Different Techniques to Evaluate Stock Performance: Risk and Return of Intel Corporation

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Abstract Investors and analysts have access to a lot of information about companies which helps them in making better investment decisions. Therefore, it is better to use all available information efficiently and apply different techniques to ensure the consistency of the results to base their decisions on a solid base. For example, financial information for Intel Corporation can be used in order to help investors in reaching their decisions more easily. Different methods will be explained to evaluate the performance of Intel Corporation. Therefore, investors will have a clear image about return and risk prior to buy the stock.

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Introduction

Intel Corporation was founded in 1968 in Santa Clara, California by Robert Noyce and Gordon Moore. It is one of the world's largest and highest valued semiconductor chip makers, based on revenue. It has five main units: PC Client Group, Data Center Group, Internet of Things Group, Mobile and Communications Group and Software and services operating segments. The revenue of Intel Corp. increased by 6% from $52.7 billion in 2013 to $55.9 billion in 2014. Additionally, its net income rose to $11.7 billion in 2014 compared to $9.6 in the previous year which represents an increase of 22%. Similarly, the earning per share increased by 22% from $1.89 to $2.31 over the same period. The stock price (as of Jan.30, 2015) is $ 33.04 (Intel Corporation).

Theory

In this part, the following theories will be discussed: The Rate of Return of the Stock (R), The Rate of Return of the Market (R_{DJIA}), The Risk of INTC Stock, Capital Asset Pricing Model (CAPM), The Weighted Average Cost of Capital (K_{WACC}) and The Dividend Effect.

The Stock Rate of Return (R = DY + CG)

The rate of return is the sum of two parts: dividend yield (DY) and capital gain (CG). Dividend Yield ($DY = D1/P0$) means how much an investor can earn as a profit from buying a stock in the form of dividends. Capital Gain ($CG = (P1 - P0)/P0$) means how much an investor can earn as a profit from buying a stock in the form of price appreciation. For example, the dividend yield of Intel stock on December, 2014 was 2.48% and capital gain (loss if negative) was -30.93%, so the rate of return was -28.45%. The loss of 28.45% is due to the decrease in the stock price of Intel Corp. (see appendix 5).

The Market Rate of Return (RDJIA)

$$R_{DJIA} = (DJIA\text{-}DJIA\ (\text{-}1))\ /\ DJIA\ (\text{-}1)$$

Using E-views, the rate of return of the market (RDJIA) on December, 2014 was -0.35% compared to 30.20% on November, 2014 (see appendix 5).

The Risk of INTC Stock (Beta)

$$Rst = \propto s + \beta s.Rmt + \varepsilon t$$

According to Investopedia, Beta (β) is "a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. Beta is used in the capital asset pricing model (CAPM), a model that calculates the expected return of an asset based on its beta and expected market returns" (Investopedia). Using E-views, I find the beta (β) of Intel. Corp. stock 1.143 and Alph ($\propto$) is -0.669 (see appendix 2). There are three situations for the beta of the stock: it may be equal to the beta of the market (=1), higher that the beta of the market (>1) or lower than the beta of the market (<1). For Intel corp., the beta of INTC stock ($\beta s = 1.143$) is higher than the beta of the market ($\beta\ for\ DJIA = 1$).

The Capital Asset Pricing Model (CAPM)

$$E(Rs) = R_{RF} + \beta s\ [E(Rm) - R_{RF}]$$

The formula of Capital Asset Pricing Model (CAPM) can be used to find the expected return on INTC Corp. stock. Where: R_{RF} is the risk free rate, $E(Rm) - R_{RF}$ is the difference between the expected return on the market portfolio and the risk free rate (market risk premium) and βs is the beta of the stock that measures its risk. To calculate the expected return of INTC stock, we can use the above equation. Using E-views, I found beta of the stock (1.143), the expected

return on the market portfolio (R$_{DJIA}$) is 8.529% (see appendix 3) and we used the rate of Treasury bills or bonds in the United States (Dec,31, 2014), the risk free rate is 3%.

$$E(Rs) = 0.03 + 1.143 [0.08529 – 0.03]$$

As a result, the expected return of INTC stock is 0.0932 or 9.32%.

The Weighted Average Cost of Capital (K$_{WACC}$)

$$K_{WACC} = Wd.Kd (1-T) + Wp.Kp + Ws.Ks$$

According to Investopedia, "a calculation of a firm's cost of capital in which each category of capital is proportionately weighted. All capital sources - common stock, preferred stock, bonds and any other long-term debt - are included in a WACC calculation. All else equal, the WACC of a firm increases as the beta and rate of return on equity increases, as an increase in WACC notes a decrease in valuation and a higher risk" (Investopedia).

As per Value Line Website, Intel Cop. has no preferred stocks and its weight of debt (Wd) is 18%. We can find the weight of equity which is common stock only by subtracting the weight of debt from 100% and we get 82%. The tax rate for Intel Corp. (T) is 28%, the cost of equity (Ks = 9.32%) is the expected return we found in the previous section (E(Rs)) from Capital Asset Pricing Model (CAPM) formula. The cost of debt (Kd = I/D) can be calculated by dividing LT-Interest which is $ 120 million over LT-Debt which is $ 12,103 million and we get 0.99% (Value Line).

I will use these numbers to find (K$_{WACC}$) for INTC that uses only 18% of debt and 82% of common stock with no preferred stock.

$$K_{WACC} = 18\% (0.99\%) (1- 0.28) + 82\% (9.32\%)$$

After calculation, I found The Weighted Average Cost of Capital (K$_{WACC}$) for Intel Corp. which is 7.77%.

The Dividend Effect

$$R_{st} = = R_{RFt} + \beta s [R_{mt} - R_{RFt}] + \lambda s (DY_{st} − DY_{mt}) + \varepsilon t$$

The dividend effect or dividend yield equation can be used to find if there is a relationship between the distribution of dividends by a company and the risk, cost or the value of that firm. Also, there are three situations for the Lambda (λ): it might be equal to zero which means the distribution of dividend is irrelevant and it is called Modigliani Miller Dividend Theory. Lambda (λ) could be negative which means the distribution of dividends is relevant and it is

called Gordon & Lintner Dividend Theory. The third situation is when we have a positive Lambda which means the higher the distribution of dividends, the higher taxes will be collected and many people do not like it because they have to pay high taxes. Using E-Views, I found a positive Lambda (λ) for INTC stock equal to 1.04 (see appendix 4).

Empirical Results

Using E-Views, we can analyze INTC Corp. from many aspects. First, the average return of the stock is higher than the average return of the market (R$_{DJIA}$). The two average returns for INTC and DJIA are 9.25% and 8.53% respectively (see appendix 1 & 3). Although the mean for INTC stock is higher, it is more risky than the market because its beta is 1.143 compared to the beta of DJIA which is only 1. An investor who requires a higher return on a stock, he must expect a higher percentage of risk which can be measured by its beta. In investment, it is recommended for investors to diversify their portfolio by buying stocks of different firms from different sectors, so the negative effect will be minimized if there is any loss in one company or one sector.

From Capital Asset Pricing Model (CAPM), we can realize that Intel Corp. has only 18% of debt compared to 82% of equity. The company must find the optimal debt-equity ratio so its cost can be reduced to generate more profit if it uses the money to finance its operations and invest in new projects. The banks who offer loans for corporations look at the balance sheet carefully especially cash and collaterals to ensure that companies are able to pay back the loan plus interest which is tax deductible. For shareholders, they look at the income statement (net income in particular) and the ability of the company to pay dividends. Also, they want the company to invest efficiently so the stock price will increase.

From Dividend Effect, the Lambda of INTC stock is positive (λs = 1.04) and it means that if the company distributes more and more dividends, the investor has to pay more taxes which a lot of people do not like. However, the probability is 0.81 (insignificant) which is higher than 0.1, so we reject it and the result becomes there is no dividend effect which is the dividend theory of Modigliani Miller. The theory says that even if the company distributes more dividends, there will be no effect because the dividend is irrelevant.

Conclusion

Summing up, the stock performance of Intel Corporation is very similar to the market. However, I believe that it is better to buy a basket of different stocks with a diversified portfolio so the risk can be reduced to a lower level instead of the current risk amount for INTC stock (βs =1.143). For companies, the optimal amount of debt and equity is crucial because it reduces their costs and generate higher returns for them. Intel Corporation should reduce its risk and increase its return through more investments and find innovative ways to beat competitions and be the leader of its industry.

References

Intel Corporation Website. Investor Relations. www.intel.com

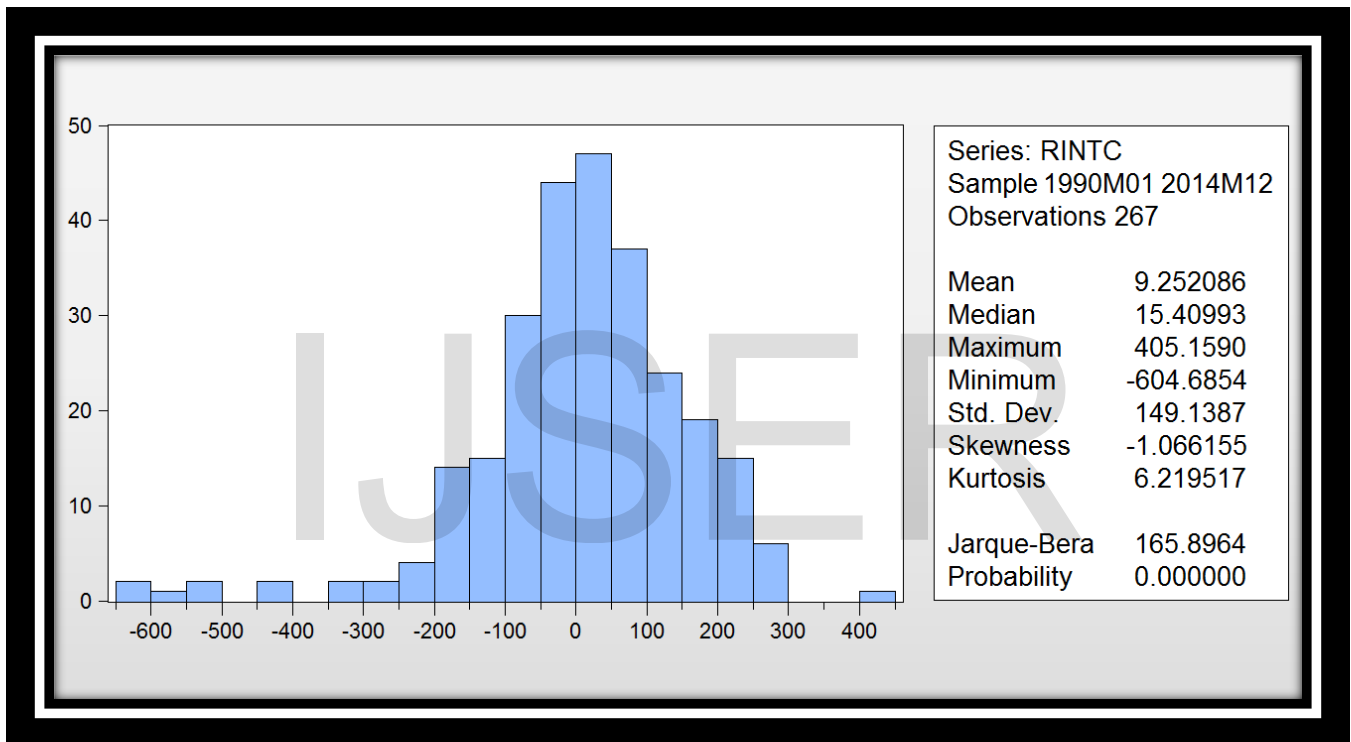Investopedia Website. Definitions of Beta and WACC. www.investopedia.com

Value Line Website. Capital Structure for INTC. www.valueline.com

Yahoo Finance Website. INTC Historical Stock and Dividend Prices. http://finance.yahoo.com

Appendix

Appendix 1. RINTC

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Dependent Variable: RINTC
Method: Least Squares
Date: 01/31/15   Time: 19:17
Sample (adjusted): 1992M10 2014M12
Included observations: 267 after adjustments

Variable         Coefficient   Std. Error   t-Statistic   Prob.

   C             -0.668602     8.584672     -0.077883     0.9380
   RDJIA          1.142769     0.170548      6.700557     0.0000

R-squared              0.144878   Mean dependent var      9.252086
Adjusted R-squared     0.141652   S.D. dependent var      149.1387
S.E. of regression     138.1727   Akaike info criterion   12.70235
Sum squared resid      5059299.   Schwarz criterion       12.72922
Log likelihood        -1693.763   Hannan-Quinn criter.    12.71314
F-statistic            44.89747   Durbin-Watson stat       2.020731
Prob(F-statistic)      0.000000
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Appendix 2. The Beta

Appendix 3. RDJIA


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Series: RDJIA
Sample 1990M01 2014M12
Observations 300

Mean            8.529467
Median         12.85449
Maximum       127.2562
Minimum      -181.5841
Std. Dev.      49.61534
Skewness      -0.606197
Kurtosis       4.181182

Jarque-Bera    35.81365
Probability     0.000000
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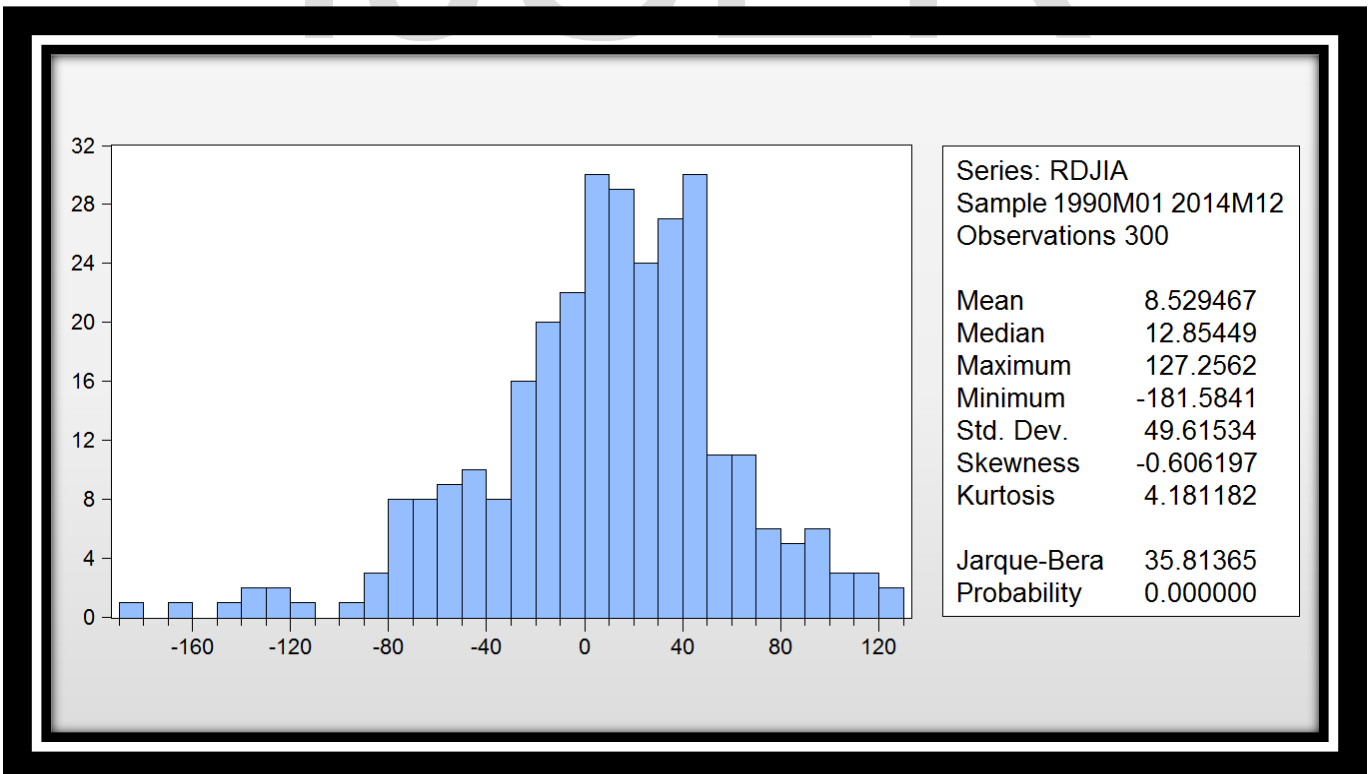
Appendix 4. Dividend Effect

Dependent Variable: RINTC
Method: Least Squares
Date: 01/31/15   Time: 20:45
Sample (adjusted): 1992M10 2014M10
Included observations: 265 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
STT3M	-0.597607	2.495966	-0.239429	0.8110
RDJIA-STT3M	1.154800	0.171341	6.739768	0.0000
DYINTC	1.040965	4.379204	0.237706	0.8123

R-squared	0.145872	Mean dependent var		8.988746
Adjusted R-squared	0.139352	S.D. dependent var		149.5381
S.E. of regression	138.7282	Akaike info criterion		12.71417
Sum squared resid	5042324.	Schwarz criterion		12.75469
Log likelihood	-1681.627	Hannan-Quinn criter.		12.73045
Durbin-Watson stat	2.021710			

Appendix. 5 Summary Tables

	INTC	INTCD	DYINTC	CGINTC	RINTC	RDJIA
2012M05	25.84000	0.210000	3.250774	-108.1690	-104.9182	-74.48491
2012M06	26.65000	0.210000	3.151970	37.61610	40.76807	47.11908
2012M07	25.70000	0.210000	3.268482	-42.77674	-39.50825	11.98035
2012M08	24.83000	0.225000	3.624648	-40.62257	-36.99792	7.578940
2012M09	22.66000	0.225000	3.971756	-104.8731	-100.9014	31.74342
2012M10	21.63000	0.225000	4.160888	-54.54546	-50.38457	-30.42346
2012M11	19.57000	0.225000	4.598876	-114.2857	-109.6868	-6.494579
2012M12	20.62000	0.225000	4.364695	64.38426	68.74895	7.237451
2013M01	21.04000	0.225000	4.277566	24.44229	28.71986	69.27032
2013M02	20.88000	0.225000	4.310345	-9.125475	-4.815130	16.78804
2013M03	21.84000	0.225000	4.120879	55.17241	59.29329	44.74100
2013M04	23.95000	0.225000	3.757829	115.9341	119.6919	21.50839
2013M05	24.28000	0.225000	3.706754	16.53445	20.24120	22.30219
2013M06	24.23000	0.225000	3.714404	-2.471170	1.243234	-16.35397
2013M07	23.34000	0.225000	3.856041	-44.07759	-40.22155	47.47813
2013M08	21.98000	0.225000	4.094632	-69.92288	-65.82825	-53.35914
2013M09	22.92000	0.225000	3.926702	51.31938	55.24608	25.87929
2013M10	24.47000	0.225000	3.677973	81.15183	84.82980	32.99867
2013M11	23.84000	0.225000	3.775168	-30.89497	-27.11981	41.73436
2013M12	25.96000	0.225000	3.466872	106.7114	110.1783	36.57124
2014M01	24.54000	0.225000	3.667482	-65.63944	-61.97196	-63.54549
2014M02	24.76000	0.225000	3.634895	10.75795	14.39284	47.61062
2014M03	25.81000	0.225000	3.487020	50.88853	54.37555	9.995276
2014M04	26.69000	0.225000	3.372050	40.91438	44.28642	8.981593
2014M05	27.32000	0.225000	3.294290	28.32522	31.61950	9.866569
2014M06	30.90000	0.225000	2.912621	157.2474	160.1601	7.855157
2014M07	33.89000	0.225000	2.655651	116.1165	118.7722	-18.77741
2014M08	34.92000	0.225000	2.577320	36.47094	39.04826	38.77126
2014M09	34.82000	0.225000	2.584721	-3.436426	-0.851705	-3.898599
2014M10	34.01000	0.225000	2.646281	-27.91499	-25.26871	24.47612
2014M11	37.25000	0.225000	2.416107	114.3193	116.7354	30.20404
2014M12	36.29000	0.225000	2.480022	-30.92617	-28.44615	-0.347987