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INTRINSIC VALUE USING DIVIDEND DISCOUNTED-CONSTANT GROWTH MODEL DRIVEN BY DIVIDEND AND CAPITAL GAIN GROWTH (THE STUDY OF BorgWarner Inc., USA)

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ABSTRACT

This study is trying to calculate the intrinsic value of a stock for company that is not paid its dividend in regular timely basis; with the outcomes either investor find the company's intrinsic value is undervalued or overvalued. Dividend discounted-constant growth model is used to valuing observed company by determining its intrinsic values in various required rates of return and explore its computation outcomes approached by long-term growth rate (g) and discounted growth rate (r) which both are driven by dividend growth and capital gain growth. The outcomes of the computation also be compared and used to explain BorgWarner's (BWA) stock price movement during 2012 to 2014 stock trading to see which of these approaches able to picturing closely to the real event. Concluding that capital gain as a driven factor able to presenting calculation outcomes that are closely projecting the movement of BWA's stock price during the observation time, thus presenting a preliminary evidence of method in projecting and determining company's intrinsic value using dividend discounted-constant growth model that is driven by capital gain for company who is not paid its dividend regularly or not at all.

Keywords**:** dividend, capital gain, intrinsic value, long-term growth, discounted growth rate, required rate of return

JEL Classification: G31

INTRODUCTION

Investors invest in many types of securities in capital markets and stocks are one of these types. To find reliable information about selected stocks, investors might use different investment analysis, but most of them commonly are using fundamental analysis or technical analysis. In fundamental analysis, Investors try to calculate the intrinsic value of a stock. This type of investment analysis is very often used by investors, because it provides a long-term and medium-term forecast of stock price trend. Fundamental analysis is able to identify the factors which influence stock price. Many subjects need to know this kind of information, not only investors, but also stockholders, stockbrokers, bank staff, financial managers and others. Fundamental analysis also incorporates economic situation of issuer of a stock. The aims of fundamental analysis are to

calculate intrinsic value of a stock and to make forecast of stock price trend.

The purpose of fundamental analysis is to identify stocks that are mispriced relative to some measure of "true" value that can be derived from observable financial data (Bodie, *at al.,* 2011). One of the premises of fundamental analysis is that securities, which actual price does not equal to its intrinsic value, really exist and they are listed in some stock exchange. Proponents of fundamental analysis believe that certain intrinsic value can be calculated for every security. Intrinsic value of a stock can be calculated by methods of fundamental analysis. It means the "justified price" and it expresses the real value of a stock. Ideally stock should have this price. Stocks are overvalued while intrinsic value greater than price, whereas stocks are undervalued while intrinsic value less than price. If intrinsic value equals to price, stocks are fairly valued. The estimating the intrinsic value of a stock belongs among basic aims of fundamental analysis.

Investors use a variety of analytical techniques in order to estimate the intrinsic value of securities in hopes of finding investments where the true value of the investment exceeds its current market value, in this study then dividend discounted-constant growth model or DDM (Gordon Growth Model) is chosen as a tool to be used. This model was introduced by Myron J. Gordon in 1956, the rationale for the model lies in the present value rule - the value of any asset is the present value of expected future cash flows discounted at a rate appropriate to the riskiness of the cash flows.

Investors could use DDM as their formula in valuing the company's stocks they desire with quite easily approach. What make it difficult is that this formula in its process relies on the ability of the investor to predict, determine and decide the value in the future based on its predicted growth rate, used mainly for mature companies that able to pay its dividend regularly and constantly growth upward. The question then rise when company adjusts their payout ratio strategies as part of company growth policy, where dividend might not been distributed in regular timely basis, while in the same time it has to be maximized its stockholders value and convince them about company future value trough company payout ratio strategies. In other hand investors realize that their source of income could come from two sources; first is obviously come from distributed dividend and second is from the positive gain from activities in selling and buying stock (capital gain).

Company which decides to plow its earning back for investment strategy (could be partially or all) might decide to reduce its dividend value or held the distribution of dividend for duration of times, might still have positive value if its business operation and business environments support its growth that might influence investors' perspective for doing the transaction in the stock market and gaining the profit for short term decision. However; this is depended on their ability (either company or investors) in projecting company future value, hence it raises the question if dividend discounted-constant growth model still able to evaluate this type of company and how capital gain could be used as optional information when dividend is not distributed to evaluate company intrinsic values.

This study would be focused on an company that is listed in US stock market that is screened using Finviz.com with condition it should have large capital cap above $10billion, listed by S&P500 index addressed in consumer goods sector, industry of auto part. Randomly chosen is BorgWarner Inc. (BWA), this is a global product leader in powertrain solutions, focus on developing leading powertrain technologies that improve fuel economy, emissions and performance. BWA's facilities are located across the globe to provide local support for its diverse customer base.

The objectives of the research then would be focused on; (1) Determining the BWA's intrinsic values for the next five years using Dividend Discounted-Constant Growth Model as a tool. (2) Determining whether WBA's intrinsic value is overvalued or undervalued compared with BWA's 2012 stock price. (3) Using long-term growth (g) and discounted growth rate (r) as constant growth variables of the dividend discounted-constant growth model formula to see if there is any different in calculation result. (4) Using the growth of projected dividend and the growth of projected capital gain as the driven factors in the dividend discounted-constant growth model to see if there is any different in calculation result.

MATERIALS AND METHODS

This study was done using quantitative descriptive

method with the used of Dividend Discount Models (Gordon Growth Model) as a tool for analyzing the data and answering the research question. This study was conducted at Murray State University, Murray - Kentucky, from August 2013 to December 2013 and Brawijaya University Malang- East Java, from January 2014 to December 2014. Data from U.S. Bureau of Economic Analysis was used as main source to determine USA industry attractiveness, while http://finviz.com was used as a tool for screening the companies in observed industry. The characteristic of the potential company to be observed was determined with conditions as follow 1) was screened by S&P500 index; 2) market caps more than 1 million Dollars; 3) business sector is consumer goods with chosen industry is Auto Part; and 4) company headquarter is in United States. Screened company was chosen randomly and Borg-Warner Inc. (BWA) was chosen to be studied further in this research.

In the process of collecting BWA's financial reports, its annual reports were obtained from BWA's website. Data for the risk free rate was collected from U.S Treasury-Bill, with the rates ranging from 4 weeks rate to 10 years rate, while S&P500 index was used as expected return of the market. In this study, researcher would determine the value of the company by calculating its intrinsic value using Dividend Discounted-Constant Growth Model with two constant growth approaches 1) using the long-term growth (g) as constant growth driven by company dividend growth and capital gain growth and 2) using the discounted growth rate (r) as constant growth driven by company dividend growth and capital gain growth. The flow of calculation process could be seen on figure 1 and figure 2 for both approaches.

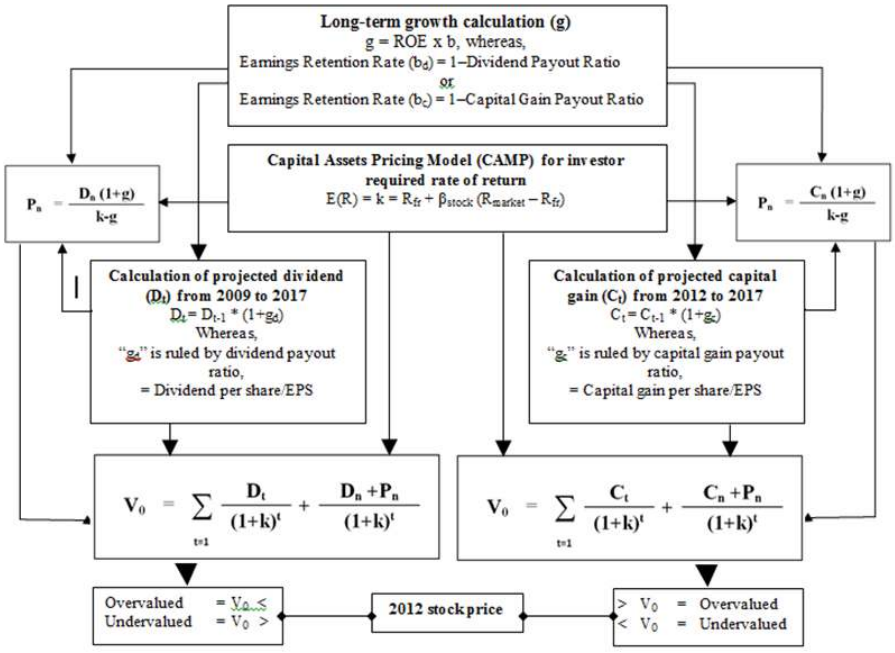

Figure 1
The Diagram Of The First Approach In Determining The Intrinsic Value With Long-Term Growth

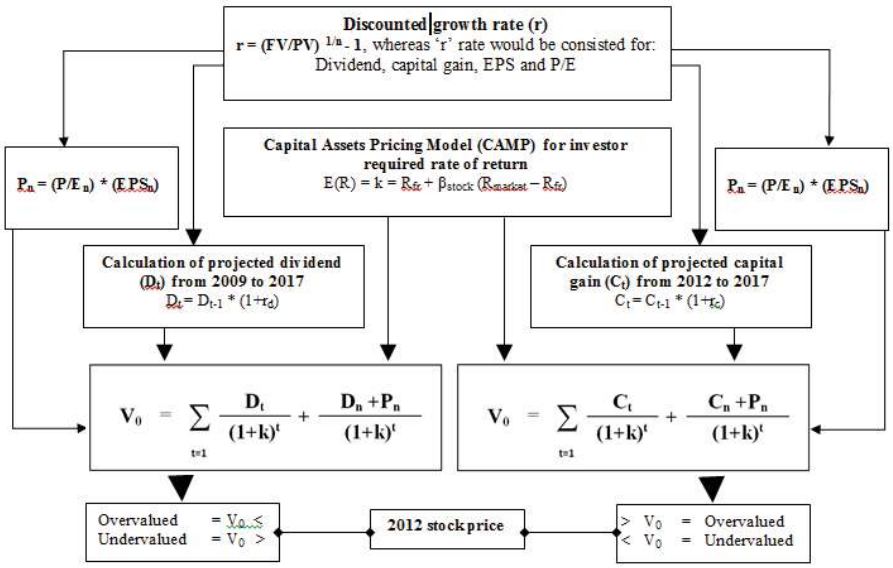

Figure 2
The Diagram Of The Second Approach In Determining The Intrinsic Value With discounted growth rate

RESULT AND DISCUSSION

Determining the Long-Term Growth (g) and the Discounted Growth Rate (r)

The fundamental analysis will be used to measure company value in the year of 2012 up to 5 years to come. The purpose of fundamental analysis is to identify stocks that are mispriced relative to some measure of "true" value that can be derived from observable financial data.

Firstly, table 1 would be presenting BorgWarner Inc. financial report summaries and the computation of the variable needed. Long-term growth (g) and discounted growth rate (r) are needed as the rates that are used to calculate the present value of investments that persist indefinitely into the future. These rates would be considered constant for duration of numbers of expected years. The first approach to calculate the constant growth is using the long-term growth (g), the "g" would be used to calculate projected dividend growth and capital gain growth for five years ahead, whereas the formula of "g" is equal ROE (return on equity) multiplied by Earning retention rate (b) , or could be written as follow;

g = ROE x b, this formula in its process of calculation would be driven by dividend and capital gain. Thus, the earning retention rate (b) could be calculated as it is driven by;

1. Dividend (D), therefore, the formula could be written as,
   Earnings Retention Rate (b)=1–DPR
   Whereas, dividend payout ratio (DPR)
   DPR=Dividend per share/EPS
2. Capital gain (C), therefore, the formula could be written as,
   Earnings Retention Rate (b)=1–CGPR, whereas, capital gain payout ratio (CGPR)
   CGPR=Capital Gain per share/EPS

The (g)'s approach however only could play its role in this process on determining the BWA's intrinsic value if its result of calculation has "g" rate less than required rate of return (k), since this rate would be used to determine the projected share price for the end of projected years. If it has value greater than required rate of return then the result of the computation would

be negative, and share price should not have negative value. The result of the long-term growth calculation approach could be seen on Table 1.

On Table 1, the "g" rate for long-term growth driven by dividend would be used the average rate since its result of calculation only involving the year of 2007 to 2009, and the rate would be 2.18%. The "g" rate for long-term growth driven by capital gain would be used 2012 rate, and it would be 12.46%.

The second approach to calculate constant growth is using the discounted growth rate (r) that could be obtained by using the formula of Present Value (PV), as shown below:

PV = FV / (1 + r) n, switch the position to find the (r) as the discounted rate for growth rate we could obtain formula as shown below,

r = (FV/PV) 1/n - 1, thus we can use this formula to calculate the discounted growth rate of the variables needed for the next process in determining the projected shares price for the end of projected years and expected dividend and expected capital gain for the next 5 years. Those variables needed for calculation are consisting of discounted growth rate for 1) Dividend (D); 2) Capital gain (C); 3) Price per earning (P/E); and 4) Earnings per share (EPS). The result of this calculation could be seen on Table 1 in the column growth rate.

Table 1
Financial Summary and Calculation Needed For Analysis

	2006	2007	2008	2009	2010	2011	2012	Growth Rate	%
Share outstandings	115,970,000	116,128,572	115,532,372	116,837,555	122,316,444	108,514,462	115,572,699		
Dividend paid	36,700,000	39,400,000	51,100,000	13,800,000	0	0	0		
Dividend per share	0.32	0.34	0.44	0.12	0.00	0.00	0.00	0.1822	18.22%
Retained Earnings	N/A	1,295,900,000	1,200,500,000	1,193,400,000	1,560,200,000	2,110,300,000	2,611,200,000		
Retained Earnings/Share	N/A	11.16	10.39	10.21	12.76	19.45	22.59	0.1515	15.15%
Retained Earnings + Dividend Paid	N/A	1,335,300,000	1,251,600,000	1,207,200,000	1,560,200,000	2,110,300,000	2,611,200,000		
Retained Earning+Dividend/share	N/A	11.50	10.83	10.33	12.76	19.45	22.59	0.1446	14.46%
Operating Cash Flow	442,100,000	603,500,000	400,800,000	351,000,000	538,900,000	708,200,000	878,700,000	0.1213	12.13%
Capital Expenditures	268,300,000	293,900,000	369,700,000	172,000,000	276,600,000	393,700,000	407,400,000	0.0721	7.21%
Free Cash Flow	173,800,000	309,600,000	31,100,000	179,000,000	262,300,000	314,500,000	471,300,000	0.1809	18.09%
FCF/Share	1.50	2.67	0.27	1.53	2.14	2.90	4.08	0.1816	18.16%
earnings	211,600,000	288,500,000	(35,600,000)	27,000,000	377,400,000	550,100,000	500,900,000	0.1544	15.44%
earnings/share	1.82	2.48	(0.31)	0.23	3.09	5.07	4.33	0.1551	15.51%
BWA Stock Price	59.27	48.06	21.84	33.45	73.31	64.93	73.49	0.1461	14.61%
P/E ratio	32.48	19.35	(70.88)	144.75	23.76	12.81	16.96	0.0478	4.78%
Capital Gain/Shares	0.54	1.07	0.89	0.66	0.72	1.12	0.94	0.0961	9.61%
Stockholders Equity	N/A	2,439,000,000	2,037,500,000	2,222,700,000	2,309,800,000	2,453,000,000	3,146,100,000		
ROE	N/A	0.1183	(0.0175)	0.0121	0.1634	0.2243	0.1592	0.0612	6.12%
Dividend Payout ratio	N/A	0.1366	(1.4354)	0.5111	N/A	N/A	N/A		
Capital Gain Payout ratio	0.2977	0.4305	(2.8868)	2.8478	0.2348	0.2204	0.2173		
Div.Retention Rate (b) Div.	N/A	0.8634	2.4354	0.4889	N/A	N/A	N/A		
Cap.Retention Rate (b)	0.7023	0.5695	3.8868	(1.8478)	0.7652	0.7796	0.7827		
Div.Long-term Growth (g)	N/A	10.21%	-4.26%	0.59%	N/A	N/A	N/A	0.0218	2.18%
Cap.Long-term Growth (g)		6.74%	-6.79%	-2.24%	12.50%	17.48%	12.46%		

Determining the BWA's Intrinsic Value

The intrinsic value is calculated by using formula below:

$$V0 = \sum_{t=1} \frac{D_t}{(1+k)^t} + \frac{D_n + P_n}{(1+k)^t}$$

The calculation above would be approached by two different constant growth driven by dividend growth and capital gain growth. Bellow would be presented the table of intrinsic value computation for both approaches (table 2), hence the result of the computation, the BWA's intrinsic value (V_0) would be compared with BWA's 2012 share price (BWA's P_{2012}) which is $73.49 (data from FINVIZ.com) to determine whether BWA's intrinsic value is overvalued or undervalued.

On Table 2, strikethrough values are BWA's intrinsic value that are overvalued compare with its 2012 stock price, while those that are not strikethrough are undervalued compared with its 2012 stock price. From table above we can see that all of BWA's intrinsic values that are calculated using discounted growth rate (r) are undervalued, while under long-term growth (g) only partially are undervalued (only those who are driven by capital gain growth).

"g" Processes in Projecting Dividend and Capital Gain

From the calculation process, the long-term growth (g) has more difficulties in picturing the real growth of the dividend and capital gain since both has to be calculated through difference period of time. Especially for the dividend that were pain only until 2009, the computation than has to be calculated based on three years' time series data and has to be projected for more than five years (from 2009 to 20017). Mathematically this actually difficult to be accepted since the data is not enough to be used in projection calculation (it should be at least more than 5 years' time series data). Thus the result of the calculation actually is not reliable enough to be used as information in deciding whether BWA's stock is valuable or invaluable to be considered by investor. Another problem comes from the information about distributed dividend from 2006 to 2008 that was in constant growth ($0.32/share to $0.44/share, or growth 18.22% per year) but decline on 2009 ($0.12/share or -73%), therefore, to picturing the constant growth for dividend, the calculation was used the year of 2006 to 2008 as initial data. Hence, the calculation had not only tried to projecting the expected dividend from 2012 to 2017 but it has to be started from 2009 and changed the value that the company had in 2009. This actually resulted in unreliable computation result, because the data used in projecting the future dividend was too short compared with the numbers of years of projected dividend. One things to be noted here is that, starting from 2009th to mid-2013th BWA had decided not to distribute dividend, resulted in 100% retained earnings, therefore, if we reflected to long-term growth equation, then BWA's growth prospect during 2009th to mid-2013th could be reflected by its ROE, it is because;

Table 2
Decision table of BWA's Intrinsic Values

type	k	long-term growth (g)		discounted growth rate (r)	
		Dividend (D_t)	Capital Gain (P_n)	Dividend (D_t)	Capital Gain (P_n)
0-1 year	13.37%	~~$ 1.18~~	$ 116.31	$ 103.02	$ 106.18
1-2 year	13.50%	~~$ 1.20~~	$ 102.39	$ 102.46	$ 105.60
2-3 year	13.62%	~~$ 1.18~~	$ 91.50	$ 101.90	$ 105.03
3-4 year	13.87%	~~$ 1.16~~	$ 75.48	$ 100.79	$ 103.91
4-5 year	14.12%	~~$ 1.13~~	$ 62.87	$ 99.70	$ 102.79
5-6 year	14.38%	~~$ 1.11~~	$ 54.38	$ 98.60	$ 101.67
6-7 year	14.75%	~~$ 1.08~~	$ 45.44	$ 97.02	$ 100.07
7-8 year	15.00%	~~$ 1.06~~	$ 40.87	$ 95.98	$ 99.00
8-9 year	15.13%	~~$ 1.05~~	$ 38.84	$ 95.44	$ 98.46
9-10 year	15.38%	~~$ 1.03~~	$ 39.10	$ 94.41	$ 97.41

g = ROE x b, whereas,
b =1-dividend payout ratio, When,
Dividend payout ratio as the fraction of earnings paid out as dividend is zero (0%, since all earning is retained), then the value of
b = 1-dividend payout ratio = 0, thus,
g = ROE x 0 = ROE

Now, if the growth prospect that is reflected by its ROE somehow greater than the required rate of return during the years of 2009 to 2012, it could be understood if BWA's management then decided to retain its earnings and put it in more use for the business, this come in understanding that If company's ROE is greater than the market's required rate of return, or capitalization rate (k), then it would benefit the company's stock price if the company reinvested its earnings in more growth and distribute little or no earnings as dividends. If its investment opportunities are limited, and its return on investment is than the capitalization rate, then it would be best for the company to distribute its earnings as dividends rather than reinvest it, while company's earnings retention rate (or plowback ratio) is the amount of earnings that the company reinvests in its business rather than distributing it to shareholders as a dividend; at least we could see the value or 2012 ROE is greater than its required rate of return (ROE is 15.92 while k is 15.38 for 5 years period). This decision might not favor the growth prospect for the dividend but it will increase the share value in the stock market since the decision to retain its earnings would be followed by company strategies in strengthening and expanding its business through intensive investments.

Another calculation by long-term growth (g) that is driven by capital gain in another hand comes in quite easily but challenging in terms of its practical use in this study. It comes to the understanding that long-term growth (g) is equal return on equity (ROE) multiplied by earning retention rate (b) is the calculation that is influenced by company internal process. ROE in itself plays it roles (together with investors' required rate of return) to determine the company policy to pay out its earnings as dividend or retains its earnings to invest in its business while in the same time determining how the manager perceived riskiness of the company's stock. While dividend and capital gain is considered as investor's source of cash inflow, in definition, this long-term growth rate actually only influenced by dividend policy instead of the capital gain policy since both driven factors actually decided by different parties. Dividend is determined mainly on the basis of the company's inappropriate profit (excess cash) and influenced by the company's long-term earning power decided by a company's very extensive study. While capital gain is determined solely by stockholders (in the stock market) whether they want to sell the possessed shares to gain profit, hold it or even to buy, for their own personal benefit, moreover, the changing of stock price is influenced by many factors such as; physiological factors, macro and micro economic, sudden or unexpected factors, etc..

Thus, in this study, capital gain as driven factor is approached as mathematical way by assuming the value of investor's expected future cash inflow from the company (normally earned as dividend payment) is replaced by the value of capital gain. This approach comes in two reasons; first, the position of distributed dividend in the financial report (reported under financing, part of company's cash outflow in cash flow reporting) will not influenced the present/the changing/ the value of earnings that is reported under operating, part of company's cash inflow in cash flow reporting. Thereby, the used of capital gain value in the formula of earning retention rate (b) would be assumed as value of another possibility of distributed dividend, the value that company decide to distribute as much as the value of capital gain earn by investor. Hence this approach tried to put some value into the formula by replacing the dividend values in the main data with capital gain values to be able to generate result from the intrinsic value equation.

Second, when the value of g is equal with company's ROE, and when the ROE value is greater than the value of k (required rate of return), and if the company able to apply its investment strategy perfectly, then in its nature, investor would see this as a positive prospect for company business. Even when the investor could not expect their benefit from dividend (also reflected by zero growth prospect of the dividend), they still hope to have positive gain from selling their possessed shares in the future to gain income. Hence this study also tried to put this expected future value of capital gain as a replacement value for the dividend with the assumption if the growth rate of the capital

gain is equal company's ROE.

"r" Processes in Projecting Variables Needed

While long-term growth (g) was used as main rate in obtaining the projected growth of all variables needed in the equation, discounted growth rate (r) is depended on each variable's trend that is computed from each variable previous time series data. This growth rate is obtained as an average annual growth rate of each variable based on its previous historical data, hence this growth rate than would be used as projecting rate for the next expected future variable needed in the computation process.

The formula to compute this process is by using the reverse formula in finding rate in net present value (NPV), during the process of calculation, the variable's growth rate would be calculated between its smallest positive value against its geometric mean (except if there is any negative number in the variable's data, then normal average would be used) when the distribution of its value from previous time series data is not upward constant or greatly different in value.

The computation process to obtain the discounted growth rate for projected dividend in this study once more faces the same problem with the number of previous data needed for the calculation, since mathematically this is not enough information to be used to obtain expected dividend, the result is not reliable enough to be used to determine whether BWA's stock is overvalued or undervalued. In other hand it was quite easily to obtain BWA's capital gain discounted growth rate and for another variables needed in the process of obtaining BWA's intrinsic value since the information is enough to be used in the calculation process.

Ultimate Sales Price Approached By "g"

As mentioned in growth rate discussion, the growth rate obtained was used to determine the value of series of expected future dividend or series of expected future capital gain. The first approach, The long-term growth rate (g) relies on company ability to execute its investment strategies through its policy to retain the earnings whether partially (other part would be distribute as dividend), or entirely (100% retained, no dividend and the g equal it ROE), thus this decision would be reacted by investor by assuming that company business future is in good condition and it has to be in good growth prospect. If than investor decides to buy BWA's stock in 2012 and would like to know its value in the next five years (it value in 2017), this growth rate would determine its growth prospect. DDM with constant growth model has implication toward stock price; it is expected to grow at the same rate as dividend or the changing of price is proportional to dividends (Bodie, *at al.*, 2011), this assumption comes in the reason that investor would buy company share as much as its intrinsic value. Hence the calculation process in obtaining BWA's ultimate sale price in 2017 relied on the process in determining the value of 2017 dividend, the g value also relies on this process. So if the company had not paid its dividend regularly, or in BWA's case it stopped distributing its dividend in 2009, the process to determine BWA's 2017 ultimate sale price in year of 2012 would be meaningless since the data is not sufficient, especially if the investor than become realistic (based on BWA 2006-2012 financial reports) by not depending his/her cash inflow on future distributed dividend but only relied on the selling of BWA's shares in the future, then the stream of expected future dividend is not too important to be considered, but more to the expected ultimate sale price of company's share in 2017.

Second driven factor in the first approach, the capital gain factor, comes in better result. This, once again as explained in previous discussion, assumed that the value of capital gains from 2006-2012 main data would be used as replacement for 2006-2012 distributed dividends, and assuming that the growth of stock price would be proportional to the growth of dividends than the value of capital gain as the reflection of positive gain from selling the shares at any period within the projected years could be used. The flaw of this assumption is in its assumption that investor could receive capital gain in every years within the projected period (assumption similar with the distributed dividend) as an investor constant sources of income, while capital gain actually is the result of doing shares trading in one period then the stream of capital gain actually is not reasonable to be occurred, what will happen is that the growth of capital gain could be computed and what is matter is its final value in the end of projected year. Reconsidered the result of the computation for BWA' intrinsic value that is approached by long-term growth (g) driven by capital gain, then the BWA's

intrinsic values for each required rate of return could be recounted by equation as shown below;

$V_0 = C_{2017} + P_{2017} / (1+k)^5$

$C_{2017} = C_{2012} * (1+g)^5$

$P_{2017} = C_{2012} * (1+g)^5 / k-g$

The result of the computation above would be presented on table 3 below;

Table 3
Recounted BWA's Intrinsic Value approached by g driven by capital gain

type	k	C2017		P2017		V_0
		PVF	NPV5	PNc	VP	
0-1 year	13.37%	187.29%	$ 0.90	$ 209.23	$ 111.7	$ 112.6
1-2 year	13.50%	188.33%	$ 0.90	$ 183.98	$ 97.69	$ 98.59
2-3 year	13.62%	189.37%	$ 0.89	$ 164.17	$ 86.69	$ 87.59
3-4 year	13.87%	191.46%	$ 0.89	$ 135.07	$ 70.55	$ 71.43
4-5 year	14.12%	193.57%	$ 0.88	$ 114.74	$ 59.28	$ 60.15
5-6 year	14.38%	195.74%	$ 0.87	$ 99.47	$ 50.82	$ 51.68
6-7 year	14.75%	198.93%	$ 0.85	$ 83.37	$ 41.91	$ 42.76
7-8 year	15.00%	201.11%	$ 0.84	$ 75.15	$ 37.37	$ 38.21
8-9 year	15.13%	202.25%	$ 0.84	$ 71.48	$ 35.35	$ 36.18
9-10 year	15.38%	204.45%	$ 0.83	$ 65.36	$ 31.97	$ 32.80

The result for BWA's intrinsic values from recounting process as explained above shows that for "k" ranging from 0 year to 3 years are undervalued while above these years are overvalued.

Ultimate Sales Price Approached By "r"

This approach tried to find the constant growth for each variable needed in the computation of BWA's intrinsic value by determining each discounted rate based on data series of variables needed respectively. Instead of depending on company growth prospect, this growth rate is calculated based on each variable growth trend, and used the computation result from series of historical data to predict its variable constant growth rate for the next five years. Another reason of this process is to avoid miscalculation and preventing unreliable result because of the value of long-term growth rate (g) that might be greater than the value of required rate of return (k), when this occur, the value of ultimate share price would be zero, this is not allowed in the equation but possible to be happened, thus the discounted rate formula that is used in the equation of net present value (NPV) would be used to determine the variable constant growth rate (the result of discounted growth rate computation for all variables needed could be seen on Table 1).

Looking from the computation result in table 1, the decision in determining the value of the BWA's ultimate sales price relied on the estimation of growth rate of P/E ratio (price per earnings ratio) and EPS (earnings per share) from 2006 to 2012. This comes in the reason that the company's P/E ratio indicates strong or weak investor confidence in a firm's outlook and earnings growth (Thompson, *at al.*, 2012), and also how optimistic market concerning a firm's growth prospect ((Bodie, *at al.*, 2011), both reasons clearly reflected by company's share price in the stock market, thus, using the P/E equation we could determine the value of BWA's ultimate sale price by calculating forward (projecting) the P/E equation using "r" as discounted growth rate. While deciding the growth rate of P/E ratio and EPS also require well understanding about company growth prospects (business internal analysis) and its opportunities (external business analysis), in this study the growth rate is solely calculated using company's P/E ratios historical data series and EPS historical data series, applying NPV equation in determining its average growth changing during 2006 to 2012. This growth rate than would be used as discounted growth rate that is used in projecting 2017 company's P/E ratio and EPS ratio. The difficulties comes when it has to be used to determine the BWA's intrinsic value that is driven by dividend growth, since the data is not enough to determine the growth of dividend and dividend projection (insufficient data), the result of this computation is not reliable to be used to determine whether BWA's intrinsic values are overvalued or undervalued.

Difference result is shown by capital gain as a driven factor, the computation in determining capital gain growth and its next 5 years projection is easily to be calculated, but considering the reason mention in previous discussion, the BWA's intrinsic value recounting is needed to be done as this process will exclude the series of expected capital gain from the intrinsic value equation and only need the value of the last projected capital gain in 2017, thus the recounted BWA's intrinsic value approached by r driven by capital gain could be seen from Table 4.

The result for BWA's intrinsic values from recounting

Table 4
Recounted BWA's Intrinsic Value approached by r driven by capital gain

type	k	G2017		P2017		V_0
		PVF	NPV5	PNg	VP	
0-1 year	13.37%	187.29%	$0.80	$190.88	$101.92	$ 102.71
1-2 year	13.50%	188.33%	$ 0.79	$ 190.88	$ 101.36	$ 102.15
2-3 year	13.62%	189.37%	$ 0.79	$ 190.88	$ 100.80	$ 101.59
3-4 year	13.87%	191.46%	$ 0.78	$ 190.88	$ 99.70	$ 100.48
4-5 year	14.12%	193.57%	$ 0.77	$ 190.88	$ 98.61	$ 99.38
5-6 year	14.38%	195.74%	$ 0.76	$ 190.88	$ 97.52	$ 98.28
6-7 year	14.75%	198.93%	$ 0.75	$ 190.88	$ 95.95	$ 96.70
7-8 year	15.00%	201.11%	$ 0.74	$ 190.88	$ 94.92	$ 95.66
8-9 year	15.13%	202.25%	$ 0.74	$ 190.88	$ 94.38	$ 95.12
9-10 year	15.38%	204.45%	$ 0.73	$ 190.88	$ 93.36	$ 94.09

process as explained above shows that
for all "k" are undervalued compare with 2012 BWA' share price.

Four processes had been done in attempt to determine the BWA's intrinsic values for all investor's require rates of return, and all processes resulted in different outcomes. What is matter next is which from these processes able to tell the BWA's share price movements during the observation period (had done between November 2012 to November 2014). As we observe the data from Figure 3, there are two lines that are picturing the movement of BWA's share price during 2012 to 2014 stock trading. The straight line is representing the normal closing price while the dotted line is representing adjusted closing price, each lines are clarified with linier trend to show its trend movement. Those two are moving in different direction, normal closing price has downward trend while adjusted closing price has upward trend. Those different actually started on end of 2013 when BWA's share price as indicated by normal closing price suddenly fall from $107.17 per share in November 2013 to $55.92 per share in December 2013, the value was also lower than 2012 share price of $73.49 per share, the event that forcing the normal closing price has downward trend.

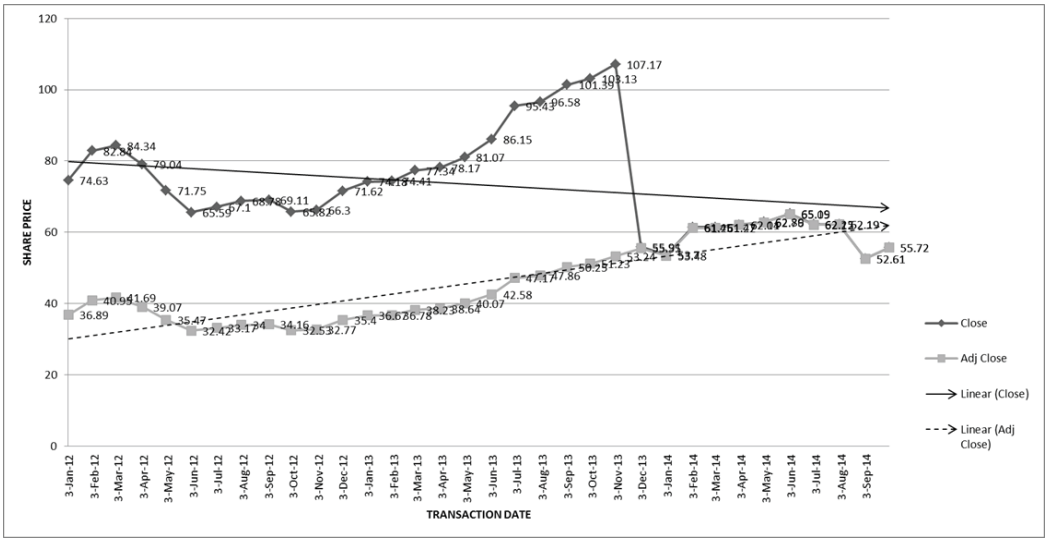

Figure 3
BWA's2012 to 2014 historical Price

What was a major affect that changed the BWA's stock price was the decision to split the shares for 2:1 (a two-for-one stock split) in December 17th 2013, this means that those who owns BWA's shares before company's decision to split the stock took affect would have double in quantity but each share would be worth less than the previous price (in this case it would be worth half of the previous price), this however will not decrease investor equity since the total value of their stocks actually still the same, but the price that is cut to half would affect the opening price in the next trading day and would be reported in the normal closing price in the end of the day with lower value than the closing price from the previous transaction day. Investor who only see this information without understanding the event would think that the stock price has depreciated to half and believe that the stock in not valuable. To understand this event in more detail we need to look for the information that is provided by yahoo finance! For BWA's historical data in daily basis, this information will tell us about the occurrence in December 17th 2013 and a day after regarding the values that were influenced by company decision to split the stocks and how it was recorded in normal closing price and adjusted closing price report. Table 5 shows the record of daily stock price after stock split take effect on December 17th 2013, a day before and two days after. This event could be pictured as explained; "On December 16th 2013, BWA's stock closed at $109.39 per share. On the next day, a two-for-one stock split went into effect; BWA's stock opened at $54.64 and closed at $55.39, up $0.75. The actual closing price would deceivingly indicate a $54 decline ($109.39-$55.39). However, the adjusted close for December 16th would change to $54.22, and the adjusted close for December 17th of $54.91 shows the actual $0.69 gain in the share price"

Table 5
Daily Stock Price Recording After Stock Split

Date	Open	High	Low	Close	Volume	Adj Close
12/18/2013	55.18	55.86	53.78	55.86	2289500	55.37
12/17/2013	54.64	55.45	54.5	55.39	1340300	54.91
12/16/2013	108	109.5	107.5	109.39	1353200	54.22
12/13/2013	106.96	108.37	106.82	107.57	1008800	53.32

Source: www.finance.yahoo (November 2014)

This policy normally had been done when company's management believe that the stock had reached its optimal price range, optimal means that if the price within this range, the P/E ratio, hence the firm's value, will be maximized and able to give signal to investors of higher future earnings since company has confidence toward its growth prospects (Brigham, *at al.*, 2002). This also explains that BWA's stock on December 17th 2013 actually was not depreciated but has been cut half because of stock split policy; hence this would be explained further that its value actually went up after the day of stock split.

Back to Table 5, we could calculate investors' total equity's value for those who are affected by this policy, as a simple drawing from this event we could put this calculation by comparing the normal closing price (this is the value that represent an actual trading price in particular day, time where investor might expect capital gain) with its outstanding shares before the stock split day took affect and a day after. Based on that assumption we could recounting the value of the stock and readjust the trend line of BWA's historical price and the result could be seen from figure 4.

CONCLUSION

From the calculation process we could conclude that the BWA's intrinsic values (without recounting process for capital gain as driven factor) for all required rates of return from both approaches driven by dividend and capital gain could be seen on table 4 resulted in difference outcomes. whereas the intrinsic values for five years projection that is approached by 'g' value would be. The intrinsic values then has to be compared with BWA's 2012 stock price to determine whether its intrinsic value is overvalued or undervalued, thus the result of that is concluded as explained below (without recounting process for capital gain as driven factor): 1) Long-term growth approach (g) driven by i) Dividend, all intrinsic values for all 'k' rates are overvalued and ii) Capital gain, 'k' rates for type 0 to 4 years the intrinsic values are undervalued while 'k' rate for type 4 to 10 years the intrinsic values are overvalued; 2) Discounted growth rate (r) driven by i) Dividend, all intrinsic values for all types are undervalued and ii) Capital gain, all intrinsic value for all types are undervalued; 3) The use of long-term growth

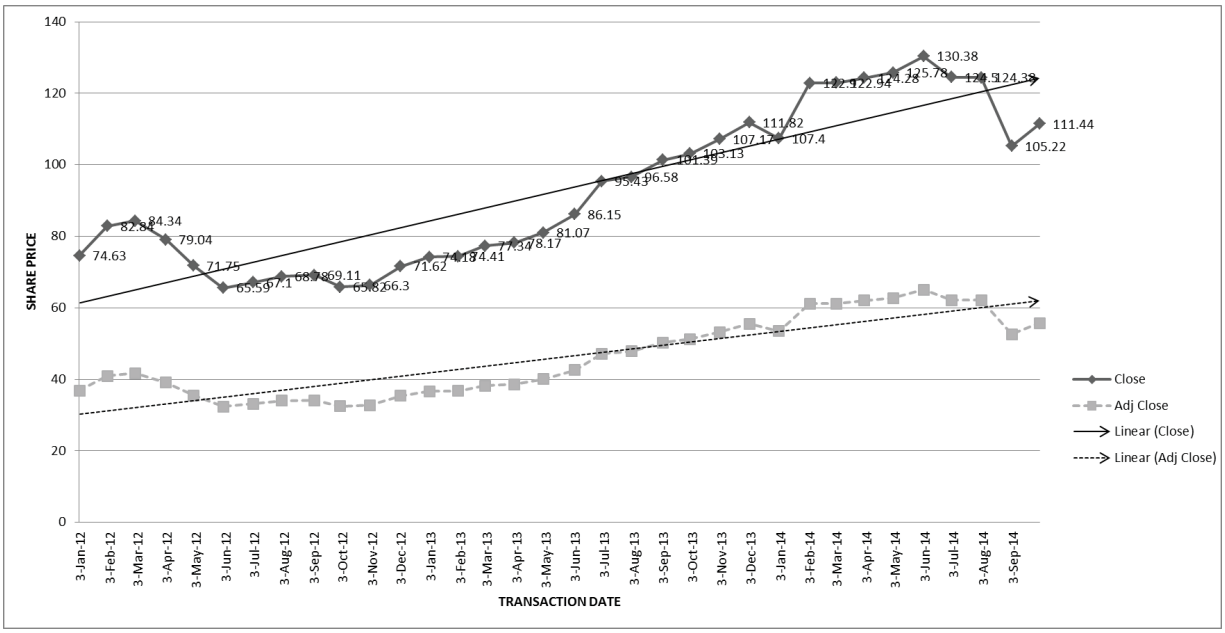

Figure 4
BWA's 2012 to 2014 historical Price with Stock Split Consideration

(g) and discounted growth rate (r) as constant growth rate in intrinsic value equation is resulted in different outcomes for both approaches as mentioned in conclusion 2 above with some adjustment for capital gain as driven factor as concluded below i) Whereas the 'g' value and 'r' value that is determined from series of distributed dividend is considered unreliable since the company that was not distributing its dividend would not have the required data or if there are any, it has to be calculated by using insufficient data series for projecting the period longer than data sources, hence it is impossible mathematically and ii) Understanding that investor could not receive capital gain in every years (or in timely basis) within the projected period (could not assume similar with the distributed dividend) as an investor constant sources of income, capital gain as a driven factor in determining BWA's intrinsic values has been recounted only included the values in final projected years (in this study would be year of 2017), thus the result of intrinsic values recalculation approached by 'g' value and 'r' value driven by capital gain are shown in Table 3 and table 4; 4) The use of dividend growth rate and capital gain growth rate for projecting series of expected inflow or expected growth of dividend or capital gain resulted in different outcomes with explanation as shown below i) Dividend growth rate and series of expected dividend determined by 'g' value or 'r' value is considered unreliable since it is produced by insufficient data (company was not paid dividend or distributing dividend not in regular timely basis, in this case, BWA only distributed its dividend until 2009 in data sources), hence considered impossible mathematically; ii) Capital gain growth rate and series of expected capital gain determined by 'g' value or 'r' value is considered reliable since it is produced by sufficient data hence considered possible mathematically, thus is used for further analysis in the explanation of the method in picturing the real occurrences of BWA's stock price movement during 2012 to 2014 stock trading; iii) As an conclusion from the 2012 to 2014 of observation of BWA's stock price movement in US stock market, this study is presenting the close approach in picturing the real occurrences during 2012 to 2014 BWA stock price movement, concluding that capital gain as a driven factor able to presenting calculation outcomes that are closely

projecting the movement of BWA's stock price during the observation time, thus presenting a preliminary evidence of method in projecting and determining company's intrinsic value using dividend discounted-constant growth model for company who is not paid its dividend regularly or not at all.

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