint and contented of the importance of risk factor in value investing. In its original incarnation, the efficient market hypothesis (EMH) is the simple proposition that market prices incorporate all available information. The nature of information does not have to be limited to financial news and research alone. Information about political, economic and social events will all be reflected in the stock price. According to the EMH, as prices respond to information available in the market, and because all market participants have the access to the same information, stocks tend to trade at their fair value on stock exchanges, thus making it impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices (Fama E.,1970)

Fama (1970) emphasized that the EMH must be tested in the context of excess returns in order to prove its validity. Damodaran argued that since an excess return on an investment is the difference between the actual and expected return on that investment, there is implicit in every test of market efficiency a model for this expected return (Damodaran, 2002). When there is evidence of excess returns in a test of market efficiency, it may be an indication that markets are inefficient or that the model used to compute expected returns is wrong or even both. In most cases, the expected return is adjusted for risk using the capital asset pricing model (CAPM), which was created in the 1960s by William Sharpe (Sharpe, 1964; Damodaran, 2002). According to the CAPM, the correct measure of risk for a stock is the stock's beta – that is, the extent to which the returns of a stock is correlated with the returns of the market as a whole (Sharpe, 1964; French, 2003), a concept that is also used in Modern Portfolio Theory (Markowitz, 1952).

The Modern Portfolio Theory (MPT), championed by Markowitz (1952), accepted EMH's argument that investing without assuming superior risk means the investor will not get significantly higher return compared to the market. The MPT also utilizes several assumptions similar to EMH, that is, transaction costs are non-existent, and that investors are rational (Markowitz, 1952). The main argument of the MPT is that it is not enough for investors to look at the expected risk and return of only one particular stock, but that investors may be better off by diversifying their investment in several stocks simultaneously. The basic premise of this argument is that by investing in more than one stock, Markowitz believed that diversification leads to a reduction in the risk of the portfolio.

Although they are the cornerstones of modern financial theory, the EMH and the MPT are highly controversial and often disputed by both proponents of value investing and behavioral finance scholars (behaviorists). If the EMH and the MPT holds completely true, then researches into value investing in general, and low P/E and P/B ratio stock portfolios (value stocks portfolios) versus high P/E and P/B stock portfolios (growth stocks portfolios) in particular should not show any superior profits, implying the non-existence of any value premium nor any value discounts. This is due to the fact that the prices of these stocks should have already incorporated the potential gains from them in the future. In other

words, no significant risk adjusted returns should be found. However, previous studies in the field of value investing (Fama & French, 1992; Lakonishok, Shleifer, & Vishny, 1994; Chen & Zhang, 1998; Xiao & Arnold, 2008; Singh & Kaur, 2014) have mostly used the portfolio approach as described by Damodaran (2002) and, as observed, have given ample evidence of market inefficiency while significantly supported the argument that value investing beat the market average.

Most interestingly, majority of researches on the value premium did not implement all 10 of Benjamin Graham's value stock selection criteria. Oppenheimer was the first one to test Graham's value stock criteria in his paper —A Test of Ben Graham's Stock Selection Criteriall (1984) in which he proved that Benjamin Graham's 10 stock selection criteria generated excess returns compared to the market. Klerck and Maritz (1997) adapted a similar method in their study of the South African stock exchange and found similar results; that stocks screened according to Ben Graham's criteria significantly beat market returns. Furthermore, a recent study of the Indian Stock Exchange by Singh and Kaur also proved the efficacy of the 10 Benjamin Graham stock selection criteria. However, Singh and Kaur (2014) argued that investments in different markets yield different returns, thus the present study intends to investigate the effectivity of Benjamin Graham's stock selection criteria in Indonesia.

**Methodology**

First raw financial data of each company are gathered. Next, financial ratios are calculated accordingly for each stock. There are two different screening procedure. First is screening for stocks which fulfill the criteria combinations and the second one is by calculating the criteria composite score of each stock. If a stock meets one particular criterion, it is given score 1 and otherwise 0 and then the scores of all the criteria which that stock meets are totaled to calculate the composite score. For instance, if a stock meets only three of the ten proposed criteria, then it is given a composite score of 3 out of 10. If the stock fulfills all of the ten proposed criteria, it is given a composite score of 10. Hence, the composite score is the sum of individual binary signals. Portfolios are formed after the screening phase. The raw returns and risk-adjusted returns are then calculated for each of the portfolios. Last, a test for autocorrelations is conducted using Durbin-Watson test, and hypotheses testing are conducted using linear regression analysis and independent t-test analysis. The complete research design will show on the next page.

This study uses a time-series study design, thus the study is intended to be conducted using the time-series data of stock prices in the IDX from 2006 to 2015. A minimum financial data of 5 years prior to 2006 is used. This study investigates all stocks in the Indonesian Stock Exchange, except for stocks of financial firms, using time-series data of stock prices spanning from 2006 to 2015. Historical financial data are gathered from the Indonesian Capital Market Electronic Library (ICAMEL), maintained by the Indonesian Stock Exchange, and from the respective companies' financial reports. The data regarding different fundamental variable such as dividend per share, tangible book value, NCAV, total debt, earnings-per-share, are measured each financial year end of the previous year, that is, 31 December from year 2001 to 2013. For the purpose of portfolio rebalancing, and to avoid the look-ahead bias in the study, the opening price the first trading day of April at year t is used as the price at which the stock is purchased and the closing price of each stock is gathered on the last trading day of March at year t+2, to make sure that all the information regarding listed firms' fundamentals are available to the public at the time of portfolio formation. For this study, the Jakarta Composite Index is chosen as the market portfolio.

## Result

Table 1 Graham Combination Criteria

| Combination | Years | | | | | | | | Total of Stocks |
|---|---|---|---|---|---|---|---|---|---|
| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | |
| H1 | 19 | 12 | 11 | 20 | 17 | 14 | 16 | 9 | 118 |
| H2 | 17 | 12 | 11 | 20 | 9 | 8 | 7 | 6 | 90 |
| H3 | 11 | 7 | 5 | 14 | 4 | 6 | 8 | 4 | 59 |
| H4 | 1 | 2 | 1 | 7 | 6 | 11 | 10 | 4 | 42 |
| H5 | 42 | 23 | 26 | 48 | 35 | 32 | 30 | 18 | 254 |
| H6 | 13 | 10 | 10 | 22 | 20 | 26 | 31 | 26 | 158 |
| H7 | 7 | 6 | 9 | 21 | 9 | 13 | 20 | 18 | 103 |
| H8 | 5 | 3 | 3 | 12 | 5 | 9 | 14 | 10 | 61 |
| H9 | 0 | 0 | 5 | 8 | 5 | 6 | 6 | 6 | 36 |
| H10 | 29 | 27 | 35 | 82 | 54 | 53 | 63 | 42 | 385 |
| H11 | 15 | 10 | 11 | 18 | 14 | 6 | 16 | 8 | 98 |
| H12 | 10 | 10 | 9 | 15 | 8 | 5 | 8 | 6 | 71 |
| H13 | 8 | 7 | 5 | 12 | 5 | 4 | 10 | 6 | 57 |
| H14 | 1 | 2 | 1 | 4 | 2 | 7 | 7 | 2 | 26 |
| H15 | 32 | 17 | 18 | 31 | 22 | 15 | 21 | 11 | 167 |
| H16 | 31 | 25 | 21 | 31 | 43 | 30 | 28 | 29 | 238 |
| H17 | 26 | 24 | 31 | 32 | 20 | 16 | 17 | 15 | 181 |
| H18 | 18 | 16 | 12 | 19 | 16 | 12 | 14 | 7 | 114 |
| H19 | 1 | 2 | 4 | 8 | 8 | 13 | 8 | 6 | 50 |
| H20 | 63 | 56 | 64 | 98 | 89 | 72 | 71 | 60 | 573 |
| H21 | 11 | 8 | 4 | 8 | 3 | 3 | 5 | 2 | 44 |
| H22 | 7 | 8 | 5 | 9 | 3 | 2 | 4 | 2 | 40 |
| H23 | 10 | 7 | 4 | 8 | 2 | 4 | 5 | 3 | 43 |
| H24 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 5 |
| H25 | 10 | 7 | 5 | 10 | 4 | 5 | 3 | 2 | 46 |

Table 5 show Majority of the screened companies fulfill the C4-C10 criteria(H20), which is a combination of stocks with the market price discounted to two-thirds of its book value (low price to book value) yet with stable past earnings growth, with a total of 573 companies categorized into portfolio 20 from the year 2006 to 2013. This is followed by the C2-C10 criteria(H10), denoting stocks which have a combination of low price-to-earnings ratio with a stable past earnings growth, with 385 companies drafted into portfolio 10. Combinations which involve criteria 5 (Discount to NCAV) or criteria 9 (Past earnings growth at least at a 7 percent annual compounded rate) drafted small amount of companies across 2006 to 2013 only seven company, compared to combinations which involved other criteria. This is the indication there were only a small number of stocks in Indonesia from 2006 to 2013 which have a stock price below two-thirds of their net current asset value or have an earnings growth of the prior five years of at least 7 percent annually. On the other hand, combinations which involve criteria 10 (Stability of past earnings growth) drafted the largest amount of across 2006 to 2013 compared to combinations which involved other criteria. This suggests that from 2006 to 2013, there were a significant number of companies which have a stability of growth of earnings with no more than two declines of five percent or more in the prior five years. Portfolio 24, the combination of criteria 5 and criteria 9, which consist of stocks which has stock prices below two-thirds of their net current asset value and have earnings growth of the prior five years of at least 7 percent annually, has the least stocks compared to the other formed portfolios with only 5

stocks drafted into the portfolio from 2006 to 2013. This denotes that there were only a handful of stocks in Indonesia which have a stock price below two-thirds of their net current asset value and have an earnings growth of the prior five years of at least 7 percent annually.

Table 2 Graham Score Criteria

| | Score 0 | Score 1 | Score 2 | Score 3 | Score 4 | Score 5 | Score 6 | Score 7 | Score 8 | Score 9 | Score 10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2006 | 0 | 9 | 26 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 |
| 2007 | 0 | 16 | 34 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| 2008 | 1 | 13 | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54 |
| 2009 | 0 | 6 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 36 |
| 2010 | 0 | 11 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| 2011 | 0 | 13 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 |
| 2012 | 3 | 10 | 26 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| 2013 | 1 | 13 | 43 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 60 |
| Total | 5 | 91 | 251 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

On the other hand, based table 6 show only a few company fulfill Graham's criteria more than the 2. Therefore, author will not continue analysis for this step since will not be effective to build the portfolio based on Table 6

Table 3

| Combinations | Total No of Stocks from 2006 to 2013 | Mean (%) | T-value | R-Sq | ANOVA (F-Val) | α | t-val (α) | β | t-val (β) |
|---|---|---|---|---|---|---|---|---|---|
| C1-C6 | 118 | 11.88 | 4.657*** | 0.494 | 5.862* | 0.997 | 3.826*** | 1.016 | 2.421* |
| C1-C7 | 90 | 11.65 | 4.523*** | 0.478 | 5.495* | 0.973 | 3.642** | 1.007 | 2.344* |
| C1-C8 | 59 | 11.61 | 4.516*** | 0.399 | 3.987* | 1.029 | 3.408*** | 0.97 | 1.997 |
| C1-C9 | 42 | 11.76 | 4.396*** | 0.415 | 4.255* | 0.997 | 3.391** | 0.976 | 2.063* |
| C1-C10 | 254 | 11.49 | 4.536*** | 0.554 | 7.466** | 0.934 | 3.853*** | 1.066 | 2.732** |
| C2-C6 | 158 | 11.23 | 4.311*** | 0.602 | 9.060** | 0.878 | 3.731** | 1.14 | 3.010** |
| C2-C7 | 103 | 11.54 | 4.544*** | 0.435 | 4.616* | 0.98 | 3.578** | 0.947 | 2.149* |
| C2-C8 | 61 | 11.44 | 2.894** | 0.433 | 4.587* | 0.966 | 3.496** | 0.952 | 2.142* |
| C2-C9 | 36 | 9.32 | 4.100*** | 0.325 | 6.743** | 0.809 | 2.683** | 1.26 | 2.597** |
| C2-C10 | 385 | 10.81 | 3.081** | 0.577 | 8.173** | 0.826 | 3.071** | 1.238 | 2.859** |
| C3-C6 | 98 | 11.51 | 4.570*** | 0.431 | 4.542* | 0.98 | 3.597** | 0.935 | 2.131* |
| C3-C7 | 71 | 11.06 | 4.990*** | 0.462 | 5.146* | 0.955 | 4.105*** | 0.849 | 2.269* |
| C3-C8 | 57 | 8.18 | 3.276** | 0.421 | 4.363* | 0.593 | 2.249* | 0.886 | 2.089* |
| C3-C9 | 26 | 9.27 | 2.986** | 0.59 | 8.650** | 0.582 | 2.076* | 1.326 | 2.941** |
| C3-C10 | 167 | 11.00 | 4.069*** | 0.464 | 5.187* | 0.882 | 3.127** | 1.034 | 2.278* |
| C4-C6 | 238 | 10.46 | 3.237** | 0.615 | 9.595** | 0.688 | 2.423* | 1.416 | 3.098** |
| C4-C7 | 171 | 12.49 | 4.161*** | 0.365 | 8.030** | 0.904 | 2.744** | 1.503 | 2.834** |
| C4-C8 | 114 | 10.24 | 4.462*** | 0.358 | 7.794** | 0.851 | 3.050*** | 1.254 | 2.792** |
| C4-C9 | 50 | 8.81 | 4.047*** | 0.291 | 5.755** | 0.805 | 2.640** | 1.178 | 2.399** |
| C4-C10 | 573 | 10.96 | 5.134*** | 0.496 | 5.916** | 0.943 | 4.357*** | 0.848 | 2.432** |
| C5-C6 | 44 | 11.01 | 4.926*** | 0.467 | 5.258* | 0.945 | 4.050** | 0.861 | 2.293* |
| C5-C7 | 40 | 11.80 | 4.663*** | 0.429 | 4.5* | 1.014 | 3.689** | 0.939 | 2.121* |
| C5-C8 | 43 | 11.67 | 4.694*** | 0.401 | 4.012* | 1.014 | 3.671** | 0.89 | 2.003 |
| C5-C9 | 5 | 11.59 | 1.892 | 0 | 0 | 0 | 0 | 0 | 0 |
| C5-C10 | 46 | 11.98 | 4.922*** | 0.393 | 3.890* | 1.06 | 3.887*** | 0.866 | 1.972* |

Shows from taable 3 the monthly mean of returns of each of the formed portfolio with 24 months holding period, from portfolio 1 to portfolio 25, along with the total number of stocks each portfolio has from 2006 to 2014. According to a separate calculation, the average monthly returns of the 25 portfolios is 10.95%. Thus, portfolio 9, 13, 14, 16, 18 and 19 scores average monthly returns that were lower than the average mean of returns of the 25 portfolios while the rest of the portfolios have an average monthly return higher than that of the average of the 25 portfolios.

Also almost all combinations generated significantly positive mean market-adjusted returns to investors. Only the combination of C5 and C9 did not generate significantly positive mean market-adjusted returns. The T-value results from the independent T-test showed that stocks which meet the following combinations: C2-C8, C2-C10, C3-C8, C3-C9, and C4-C6 yielded significantly positive mean market-adjusted returns at 5 percent level of significance while the other combinations yielded significantly positive mean market-adjusted returns at 1 percent level of significance. Therefore, that all of the combinations proposed by Graham, except combination C5-C9, can be used safely to attain significantly higher returns than the market in case of the 24-month holding period.

The asset pricing model when applied to different risk-reward combinations of stocks, reveals that the P-value of the ANOVA has been insignificant in case of combination C5-C9. Moreover, that the asset pricing model is not a good fit for this combination, only the following combinations generate P-value of ANOVA that is significant at the 5 percent significance level: C1-C10, C2-C6, C2-C9, C2-C10, C3-C9, C4-C6, C4-C7, C4-C8, C4-C9, and C4-C10. The rest of the combinations generate P-value of ANOVA that is significant at the 10 percent significance level. Thus, keeping aside the portfolio with insignificant P-value of ANOVA, the rest of the combinations can be used safely by investors to invest profitably in the stock market in case the portfolios are held for the period of 24 months.

Each of the portfolio except portfolio consisting of combination C5-C9 showed significant alpha, indicating that each of the distinct combination can provide to provide abnormal returns to investors in case of a 24 months holding period. The majority of the combinations gave an alpha which hovers around 0.805 to 1.06 except combination C3-C8, combination C3-C9, and combination C4-C6. Combinations C3-C8, C3-C9 and C4-C6, on the other hand, only gave an alpha of only 0.593, 0.582, and 0.688 respectively, thus making those combinations with the lowest alpha compared to the rest of the combinations.

Different combinations give varying degrees of statistical significance for their respective alpha. Combinations C3-C8, C3-C9, and C4-C6, gave a significant alpha at 10 percent significance level. Combinations C1-C7, C1-C9, C2-C6, C2-C7, C2-C8, C2-C9, C2-C10, C3-C6, C3-C10, C4-C7, C4-C9, C5-C6, C5-C7, C5-C8 provided significant alpha at 5 percent significance level. The rest of the combinations gave significant alphas at 1 percent significance level.

The beta of the value stocks portfolios as obtained in this research diverged from the low beta of value stocks portfolios conducted by other researchers in the field of value investing. Oppenheimer's (1984), Xiao and Arnold's (2008), and Singh and Kaur's (2014) research, for instance, consistently found that beta of value stocks portfolios were less than 1.00. This research's beta of value stocks portfolios, however, were more varied, with some portfolios scoring betas less than 1.00 (11 portfolios) and some scoring betas higher than 1.00 (13 portfolios). Combinations C1-C8, C1-C9, C2-C7, C2-C8, C3-C6, C3-C7, C3-C8, C4-C10, C5- C6, C5-C7, C5-C8, and C5-C10 all scored beta lower than 1.00 while combinations C1-C6, C1- C7, C1-C10, C2-C6, C2-C9, C2-C10, C3-C9, C3-C10, C4-C6, C4-C7, C4-C8, and C4-C9 generated beta that is higher than 1.00. It is interesting to note that majority of combinations which involve C5 produced beta lower than 1.00, indicating that criteria five might be attractive to investors who desire less volatility from their portfolio of value stocks.

The significance of the beta for each portfolio also differs from one another, with some having significant beta while some have non-significant beta. Combinations C1-C8 and C5-C8 have insignificant beta, thus

indicating that the beta generated by these two portfolios are not generating significant unique contributions to the prediction of the returns of these portfolios. Furthermore, combinations C1-C6, C1-C7, C1-C9, C2-C7, C2-C8, C3-C6, C3-C7, C3-C8, C3- C10, C5-C6, C5-C7, and C5-C10 are significant at the 5 percent significance level. The rest of the combinations, which is combinations C1-C10, C2-C6, C2-C9, C2-C10, C3-C9, C4-C6, C4- C7, C4-C8, C4-C9, C4-10, and C5-C9 generated beta at a 1 percent significance level. It is worthwhile to note that combinations involving C4 all generated beta at a 1 percent significance level, signifying the beta of C4 portfolios generates significant contributions to the prediction of the returns of the portfolios.

A portfolio's beta of less than 1.00 denotes that the portfolio is theoretically less volatile compared to the market index while a portfolio's beta higher than 1.00 means that the portfolio is theoretically more volatile compared to the market index. This research's findings found that some portfolio of value stocks are more volatile than the market index while some portfolio of value stocks are less volatile than the market index. This discrepancy could be analyzed by future researchers to discover whether value stocks in Indonesia have more or less volatility compared to the market index.

The explanatory power of the model, determined through R-square, has been little in all of the cases examined except in the case of combination C4-C6, which has an R-squared value of 0.615, slightly higher than the rest. R-squared values range from 0 to 100. An R-squared of 100 indicates that the whole movements of security are completely explained by movements in the index. A high R-squared (between 85 and 100) indicates the fund's performance patterns have been in line with the index. Next, a fund with a low R-squared (70 or less) doesn't act much like the index. Thus, a hypothetical mutual fund with an R-squared of 0 has no correlation to its benchmark at all while a mutual fund with an R-squared of 100 matches the performance of its benchmark precisely. The results of the analysis showed that all the portfolios analyzed generated low R-square values which are less than 0.70. Therefore, the market risk factor has little role in explaining the variation in overall returns of the analyzed portfolios.

## Conclusion

This research testing Benjamin Graham criteria in Indonesia stock exchange market. The results of these study further cemented the proof of Benjamin Graham 's investing style efficacy. It is 24 out of 25 Benjamin Graham 's different risk-reward combinations grant excess returns for investors except for the combination of discount to net current asset value and past earnings stability. The rest of the combinations involving the NCAV stocks criterion, however, generated significant positive excess returns compared to the market. These study can, be used to help individual investors, financial analysts and fund managers alike to save considerable time, energy and resources in the process of screening for value stocks. By applying combination 24 out 25 Graham's combination that already proven, generates excess return beyond Index. For further study the researchcer, they can also make various holding period such as 3 month, 12 month or 60 month.Moreover,added trading cost would be provide more closer result into the real market condition.

## Reference

Anderson, D., Sweeney, D., & Williams, T. (2010). Statistics for Business and Economics. Cincinnati: South-Western College Pub.

Bank Indonesia. (2015, October 11). Market Data and Info for Bond Yields. Retrieved October 11, 2015, from Bank Indonesia:

Barberis, N., Shleifer, A., & Vishny, R. (1998). A Model of Investor Sentiment. Journal of Financial Economics, 307-343.

Basu, S. (1977). Investment Performance Of Common Stocks In Relation To Their Price-Earnings Ratios: A Test Of The Efficient Market Hypothesis. Journal of Finance, 663-682.

Blustein, P. (1977, August 1). Ben Graham's Last Will and Testament. Forbes, pp. 43-45.

Bird, R., & Gerlach, R. (2003). The Good and the Bad of Value Investing: Applying a Bayesian Approach to Develop Enhancement Models. European Financial Management Association Annual Meeting. Helsinki: European Financial Management Association.

Bodie, Z., Kane, A., Marcus, A., & Jain, R. (2014). Investments: Asia Global Edition. Singapore: McGraw-Hill.

Chan, L., Hamao, Y., & Lakonishok, J. (1991). Fundamentals and Stock Returns in Japan. Journal of Finance, 1739-1764.

Chen, N., & Zhang, F. (1998). Risk and Return of Value Stocks. Journal of Business, 501-535.

Damodaran, A. (2002). Investment Valuation - Tools and Techniques for Determining the Value of Any Assets. New Jersey: John Wiley and Sons.

De Bondt, W., & Thaler, R. (1985). Does the Stock Market Overreact? The Journal of Finance, 793-805.

Fama, E. F. (1970). Efficient Capital Markets: A Review Of Theory And Empirical Work. The Journal of Finance, 383-417.

Fama, E., & French, K. (1992). The Cross-Section of Expected Stock Returns. The Journal of Finance, 427-465.

French, C. (2003). The Treynor Capital Asset Pricing Model. *Journal of Investment Management*, 60-72.

Graham, B., & Dodd, D. (1934). Security Analysis. New York: McGraw-Hill.

Greenblatt, J., Pzena, R., & Newberg, B. (1981). How the Small Investor Can Beat the Market. The Journal of Portfolio Management, 48-52.

Jensen, M. (1969). Risk, The Pricing of Capital Assets, and The Evaluation of Investment Portfolios. Journal of Business, 167-247.

Klerck, W., & Maritz, A. (1997). A Test of Graham's Stock Selection Criteria on Industrial Shares Traded on the JSE. Investment Analysts Journal, 25-33.

Lakonishok, J., Shleifer, A., & Vishny, R. (1994). Contrarian Investment, Extrapolation, and Risk. The Journal of Finance, 1541-1578.

Malkiel, B. G. (2007). A Random Walk Down Wall Street: The Time-Tested Strategy for Successful Investing. New York: W. W. Norton & Company.

Markowitz, H. (1952). Portfolio Selection. The Journal of Finance, 77-91.

Oppenheimer, H. (1984). A Test of Ben Graham's Stock Selection Criteria. Financial Analysts Journal, 68-74.

Plyakha, Y., Uppal, R., & Vilkov, G. (2014, January 15). Equal or Value Weighting?

Implications for Asset-Pricing Tests. Retrieved October 11, 2015, from Social Science Research Network: papers.ssrn.com/sol3/papers.cfm?abstract_id=1787045

Plyakha, Y., Uppal, R., & Vilkov, G. (2014, January 15). Equal or Value Weighting?

Implications for Asset-Pricing Tests. Retrieved October 11, 2015, from Social Science Research Network: papers.ssrn.com/sol3/papers.cfm?abstract_id=1787045

Reese, J. P. (2009). The Guru Investor: How to Beat the Market Using History's Best Investment Strategies. New Jersey: Wiley.

Sharpe, W. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. The Journal of Finance, 425-442.

Sharpe, W. (1966). Mutual Fund Performance. *Journal of Business*, 119-138.

Singh, J., & Kaur, K. (2014). Testing Ben Graham's Stock Selection Criteria in Indian Stock Market. Management and Labour Studies, 43-62.

Swensey, D. (2000). *Pioneering Portfolio Management.* New York: The Free Press.

Treynor, J. (1965, January - February). How to Rate Management Investment Funds. Harvard Business Review (43), pp. 63-75.

Viliawati. (2013, July 1). Mengantisipasi Dampak Gejolak IHSG pada Reksa Dana Saham. Retrieved May 21, 2016, from Infovesta: http://www.infovesta.com/infovesta/artikel/readartikel.jsp?id=4

Xiao, Y., & Arnold, G. (2008). Testing Benjamin Graham's Net Current Asset Value Strategy in London. Journal of Investing, 11-19.