Valuation of (Berger, Asian and Nerolac Paints) through FCFE and FCFF models

Assignment 4

Submitted in partial fulfillment of the requirements for the course of ECON F355 Business Analysis and Valuation

By

Group no. (2)

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Group Number: 02

Industry: PAINTS

Company Names: Asian Paints, Berger, Kansai Nerolac

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DIVIDEND DISCOUNT MODEL

Analysts utilize discount models to calculate a stock's worth using predicted dividend activities because these models take the TVM(time value of money) into the account by discounting the future expected cash flows with a suitable rate of return or discount rate to calculate present value.

A dollar earned on tomorrow is simply worth less than that dollar earned today since a dollar earned today might be invested and can earn interest. This is known as the time value of money. A payment's present value decreases as it is received further down the road**.**

The discount rate is used to make the adjustment to the present value of future gain. The amount of income that an investor expects to get or tries to earn, depending on the circumstance, represented as a percentage(%) of the initial investment, is known as a interest rate,discount rate, or needed rate of return.

For instance, you simply need to invest $1,000 now to earn $1,100 in a year at a 10% interest rate. Therefore, $1,000 is the present value of $1,100 at a 10% discount rate.

2 STAGE DIVIDEND DISCOUNT

The two stage dividend discount model divides the dividends in two different sections, and it assumes that dividends will grow at two different rate. The dividend payout rises steadily in the first until a certain period and then becomes constant till perpetuity.

To find the intrinsic value of a stock issued which is growing quickly, the two-stage model is used frequently. More apt companies for this valuation approach are smaller firms who have already shown they have staying power but are still in the early stages of fast expansion. Resulting, the company's rapid growth, for the first stage of a two-stage dividend growth strategy, it is typically expected to be aggressive, while in the second stage we expects a lower, a more sustainable rate of dividend increase.

2 STAGE DIVIDEND DISCOUNT MODEL FORMULA

$$\frac{D_1}{(r+1)^1} + \frac{D_2}{(r+1)^2} + \frac{D_3}{(r+1)^3} + \ldots + \frac{D_N}{(r+1)^N} + \frac{\frac{D_N(1+G_2)}{(r-G_2)}}{(r+1)^N}$$

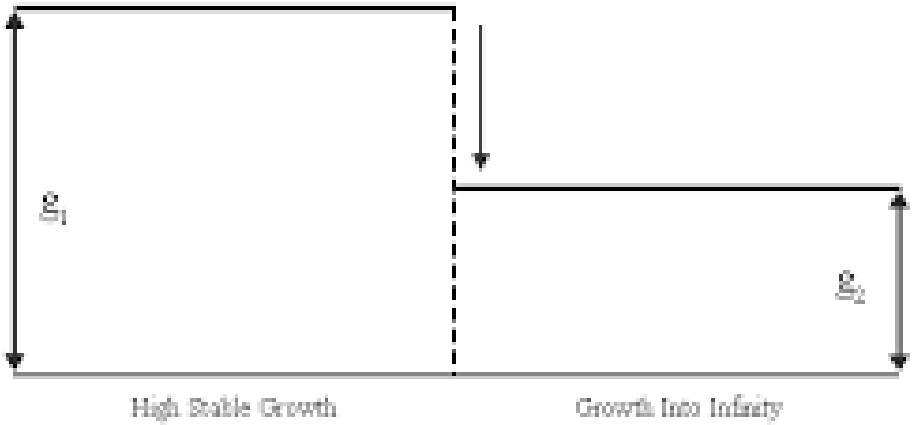
When all the variables are in place, despite the formula's scary appearance, it turns out to be rather straightforward. In this instance, G2 represents the dividend growth rate for stage two and D1 represents the dividend to be paid in a year. The constant

discount rate or expected rate of return is represented by the variable r. Last but not least, N denotes the length of time that the first dividend growth rate spans.

Asian Paints :
PV of dividends in growth phase = Rs 87.37
PV of terminal dividend = Rs 2121.82
Thus , total present value = Rs 2206.20

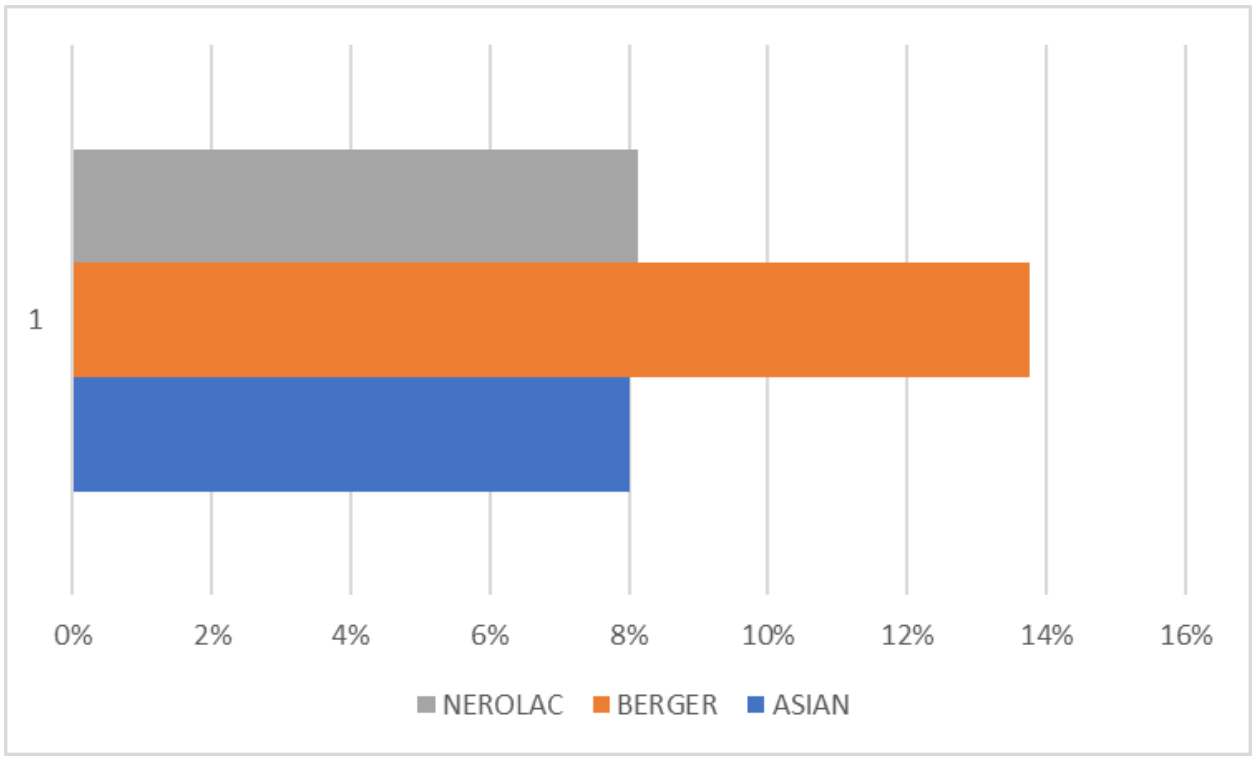
Berger :
PV of dividends in growth phase = Rs 32.20
PV of terminal dividend = Rs 118.50
Thus , total present value = Rs 151.30

Kansai Nerolac :
PV of dividends in growth phase = Rs 11.09
PV of terminal dividend = Rs 137.13
Thus , total present value = Rs 148.22



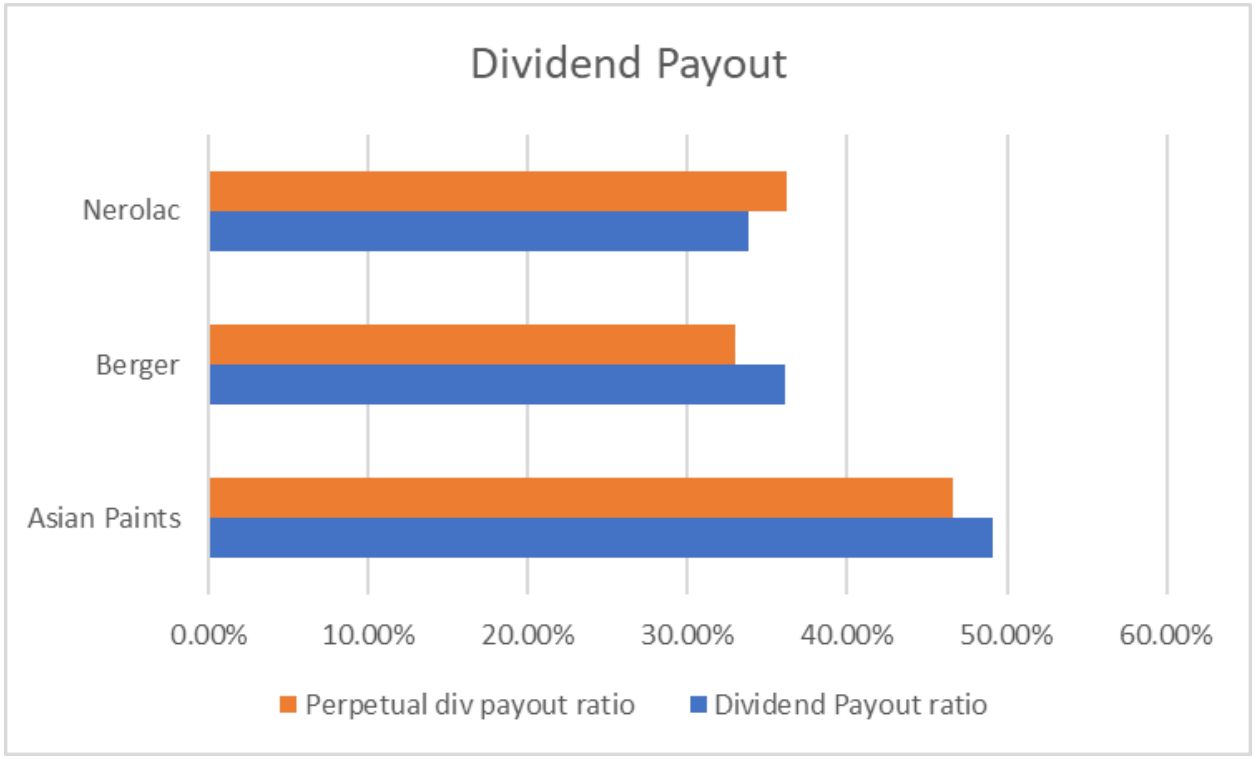
APPLYING 2 STAGE DDM TO OUR COMPANY-

The past 5 years data for all the three companies was analyzed, the data was averaged and the values for the 1st year (i.e 2023) was forecasted using this averaged values. The high growth period for all the three companies was assumed to be almost 5 years as this companies are mostly large capitalization companies and there seems no immediate threat to any of this three companies from any of the substitutes or any new firm entering.
Although there is a little threat from GRASIM, but it might take considerable time for actually generating profits.
The average growth rate for the three company was found to be in the high growth period-



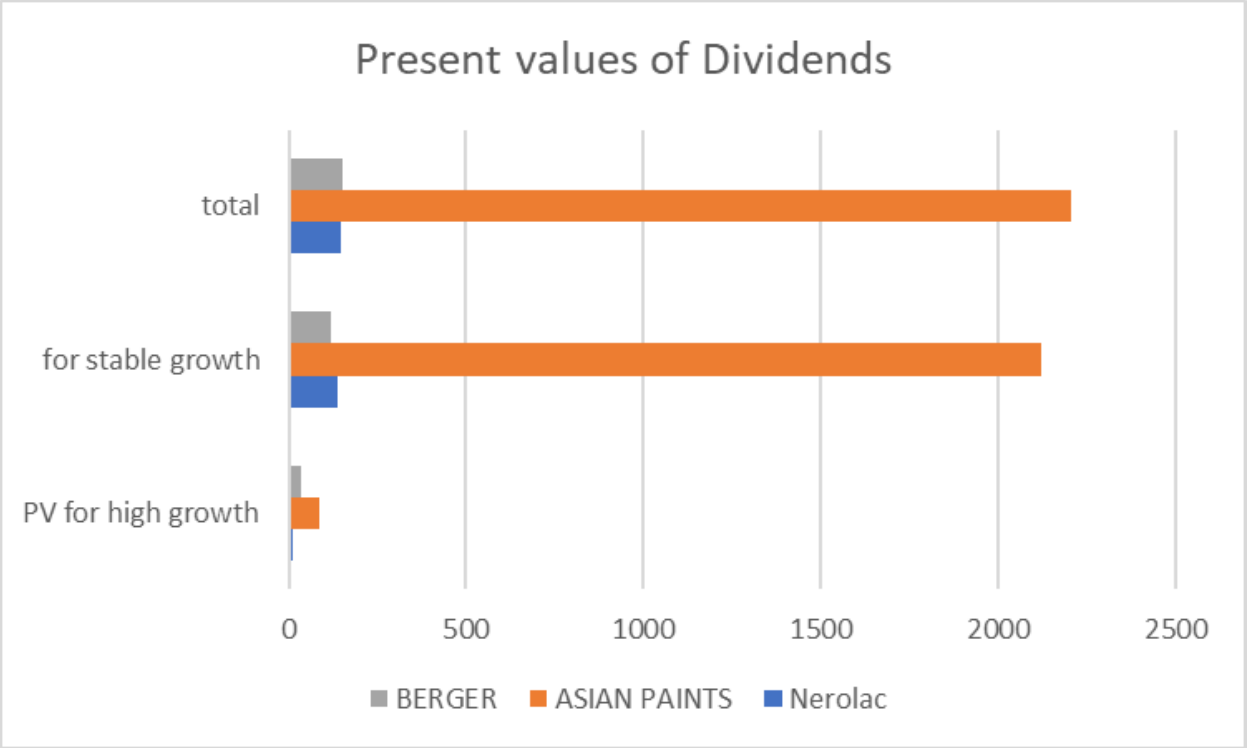
ASIAN PAINTS- 8%
NEROLAC-8.14%
BERGER PAINTS- 13.76%
As Nerolac and Asian Paints are the two major players the growth rate of about 8% seems justifiable as there is a relatively less space for them to grow, but berger due to is low market share has relatively higher opportunities for growth which is indicated in its growth rate.

After the high growth phase the company is expected to grow at the risk free rate as it is a large capitalization company.
So Nerloac will grow at rate of 7%p.a till perpetuity and asian and berger will growth at 8%p.a at 10%p.a respectively.



The graph indicates the variation of dividend payout ration for all the three firms for both the periods.

The following graph indicate the present values for all the three companies calculated for high growth, stable period growth in dividends and total PV which is the price of stock.



The value of stock calculated for asian paints and Nerolac by 2stage dividend model is quite in accordance with the correct price, which also justifies why 2 stage DDM is a proper model for valuing this 2 companies, but in case of Berger the model is giving miserable deviation from the current stock value, which suggests estimating the high growth period might be a problem in case of berger.

DRAWBACKS OF 2 STAGE MODEL

Although the Gordon Growth Model, which was the Gordon Growth Model's single-rate predecessor, had several drawbacks, the two-stage dividend discount model does have some advantages over more straightforward formulas. First of all, neither model accurately represents dividend growth since it relies on stable rates of growth. Although different growth rates are taken into consideration by the two-stage model, it assumes that the switch occurs suddenly rather than taking into

account a steady fall between the first, more aggressive growth rate and the stable growth rate in the second stage.

All dividend models have the flaw of not taking into account external elements that affect stock prices, such as investor sentiment or corporate innovations.

3 STAGE DIVIDEND MODEL

The Gordon Growth Model, the Two-Stage Model, and the H-Model are the simpler alternatives for the three-stage dividend discount model's. The three models are really combined to some extent in order to address the flaws inherent in the formulas.

All of these formulas of discounting are based on the Gordon Growth Model, however due to its intrinsic simplicity, it is quite accurate because it says that dividends would always increase at the same pace. Changing dividend growth rates are both possible with the two-stage and H-Models, although only the H-Model supports gradual variations as opposed to abrupt switches from one stable rate to other.

The three-stage model combines aspects of all the three models: an early phase of extremely rapid or meager growth, followed by a phase of gradual expansion or decline, which then stabilizes at a slower growth rate which is supposed to last for the company's whole existence.

3 STAGE DIVIDEND MODEL FORMULA

$$\text{Stock Value} = \frac{D_1}{(r+1)^1} + \frac{D_2}{(r+1)^2} + \frac{D_3}{(r+1)^3} + \ldots + \frac{D_N}{(r+1)^N} + \frac{\frac{D_N(1+G_2)+D_N H(G_1-G_2)}{(r-G_2)}}{(r+1)^N}$$

APPLYING 3 STAGE DDM TO OUR COMPANY

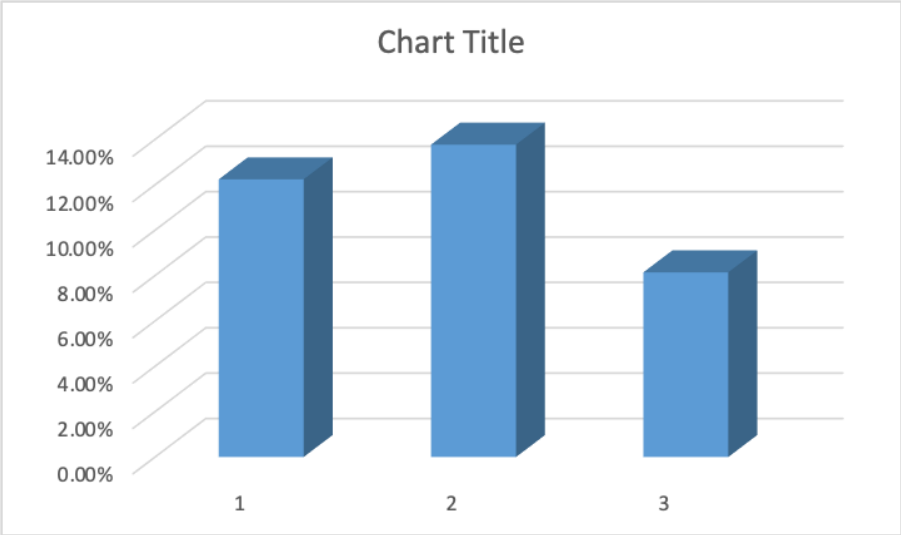
Data from the past 5 years was collected from bloomberg and analyzed. Applying the 3 stage model, the first stage was considered a high growth period. With the advancement in technologies and growing Indian economy, we considered a 5 year high growth period for all the companies

In the 2nd stage, which is called the transition phase, we considered a period of 3 years as sufficient time for the company to transform from a high growth stage to the growth at which the economy is growing. For a stable period, growth of the Indian economy which is around 7 % was considered. For high growth, the growth was calculated from retention ratio and return on equity. The growth percentage are as follows-

1)Asian Paints - 12.22%

2)Berger paints- 13.77%

3)Nerolac paints- 8.14%

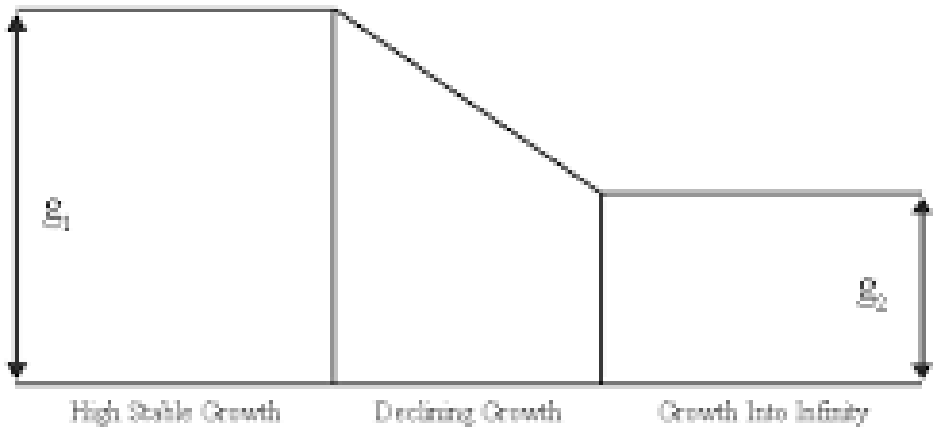


For transition period decrease in growth period was calculated form difference in high growth and growth in stable period (7%) divided by time of transition period
As the growth decreases, so the dividend payout and cost of equity increases, which was also calculated
At last all these future values were calculated to their present value and were added to find the total price of share

Asian Paints :
PV of high growth phase = Rs 84.38
PV of transition phase = Rs 45.73
PV of stable growth phase = Rs 2571.62
Thus, total PV = Rs 2701.73

Berger :
PV of high growth phase = 13.9
PV of transition phase = 8.1
PV of stable growth phase = 671.7
Thus, total PV = 696.8

Kansai Nerolac :
PV of high growth phase = Rs 8.66
PV of transition phase = Rs 4.89
PV of stable growth phase = Rs 347.23
Thus, total PV = Rs 363.03



Free cash flow to equity(FCFE)

FCFE is the amount of liquid funds that are available to Eequity shareholders of a firm after being adjusted for all costs, expenses and debt.
One of its objectives is to help determine the value of a firm, this is because the amount of dividend paid to investors and the amount utilized for share buy backs is dependent on FCFE.
If the company's funds available for dividend payments are much lower than the FCFE, the excess is either being used to boost its cash position or invested in marketable securities.
The firm is paying all of it to its investors if the money used to repurchase shares or pay dividends is about equal to the FCFE.

The following is the formula used to calculate FCFE

$$\text{FCFE} = \text{Net Income} - [\text{Net Capex} * (1\text{-Debt Ratio})] - [\text{Change in noncash WC} (1\text{-Debt Ratio})]$$

Free cash flow to the firm(FCFF)

FCFF is the amount of liquid funds a firm has obtained from operating activities after adjusting for all costs, expenses, depreciation, amortization, taxes and debt which can be used for distributing amongst investors.
FCFF is used to judge a firm based on its liquidity position which inturn indicates the health of the firm.
A negative FCFF indicates that the firm has not been able to recover for its costs and investment activities through its sales.

$$\text{Value of Firm} = V_0 = \frac{FCFF_1}{k_c - g_n}$$

As it can be seen from the formula above Value of a firm can be determined from its FCFF.
kc : Cost of equity
gn : stable growth rate

FCFE OF ASIAN PAINTS

Here we have done the FCFE calculations for both 2 stage and 3 stage.
Here we have considered in 2 stage:

1.1-5 years high growth
2. Stable growth

PV of high growth phase = 131216 Million Rs
PV of stable growth phase = 1354258 Million Rs
Thus, total PV = 1485475 Million Rs
The value of stock obtained is Rs. 3256
The stock is undervalued.

3 stage FCFE calculations for FCFE are as follows
Stage 1: 1-5 years High Growth period
Stage 2: 5-10 years Transitional Growth
Stage 3: Stable growth till perpetuity
We extracted annual historical data from Bloomberg terminal for the time frame 2018-2022 and Calculated Average FCFE to be 16,275 Million Rs and Average growth to be 27%.
In the High Growth period the company's earnings and other relevant parameters are projected to grow at 27%.
PV of high Growth phase = 131216.56 Million Rs
In the Transition zone, the growth rate linearly declines from 27% to industry average growth rate of 6.18%.
PV of Transition period = 215828.77 Million Rs.
Terminal Value of stable phase is 1623401 Million Rs. and PV of Terminal Value = 891248 Million Rs
Thus Total Value = 1238293 Million Rs and the number of shares outstanding is 456.22 Million
Thus dividing the former by later, the value of the stock obtained is 2714.246 Rs.
The stock currently trades at 3053 Rs.
We've discounted all the values using Asian Paints cost of equity i.e., 8.90%/
Thus , Asian Paints is overvalued.

FCFE OF BERGER

Here we have done the FCFE calculations for both 2 stage and 3 stage.
Here we have considered in 2 stage:

1. 1-5 years high growth
2. Stable growth

PV of high growth phase = 13711.83 Million Rs
PV of stable growth phase = 52569.51 Million Rs
Thus, total PV = 66281.35 Million Rs
The value of stock obtained is Rs. 284.4693
The stock is overvalued.
Here we have considered in 3 stage:

1-5 year high growth
Transition stage
Stable growth

PV of high growth phase = 13711.83 MillionRs
PV of transition phase = 7198.254 MillionRs
PV of stable growth phase = 45308.94 MillionRs
Thus, total PV = 66219.03 MillionRs
The value of stock obtained is Rs.284.2018
The stock is overvalued.

FCFE NEROLAC

- 2 stage per share calculations for the valuation of nerolac through FCFE model are as follows:

PV of high growth phase = Rs 15.58
PV of stable growth phase = Rs 536.56
Thus, total PV = Rs 552.14

Where 2023-2026 was high growth
And beyond that the growth was considered to be stable

- 3 stage per share calculations for the valuation of nerolac through FCFE model are as follows:

PV of high growth phase = Rs 15.58
PV of transition phase = Rs 15.28
PV of stable growth phase = Rs 667.32
Thus, total PV = Rs 698.17

Where 2023-2026 was high growth
2027-2029 was the transition period
And beyond that the growth was considered to be stable

FCFF OF ASIAN PAINTS

As the debt ratio of Asian Paints is zero so this leads to the values of FCFE calculated to coincide with the value of FCFF.
3 stage FCFF calculations for FCFF are as follows
Stage 1: 1-5 years High Growth period
Stage 2: 5-10 years Transitional Growth
Stage 3: Stable growth till perpetuity
We extracted annual historical data from Bloomberg terminal for the time frame 2018-2022 and Calculated Average FCFF to be 16,275 Million Rs and Average growth to be 27%.

In the High Growth period the company's earnings and other relevant parameters are projected to grow at 27%.
PV of high Growth phase = 131216.56 Million Rs
In the Transition zone, the growth rate linearly declines from 27% to industry average growth rate of 6.18%.
PV of Transition period = 215828.77 Million Rs.
Terminal Value of stable phase is 1623401 Million Rs. and PV of Terminal Value = 891248 Million Rs
Thus Total Value = 1238293 Million Rs and the number of shares outstanding is 456.22 Million
Thus dividing the former by later, the value of the stock obtained is 2714.246 Rs.
The stock currently trades at 3053 Rs.
Therefore Asian Paints is overvalued

FCFF OF BERGER PAINTS

Here we have considered 3 stage FCFF:

1.1-5 year high growth
2.Transition stage
3.Stable growth

Thus, total PV =PV of high growth phase+ PV of transition phase+ PV of stable growth phase= 427260.5 million rs.
The number of shares outstanding are 749.52 million
The value of stock obtained is 570
The stock is undervalued as it is trading on a lower price as compared to the estimated price.

FCFF OF NEROLAC PAINTS

Here we have considered 3 stage FCFF:

1.1-5 year high growth

2.Transition stage

3.Stable growth

Thus, total PV =PV of high growth phase+ PV of transition phase+ PV of stable growth phase= 354639.7MillionRs

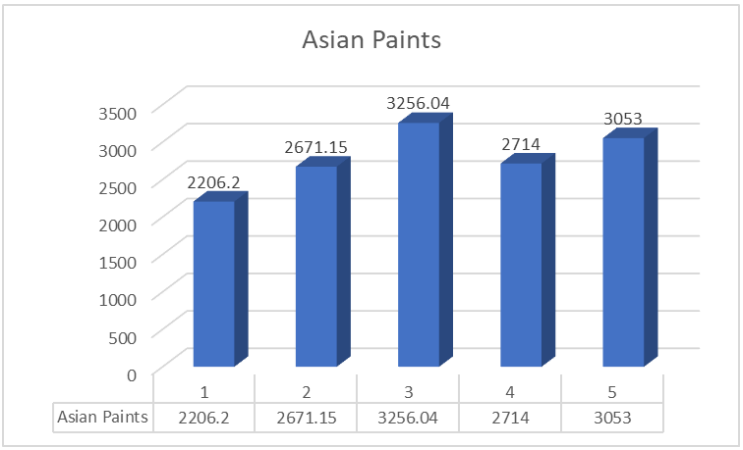
The number of shares outstanding are 539 million

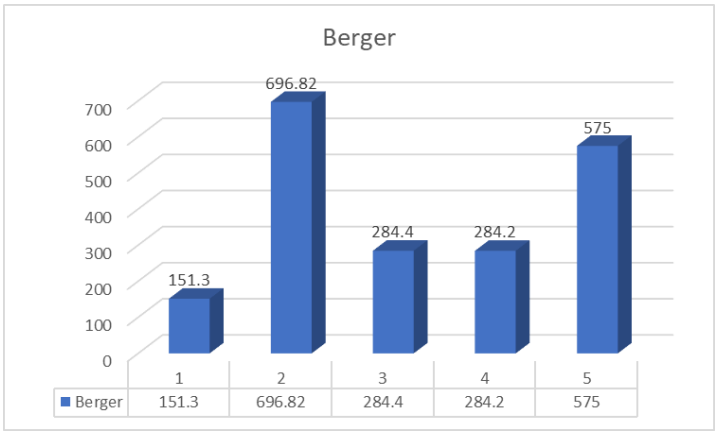
The value of stock obtained is Rs.657.9587

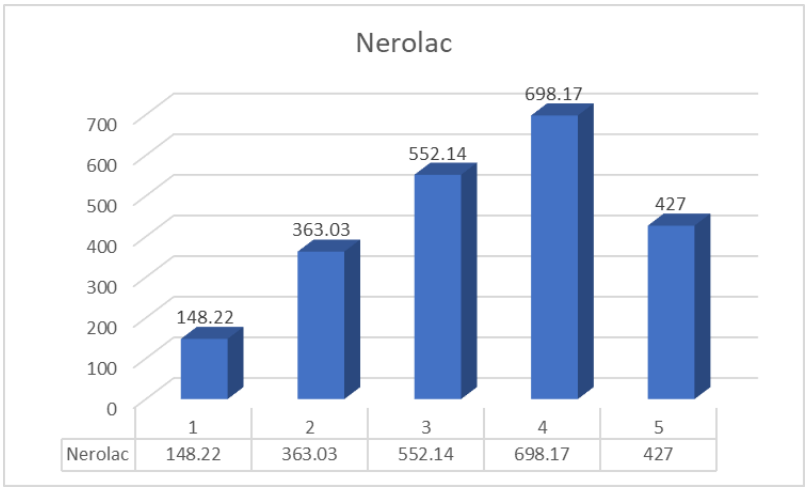
The stock is undervalued as it is trading on a low price as compared to the estimated price.

Conclusion:

Model		Asian Paints		Nerolac		Berger	
DDM 2 stage		2206.2	Overvalued	148.22	Overvalued	151.3	Overvalued
DDM 3 stage		2671.15	Overvalued	363.03	Overvalued	696.82	Undervalued
FCFE 2 stage		3256.04	Undervalued	552.14	Undervalued	284.4	Overvalued
FCFE 3stage		2714	Overvalued	698.17	Undervalued	284.2	Overvalued
Current Stock Price		3053		427		575	







SUMMARY

To summarize in this report we have applied the two stage and three stage dividend framework for all the three companies namely ASIAN PAINTS,BERGER PAINTS and NEROLAC PAINTS.

While applying the dividend discount models we essentially analyzed the past 5 year performance of these companies and found the retention and dividend payout ratios for them and we also found the growth in earnings per year.

After calculating these parameters we took the average values of growth & dividend payout ratio and used them for the high growth phase, we used the calculated cost of equity for these companies from the assignment 3 and used the cumulative values for discounting.

For the two stage DDM we assumed the stable growth equal to the risk free rate(as these companies have very high market capitalization and limited growth opportunities due to size) and calculated the present values of the dividends, which came quite close to the current market price, emphasizing that 2 stage DDM is a suitable model for this companies and the length of the high growth period is taken properly.

For the 3 stage DDM model we took the growth rate the same as in two stage for a 5 years high growth period. Then we decreased the growth rate to the growth rate of the Indian economy in the transition period as the paint secor growth rate will depend on chemical industry growth rate and chemical industry growth rate will depend on the growth rate of the Indian economy. We linearly decreased the growth rate , increased the dividend payout ratio and cost of equity in the transition period and then we calculated the perpetuity value with the same growth rate. Finally we added all the three values i.e. growth period, transition period and stable period to find the value of stock

For the FCFE and FCFF projection we analyzed the data of all the three companies and used two stage and three stage FCFE model for valuation, we took the values of NetPPE to calculate CAPEX and we took the depreciation. We took the revenue figures for the last 5 years of all of the three companies

and calculated FCFE for the past 5 years to get the average FCFE growth rate, and using this growth and risk free rate projected the cash flows for the next few years by assuming that the leverage will remain constant(in this case it was already almost zero) and capex will tend to depreciation and then by properly discounting the FCFE we got the current value.
As our companies had little to no debt we can simply neglect the implication of debt on cash flow, implying that FCFE and FCFF will remain similar for the firms.