



EGADE Business School
Tecnológico de Monterrey

Investments project

TEAM

Daniel Morales Chávez
E. García
Q. Merceron
R. Cortina

Investments
Master in Finance

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Executive Summary

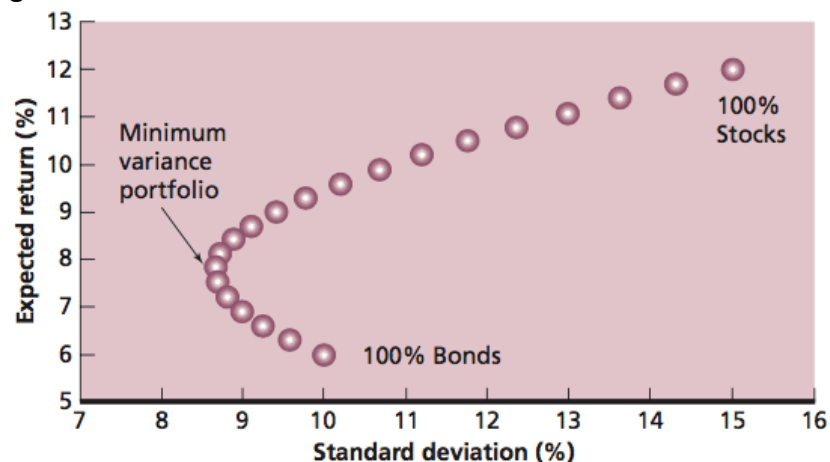
In the financial markets, we can find many alternatives to invest money with the goal of getting some return on it, unfortunately, is not easy to decide on which alternatives is better to invest. For that, there are some theories of finance related to portfolio management, as it is well known that, investing in only one asset is risky: “do not put all the eggs in one basket”, one of such theories is the Efficient Portfolio developed by Harry Markowitz, which aims to find the optimal mix of assets that gives you the higher return for a given level of risk.

In this report, we aim to find an efficient portfolio consisting of five different stocks, for that we have followed the principles of the Markowitz Efficient Portfolio and CAPM theories to look for the optimal mix of our selected stocks. Our target is to get a return above the market for an acceptable level of risk by using the principles of diversification.

Introduction and objectives

INTRODUCTION

The efficient portfolio theory developed by Markowitz consists on computing for different portfolios with a different mix of assets with the lowest standard deviation possible (risk), this is an optimization problem that is resolved with Lagrange multipliers. In a nutshell, this means finding the optimal mix of assets that give you the lowest risk, after several scenarios, we can find different portfolios giving different expected returns and once we plot them we get a curve:



We could also find the “Minimum variance portfolio” which represents the mix of assets that gives you the best return possible with the minimum variance or risk. Any portfolio below the Minimum variance portfolio is called “dominated” or inefficient portfolios,



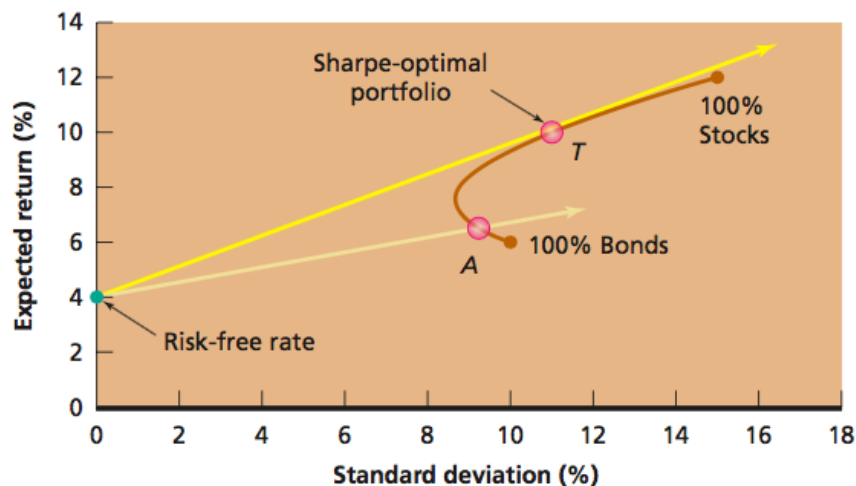
because for the same level of risk, you can invest your money in another portfolio and get a higher return. Then, all the portfolios above the Minimum variance portfolio is said to be “Efficient”. All the efficient portfolios are called the “Efficient Portfolio Frontier”.

We could choose any of the portfolios plotted in the Efficient frontier, however not all of them are optimal.

When we want to determine, what investment is better in comparison to another, we must not only think of returns, we must also consider the risk involved in the investment. The Sharpe Ratio can help us to measure how good an investment is, given a certain level of risk and return, as it is an operation between the risk premium return and the standard deviation.

The Sharpe ratio is a reward-to-risk ratio that focuses on total risk, thus in case of portfolios, is very useful because when we think of a well-diversified portfolio, the unsystematic risk should be eliminated by the diversification, which means that if a portfolio is not well-diversified, then Sharpe ratio shall penalize the portfolio as the standard deviation would be higher than it should.

When we draw the Sharpe ratio of the portfolios we would get a straight line that we can plot together with the efficient frontier. This line is called Capital Market Line and will help us to determine what is the optimal portfolio of the efficient portfolio frontier:



Portfolio T has the highest Sharpe ratio of any possible combination of these two assets, so it is Sharpe optimal.

OBJECTIVES AND INVESTOR PROFILE

We will use the above-mentioned theories as principles to build our portfolio of five stocks focusing on getting an expected return above the average return in the market and with the lowest level of risk possible. This would be possible by using the principles of



diversification and Sharpe-optimal portfolio. Our investor is a 35 years old professional who expects to get better returns than the S&P 500 but with the lower risk possible.

Description of the stock exchange and their line of businesses and operations

Stock Exchange

For this portfolio, we are investing the American stock market as there is more variety of stocks to choose and thus, more industries which means there is more possibilities to get a good diversification of our investment. We should select stocks from both the New York Stock Exchange (NYSE) and the NASDAQ.

- **NYSE**

The New York Stock Exchange is the world's largest stock exchange by market capitalization, it is located at Wall street, New York in the United States and it gathers some of the most influential public companies in the world and it covers many industries and sectors such as:

Pharmaceutical industry gathers research, manufacture and sale of medicine. It is one of the biggest economic sectors in the world, generating more than 900 billion dollars in 2015. This number grows constantly for a few decades. The American market (especially in the United States of America) counts for half of these transactions.

Financial sector gathers large banking institutions, investment banks, insurance companies, pension companies. The financial sector is one of the largest portions of the S&P 500. The largest companies within the financial sector are some of the most recognizable banking institutions in the world such as JPMorgan Chase & Co., Wells Fargo & Company, Bank of America Corporation and Citigroup Inc.

Services sector it is comprised of various service industries including warehousing and truck transportation services; information sector services; commodities, securities and other investment services; professional, technical and scientific services; waste management services; health care and social assistance services; and arts, entertainment and recreation services.

Automotive industry comprises mainly car manufacturers such as GM, Ford, Tesla, Volkswagen, Toyota, Nissan, etc.

For this portfolio, we have selected a stock from the above motioned sectors and industries, the process of selection is detailed in **Appendix A**.



Selected stocks

- **Abbott**

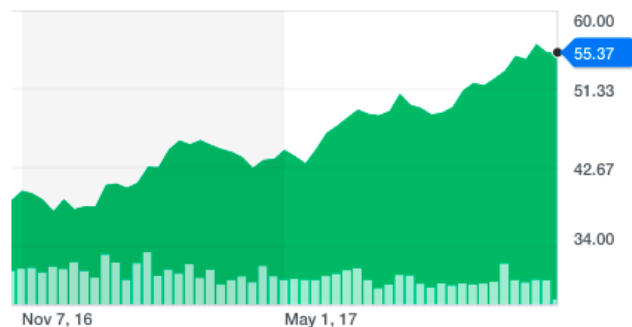
Abbott is a global healthcare company dedicated to improving life through the development of products and technologies that cover the breadth of health care. With a leading portfolio, based on science and diagnostic, medical devices, nutritional and brand name pharmaceutical, and generics, Abbott serves people in over 150 countries and employs approximately 73,000 people.

Pharmaceutical industry gathers research, manufacture and sale of medicine. It is one of the biggest economic sectors in the world, generating more than 900 billion dollars in 2015. This number grows constantly for a few decades. The American market (especially in the United States of America) counts for half of these transactions.

Laboratories and biotechnologies societies are the two main actors in the sector, the last ones developing in a very fast way during the last years. The top 6 biggest firms in pharmaceutical industry hold one third of the total turnover. Therefore, we can't talk about a concentrated market, but a monopolistic competition, with some huge industries inside.

The economic and social pressures are also high for the pharmaceutical sector. Troubled economy and prices do matter for the sales. Consumers are more aware of the potential effects of the drugs. That's why consolidating the oncology sector allowed Abbott to have strong future sales. And the illnesses in oncology are seen differently from consumers: they want to get cured, and have less judgment on the side effects of the products.

Many sectors now face environmental pressures, and Abbott is not an exception. The community awareness and political decisions affect what medicine could do, and has certainly reduced some innovation in the sector. If pharmaceuticals has enjoyed the great demand of drugs in the last decades, it now must deal with the willingness of the population to stay healthy avoiding medicine.



Performance of Abbott stock price during for the last year (Oct 2016 – Oct 2017)



- **AIG**

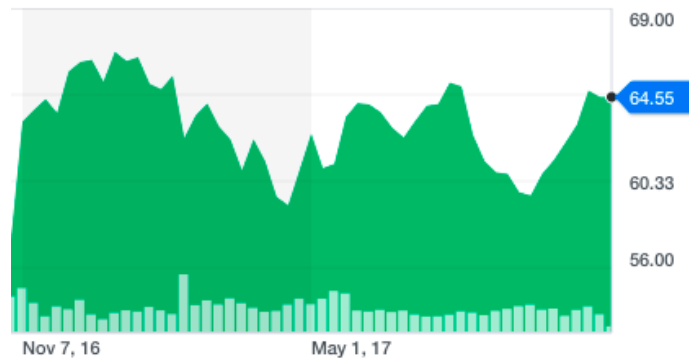
American International Group, Inc. Is a Multinational Insurance Corporation with headquarters in New York City ranked 49th on then Fortune 500 list and with 76.3 billions in shareholder equity.

In their early years 1919, Cornelius Vander Starr established as General Insurance Company in Shanghai China. In 1920 extends to Southeast Asia and in 1926 open first office in USA named American International Underwriters Corporation (AIU).

At 1930 AIU entered to La Havana. After World War II entered to Germany and Japan and continue their expansion to Europe in 1950. In 1969 went public.

The company's Commercial Insurance segment offers general liability, environmental, commercial automobile liability, workers compensation, excess casualty, and crisis management insurance products, as well as various risk-sharing and other customized structured programs; commercial, industrial, and energy-related property insurance; aerospace, political risk, trade credit, surety, and marine insurance; and various insurance products for small and medium sized enterprises.

AIG report for the second quarter 2017 net income for \$1.1 billion and \$1.19 per diluted share and Consolidated Adjusted ROE of 10.5%.



Performance of AIG stock price during for the last year (Oct 2016 – Oct 2017)

- **Amazon**

Amazon is an American e-commerce company based in Seattle founded by Jeff Bezos in 1994. Amazon is the largest Internet-based retailer in the world by total sales and market capitalization and has separate retail websites for the United States, the United Kingdom, Ireland, France, Canada, Germany, Italy, Spain, Netherlands, Australia, Brazil, Japan, China, India, and Mexico.

In 2015, Amazon surpassed Wal-Mart as the most valuable retailer in the United States by market capitalization and became the fourth most valuable public company in the world. In 2016, Amazon had a net income of 2,371 million USD, an increase of nearly 400% from its net income in 2015 of 596 million USD.

In 2017, Amazon bought Whole Foods Market for \$13.4 billion, which increased



Amazon's presence as a physical store retailer.

Amazon stock price is 1,100.95 USD and has a YTD return of 38%. It has a 1.31 BETA and a 280 P/E ratio. Its performance the last five years has made amazon extremely attractive to investors.



Performance of Amazon stock price during for the last year (Oct 2016 – Oct 2017)

- **Wynn Resorts**

Wynn Resorts is one of America's leading promoters and operators of casino-hotels. At the end of 2014, the group owns 2 casinos-hotels under the Wynn Las Vegas and Wynn Macau brands located in the United States. Net sales breakdown by activity as follows:

- Casino operation (73.4%): nearly 730 gaming tables and 5,373 slot machines operated at the end of 2014;
- operating restaurants and bars (10.4%): 42 restaurants;
- hotels (9.3%): nearly 5,756 rooms;
- other (6.9%): exploitation of leisure sites (nightclubs, wedding chapels, spa, etc.) and sale in stores (sale of cars under the Ferrari and Mestari brands, and Chanel clothing, Graff, Manolo Blahnik, Louis Vuitton, etc.).

All sales are made in the United States.



Performance of Wynn stock price during for the last year (Oct 2016 – Oct 2017)



- **Tesla**

Tesla Inc. designs, manufactures and sells electric vehicles and electric components. It currently offers: Model S and Model X.

50% of its turnover comes from United States market where they have established the great majority of retailers, service and charging stations.

Tesla had an aggressive growth of about 73% in FY 2016 compared with FY 2015, reporting total turnover of 7 billion USD, although in general, the company has been reporting net losses, mainly due to its strong investments in research and development and expenses in sales force.

Tesla stocks are currently trading at 337.02 USD per share and it possesses a P/E of 0, this is because it does not have profits. Even though Tesla is reporting net losses and it does not have a P/E ratio, the stock has a percentage gain of around 1,509% after its IPO back in 2010, which means that Tesla is very attractive for investors and we can assume there are high expectations on this company.

Tesla's Beta is around 1.39 in Bloomberg considering two years in the calculations, if we calculate the beta since its IPO, we get a beta of 1.078. This means that Tesla is highly volatile on the short term but on the long term is just above the average on the market, but it that risky.



Performance of Tesla stock price during for the last year (Oct 2016 – Oct 2017)



Methodology(s) for the calculations and other relevant analytical procedures

For the computing of different efficient portfolios based on Markowitz theory we will need to calculate the expected returns of our five stocks, the individual standard deviation of every stock, and with that, we will calculate the variance-covariance matrix and the correlation matrix. All these calculations are necessary to determine the mix of assets that give the lowest risk possible.

Expected Returns

Although we can calculate the expected returns based on the historical average return of the 365 days of data, or even determine probabilities and compute for the expected returns based on normal distribution, we will follow the approach of Capital Asset Pricing Model (CAPM), in which expected returns are calculated based on the Security Market Line, and they are only different due to systematic risk, measured with the Beta of the stock. The logic behind this, is that there is no reward for bearing unsystematic risk, as it can be eliminated at no cost by diversification, but systematic risk cannot be eliminated, so there must be a reward for bearing it and it is measured by the Beta. In other words, the beta is a multiplier of the risk premium return in which $\beta = 1$ means the stock moves together with the market, above 1 means the returns of the stock move above the market.

The formula for CAPM expected return goes as follows:

$$E(R_i) = R_f + [E(R_M) - R_f] \times \beta_i$$

Where Beta equals to:

$$\beta_i = \text{Corr}(R_i, R_M) \times \sigma_i / \sigma_M$$

Standard deviation (risk)

The volatility of an asset is measured with its standard deviation and it represents how distant the actual returns are from the average return of the stock. We calculate the standard deviation as the square root of the variance which is calculated with the following formula:

$$\text{Var}(R) = \frac{1}{N-1} [(R_1 - \bar{R})^2 + \dots + (R_N - \bar{R})^2]$$



Covariance and Correlation

Covariance is a measure of the tendency of two things to vary together. If the covariance is positive, then the tendency is to move in the same direction, and vice versa for a negative covariance. A zero covariance means there is no relation.

$$Cov(X, Y) = \sum_{i=1}^N \frac{(X_i - \bar{X})(Y_i - \bar{Y})}{N - 1}$$

Correlation is just the Covariance normalized by the standard deviation, which should display measures between -1 and +1

$$\text{cor}(X, Y) = \frac{\text{cov}(X, Y)}{\sigma_X \sigma_Y}$$

Portfolio Return and Variance

As soon as we get the desired or optimal weights of our portfolio, we would like to estimate the return (Expected return of the portfolio) and the risk involved. For the expected return, we will follow a weighted average return approach, that is adding up all the returns multiplied by its weight:

$$R_p = x_F R_F + x_S R_S + x_B R_B$$

For the risk, we can use the standard deviation of the portfolio, which is the square root of the variance of the portfolio which is measured with the following formula:

$$\sigma_p^2 = x_A^2 \sigma_A^2 + x_B^2 \sigma_B^2 + 2x_A x_B \sigma_A \sigma_B \text{Corr}(R_A, R_B)$$

This means that the risk is dependent of how much is invested on the individual assets, the risk of the individual assets and the correlation between the assets of the portfolio.

The formulas above work for portfolios of two assets, however, in our portfolio we should extend those formulas accordingly.

Sharpe-Optimal Portfolio

To find the optimal portfolio, we should find for the optimal weights to invest in every stock, a simplified version of the formula goes as follows:

$$x_S = \frac{\sigma_B^2 \times [E(R_S) - R_F] - \text{Corr}(R_S, R_B) \times \sigma_S \times \sigma_B \times [E(R_B) - R_F]}{\sigma_B^2 \times [E(R_S) - R_F] + \sigma_S^2 \times [E(R_B) - R_F] - [E(R_S) + E(R_B) - 2 \times R_F] \times \text{Corr}(R_S, R_B) \times \sigma_S \times \sigma_B}$$



Sharpe Ratio and Portfolio Sharpe Ratio

To measure the performance of the portfolio, we shall use the Sharpe Ratio as a good indicator of how good the portfolio is in terms of return and risk. For that, we need to calculate the Risk premium return, that is, the return on excess of the market that our portfolio gives.

$$\text{Sharpe ratio} = \frac{R_p - R_f}{\sigma_p}$$

$$\frac{E(R_p) - R_f}{\sigma_p} = \frac{x_S E(R_S) + x_B E(R_B) - R_f}{\sqrt{x_S^2 \sigma_S^2 + x_B^2 \sigma_B^2 + 2x_S x_B \sigma_S \sigma_B \text{Corr}(R_S, R_B)}}$$



Calculations, Analysis, Explanation of Results and Decision-Making (Analysis of Results and Explanation of Findings and Outcomes)

Expected Returns calculations

After testing different combination of different stocks (selection process explained in **Appendix A**), we came to the best fit for our portfolio with Abbott, Amazon, AIG, Wynn and Tesla. So, we look for 365 days of closing prices in Yahoo Finance and calculated the returns of every stock (**Appendix A**). With that information, we can determine the average returns and then perform an EAR calculation and estimate the average annual returns (**Exhibit 1**). This can give us a good idea of the expected returns of every asset, but as we stated on the Methodology section, we will perform a CAPM calculation for determining the expected returns.

Calculation of Average Daily Return					
Abbott	Amazon	AIG	WYNN	TESLA	S&P 500
0.05%	0.12%	0.03%	0.11%	0.09%	0.05%
Calculation of Average Annual Return					
Abbott	Amazon	AIG	WYNN	TESLA	S&P 500
19.14%	42.50%	10.02%	39.67%	32.35%	18.55%

Exhibit 1

After the calculation of returns, we got the values for betas calculated using the 365 days of data, this information gives us an idea of how correlated is every stock with the market and measure the volatility implied in every stock (Systematic risk), as we see in **Exhibit 2**, Wynn and AIG are the riskiest assets, because the price of them will change always above average of the S&P 500 (either increasing or decreasing). We then use the Betas and the risk-free rate of **1.20%** (based on the 90 days T-bills return average) and we got the expected returns based on CAPM calculations (**Exhibit 2**) and we see that both Wynn and AIG have the higher returns, and this is explained with the Beta because the Risk premium is the same for all the five stocks (Market risk rate minus Risk free rate).

Calculation of Beta					
Abbott	Amazon	AIG	WYNN	TESLA	S&P 500
1.17	1.06	1.20	1.38	1.06	1.00
Calculation of Expected Returns with CAPM					
Abbott	Amazon	AIG	WYNN	TESLA	S&P 500
11.50%	10.52%	11.74%	13.32%	10.54%	10.00%

Exhibit 2



Correlations

Now that we know the expected returns of every asset, we need to determine risk and evaluate how well diversified is our portfolio, so we would like to know how does a stock moves with relation to another, which we can analyze through a correlation matrix between the five stocks (**Exhibit 3**) which is represented between -1 and +1 in percentage units.

	Correlations				
	Abbott	Amazon	AIG	WYNN	TESLA
Abbott	100.0%	23.4%	31.3%	17.0%	9.0%
Amazon	23.4%	100.0%	15.5%	23.6%	28.9%
AIG	31.3%	15.5%	100.0%	17.8%	6.4%
WYNN	17.0%	23.6%	17.8%	100.0%	16.8%
TESLA	9.0%	28.9%	6.4%	16.8%	100.0%

Exhibit 3

The less correlated the stocks, the less risk in our portfolio, and we see above that the correlations are low in general, however is worth noticing that Abbott and AIG are the two most correlated stocks in our portfolio (31.3% correlated) and in second place, we have Amazon and Tesla (28.9% correlated).



Portfolio Efficient Frontier

After running several scenarios of different portfolios using the Markowitz theory, we can plot all the alternatives and get the portfolio set (blue line) and the portfolio efficient frontier (red border circles in the portfolio set) which is shown in **Exhibit 4**.

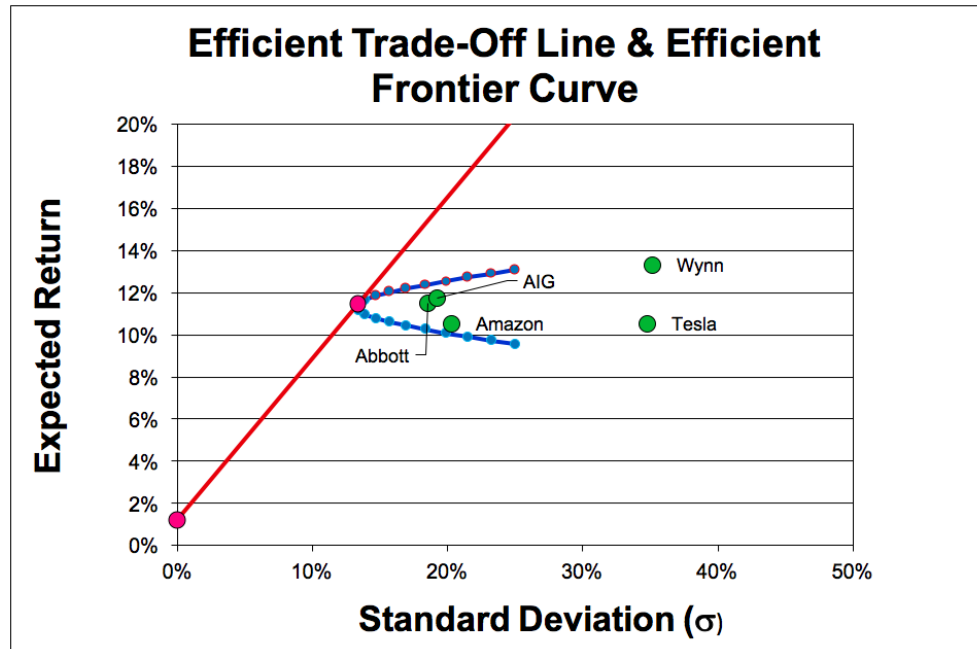


Exhibit 4

We also computed for the Capital Market line (straight line in red), and the point at which crosses the portfolio efficient frontier is called “The Sharpe-optimal portfolio”.

This Portfolio is the one in which we should invest our money, as it is not only efficient but also optimal in terms of risk and return.

This Portfolio includes the following weights in the investment:

Stock	Weight		
Abbott	32.32%	Std Deviation	13.32%
Amazon	21.75%		
AIG	33.17%		
Wynn	6.94%		
Tesla	5.81%		
		Expected Return	11.44%

Considering that the S&P 500 gives on average a 10% return, our portfolio is a good investment with an expected return of 11.44% and a risk of 13.32%.



Although the risk of the portfolio could seem high, it is showing a well-diversified portfolio considering that the individual risks of the five stocks are quite high, specially in Wynn and Tesla, so we can confirm that our portfolio is diversified, although we could improve the diversification and eliminate all unsystematic risk by adding more assets. **Exhibit 5** shows us the standard deviation of every stock individually.

Stock	E(Return)	Std Deviation
Abbott	11.5%	18.6%
Amazon	10.5%	20.3%
AIG	11.7%	19.2%
Wynn	13.3%	35.2%
Tesla	10.5%	34.8%

Exhibit 5

Conclusion, recommendations and learning outcomes

This project summarizes the principles of investing, specifically in a portfolio of a variety of stocks. Diversification is key when it comes to investing, otherwise, we would take unnecessary (and expensive) risks, so in this part the correlation of stocks is relevant, the less correlated, the lower the risk in the portfolio. However, we also observed, that to get a high expected return, we need to consider the beta of stocks, because according to CAPM theory, beta is like a multiplier of the risk premium. It can imply either a volatile movement of the stock price if the beta is high, or a quiet move. So, correlation of the individual stocks with the market is also relevant.

Even though we tested different scenarios, we were not able to reduce the risk to levels below 10%, thus our recommendation is to include more stocks into a portfolio until we can eliminate the unsystematic risk, which in this case was reduced but not deleted. We can find good stocks to add to our portfolio using performance evaluation ratios such as Jensen's Alpha, Treynor's ratio or Sharpe ratio.

References and bibliographies

Portfolio Optimization Software by Prof. Mazin A. M. Al Janabi, Ph.D.
Jordan, B. D., Miller, T. W., & Dolvin, S. D. (2018). *Fundamentals of investments: valuation and management*. Dubuque: McGraw-Hill Education.
Yahoo Finance: <https://es-us.finanzas.yahoo.com>
S&P 500 High beta index: <http://www.espanol.spindices.com/indices/strategy/sp-500-high-beta-index>



Appendix A: Calculations, Analysis, Explanation of Results and Decision-Making (Details of Calculations and Analysis)

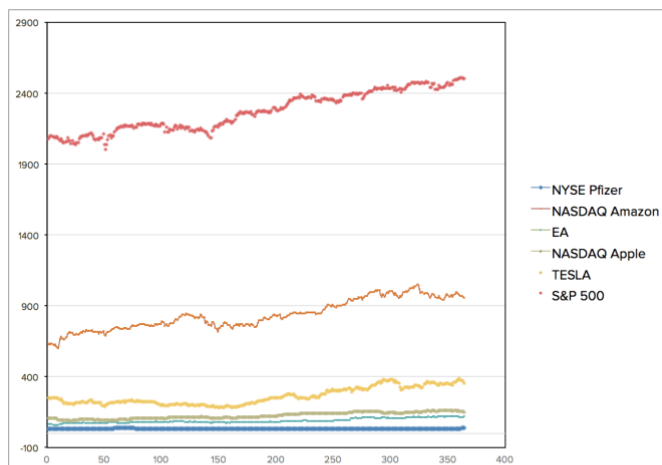
Selection of stocks process

The first step was do research about the best companies to invest in 2017. Each member of the team does some research about sectors, industries and companies, we also based our research in the S&P High beta stock index. With this selection, we do our first test portfolio. Learn about the software and took some ratios and measures to evaluate the performance.

Test 1:

The first choice

- **S&P 500**
- 1 **Pfizer**
Healthcare, Drug Manufacturers - Major
- 2 **Amazon**
Services, Catalog & Mail Order Houses
- 3 **EA**
Technology, Multimedia & Graphics Software
- 4 **Apple**
Consumer Goods, Electronic Equipment
- 5 **Tesla**
Consumer Goods, Auto Manufacturers - Major



Correlations					
	1	2	3	4	5
1	100.0%	5.7%	0.3%	10.3%	7.6%
2	5.7%	100.0%	1.2%	37.8%	28.9%
3	0.3%	1.2%	100.0%	1.0%	-14.8%
4	10.3%	37.8%	1.0%	100.0%	25.3%
5	7.6%	28.9%	-14.8%	25.3%	100.0%

σ_p 12.1%
E(Rp) 9.30%
Sharpe Ratio 66.9%

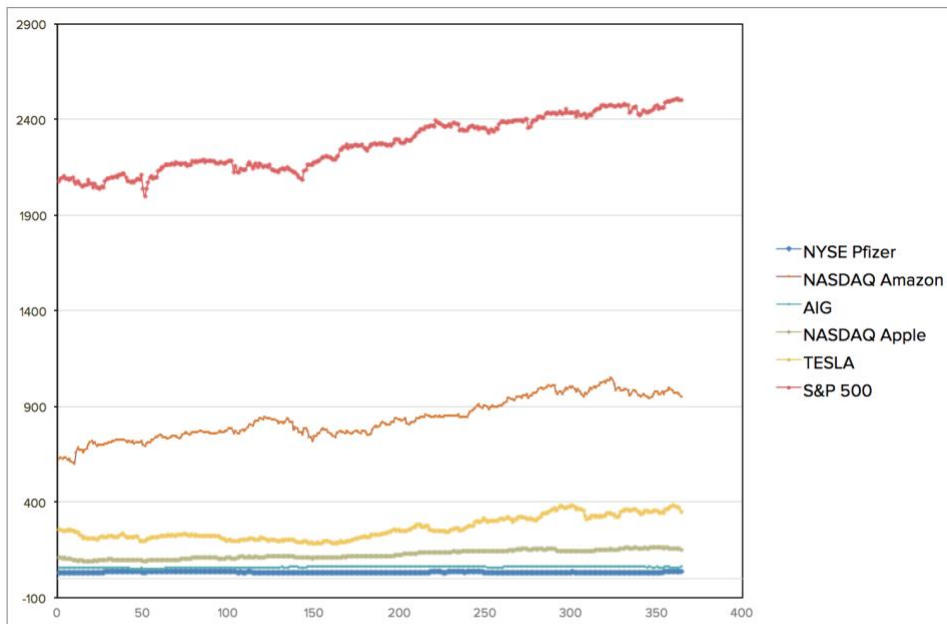
This first step show correlations between stocks of the companies greather than 0 except EA with Tesla which correlation index was -14.8%. The E(Rp) was 9.30% and we thought that we can achieve better results.

Test 2



Change EA ↓ for AIG ↑

- **S&P 500**
- 1 **Pfizer**
Healthcare, Drug Manufacturers - Major
- 2 **Amazon**
Services, Catalog & Mail Order Houses
- 3 **AIG (EA)**
Financial, Property & Casualty Insurance
- 4 **Apple**
Consumer Goods, Electronic Equipment
- 5 **Tesla**
Consumer Goods, Auto Manufacturers - Major



Correlations					
	1	2	3	4	5
1	100.0%	5.7%	19.2%	10.3%	7.6%
2	5.7%	100.0%	15.5%	37.8%	28.9%
3	19.2%	15.5%	100.0%	21.4%	6.4%
4	10.3%	37.8%	21.4%	100.0%	25.3%
5	7.6%	28.9%	6.4%	25.3%	100.0%

σ_p 11.3%
 $E(R_p)$ 9.90%
 Sharpe Ratio 77.0%

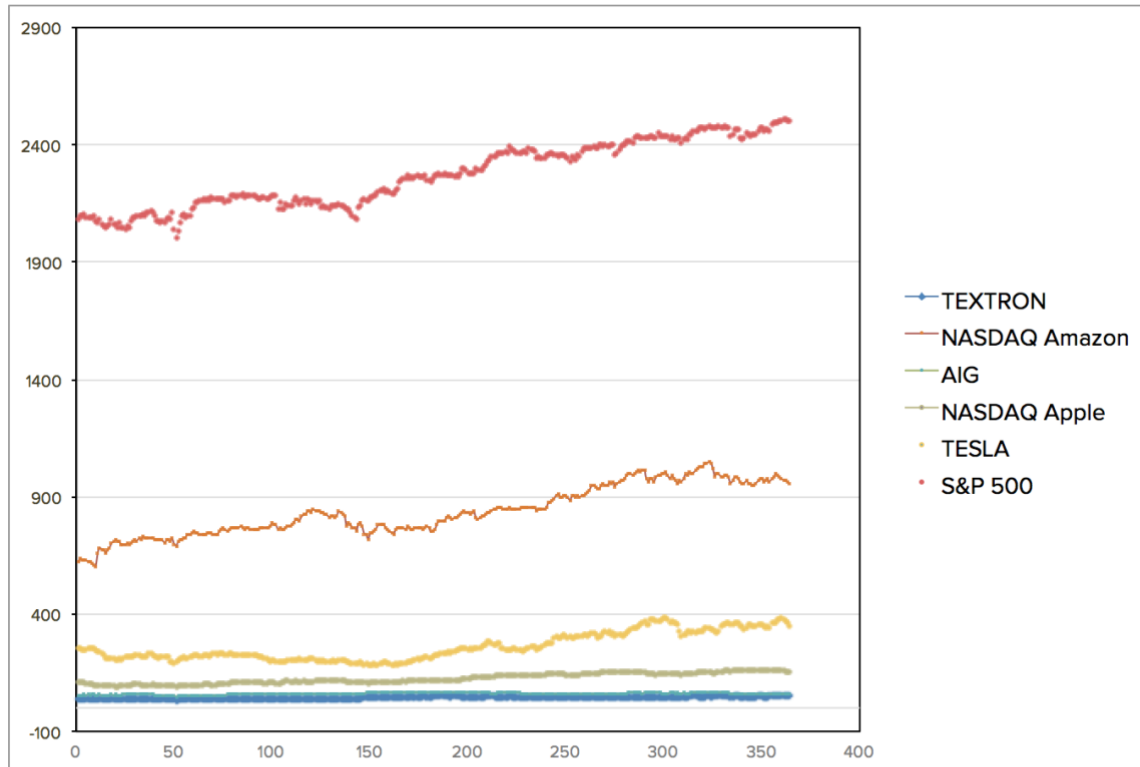
In this case, we get better expected return and Sharpe ratio. The risk decreases from 12.1% to 11.3%. To add sector diversification changing from Technology Software Products to Financial Insurance, we get risk decrease. But correlations now all greater than 0.



Test 3

Change Pfizer ↓ for Textron ↑

- S&P 500
- 1 **Textron (Pfizer)**
Industrial Goods, Aerospace/Defense - Major Diversified
- 2 **Amazon**
Services, Catalog & Mail Order Houses
- 3 **AIG (EA)**
Financial, Property & Casualty Insurance
- 4 **Apple**
Consumer Goods, Electronic Equipment
- 5 **Tesla**
Consumer Goods, Auto Manufacturers - Major



Correlations					
	1	2	3	4	5
1	100.0%	11.4%	48.7%	19.4%	12.1%
2	11.4%	100.0%	15.5%	37.8%	28.9%
3	48.7%	15.5%	100.0%	21.4%	6.4%
4	19.4%	37.8%	21.4%	100.0%	25.3%
5	12.1%	28.9%	6.4%	25.3%	100.0%

σ_p 13.5%
 $E(R_p)$ 11.60%
 Sharpe Ratio 77.0%

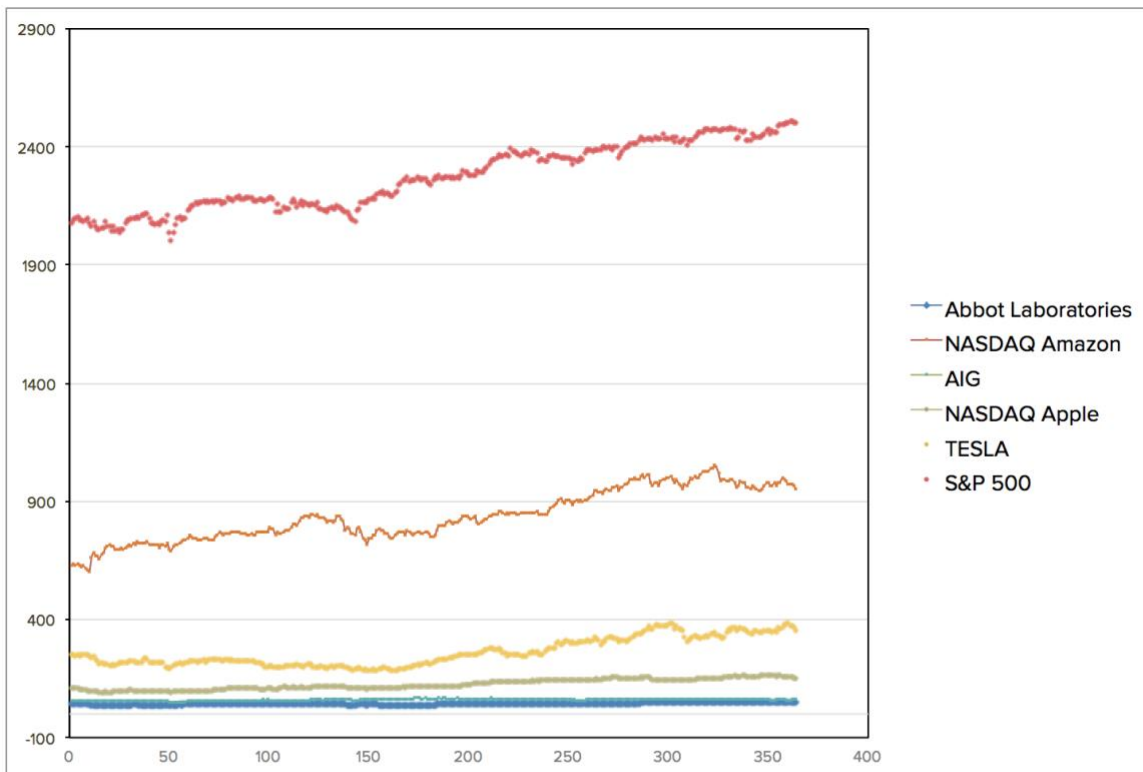
With this change, we want more diversification including a new sector: Aerospace / Defense. We get an increment of Expected Return to 11.6% but with riskier portfolio (standard deviation increase from 11.3% to 13.5%). Sharpe Ratio is the same as Test 2 and the correlation indexes are pretty much the same. In conclusion this change does not work.

Test 4



Change Textron ↓ for Abbot ↑

- S&P 500
- 1 Abbot (Textron)
Healthcare, Drug Manufacturers - Major
- 2 Amazon
Services, Catalog & Mail Order Houses
- 3 AIG (EA)
Financial, Property & Casualty Insurance
- 4 Apple
Consumer Goods, Electronic Equipment
- 5 Tesla
Consumer Goods, Auto Manufacturers - Major



Correlations					
	1	2	3	4	5
1	100.0%	23.4%	31.3%	28.9%	9.0%
2	23.4%	100.0%	15.5%	37.8%	28.9%
3	31.3%	15.5%	100.0%	21.4%	6.4%
4	28.9%	37.8%	21.4%	100.0%	25.3%
5	9.0%	28.9%	6.4%	25.3%	100.0%

σ_p 12.9%
 $E(R_p)$ 11.10%
 Sharpe Ratio 76.7%

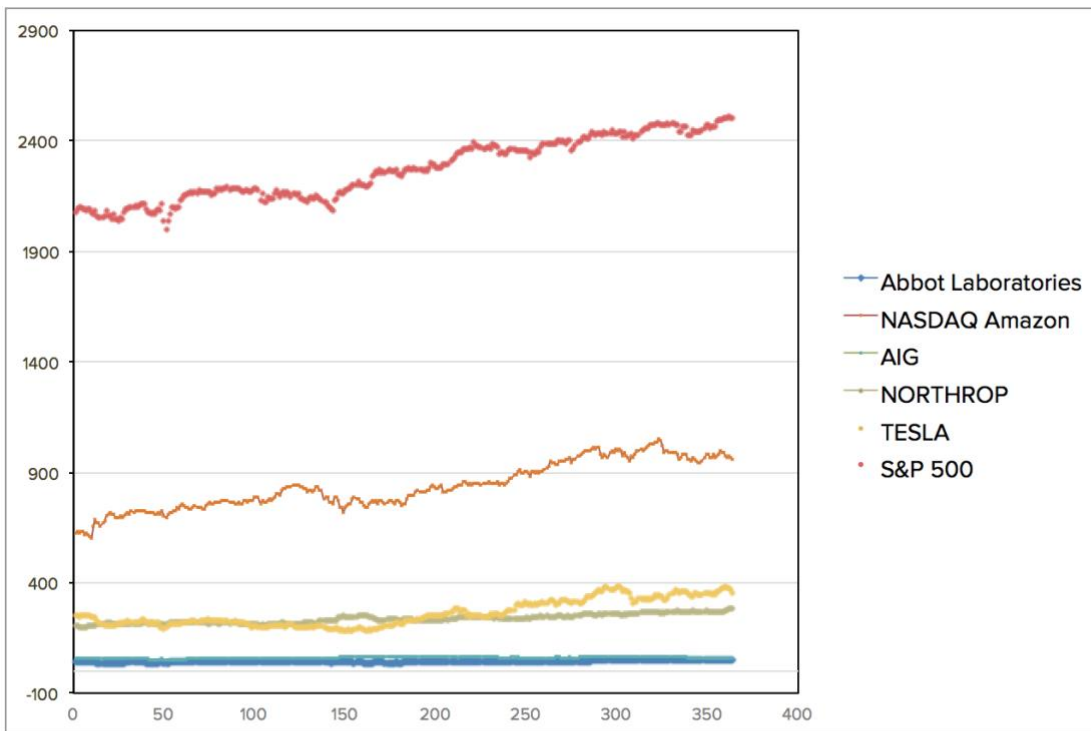
Return to the drug manufacturer sector but with Abbot now. We get decrease the risk to 12.9% and increase the expected return. With Textron we reach 11.6% but with Abbot we get 11.1% but with lower risk. Sharpe ratio is lower than which we get with Pfizer (77% vs. 76.7%) but we achieve better return increasing some risk.

Test 5



Change Apple ↓ for Northrop ↑

- S&P 500
- 1 Abbot (Texttron)
Healthcare, Drug Manufacturers - Major
- 2 Amazon
Services, Catalog & Mail Order Houses
- 3 AIG (EA)
Financial, Property & Casualty Insurance
- 4 Northrop (Apple)
Industrial Goods, Aerospace/Defense - Major Diversified
- 5 Tesla
Consumer Goods, Auto Manufacturers - Major



Correlations					
	1	2	3	4	5
1	100.0%	23.4%	31.3%	16.4%	9.0%
2	23.4%	100.0%	15.5%	5.2%	28.9%
3	31.3%	15.5%	100.0%	22.3%	6.4%
4	16.4%	5.2%	22.3%	100.0%	6.1%
5	9.0%	28.9%	6.4%	6.1%	100.0%

σ_p 11.3%
 $E(R_p)$ 10.10%
 Sharpe Ratio 78.8%

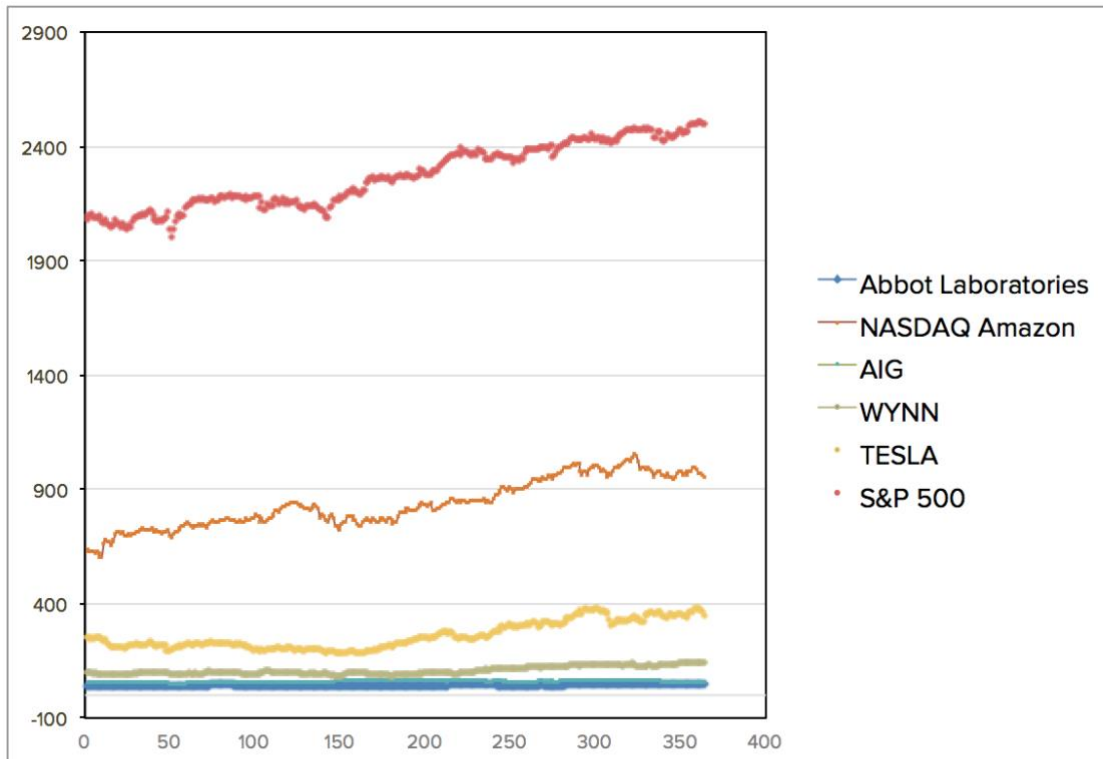
Another try to add diversification adding a aerospace defense sector but now with Northrop. With this change we get lower risk 11.3% with lower return but when with the best sharpe ratio of all tests.

Test 6



Change Northrop ↓ for Wynn ↑

- **S&P 500**
- 1 **Abbot (Textron)**
Healthcare, Drug Manufacturers - Major
- 2 **Amazon**
Services, Catalog & Mail Order Houses
- 3 **AIG (EA)**
Financial, Property & Casualty Insurance
- 4 **Wynn (Northrop)**
Services, Resorts and Casinos
- 5 **Tesla**
Consumer Goods, Auto Manufacturers - Major



Correlations					
	1	2	3	4	5
1	100.0%	23.4%	31.3%	17.0%	9.0%
2	23.4%	100.0%	15.5%	23.6%	28.9%
3	31.3%	15.5%	100.0%	17.8%	6.4%
4	17.0%	23.6%	17.8%	100.0%	16.8%
5	9.0%	28.9%	6.4%	16.8%	100.0%

σ_p 13.3%
 $E(R_p)$ 11.40%
 Sharpe Rat 76.7%

In the last test, we try with another sector: Resorts and Casinos. We increase risks and return with a sharpe ratio lower.

Performance evaluation



In the following table, we evaluated the five cases considering risk, return and Sharpe Ratio.

Lower Risk	11.3% (TEST 2 Y 5)
Higher ERp	11.6% (TEST 3)
Higher Sharpe Ratio	78.8% (TEST 5)

Although we see that the best case could be Test 5 due to the higher Sharpe ratio, it does not meet the expectations of our investor as the Expected Return of Portfolio test 5 is practically the same as the market (S&P 500). So, our investor could invest in the S&P 500 stocks and get the same return for lower risk.

Considering that test 3 gave us the best return, but also the higher risk, we are advising our investor to go for test 6, in which we may not get the higher Sharpe ratio, but it is getting a return above the S&P 500 and a risk of 13.3%, less than test 3.

Closing prices of the five selected stocks and the S&P 500.



The following table (**Table 1**) includes 365 days of closing prices from 15-April-2016 to 22-September-2017:

TABLE 1

Dates	Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
22/09/17	\$52.51	\$955.10	\$60.71	\$144.91	\$351.09	\$2,502.22
21/09/17	\$51.43	\$964.65	\$60.50	\$145.40	\$366.48	\$2,500.60
20/09/17	\$51.89	\$973.21	\$60.12	\$145.69	\$373.91	\$2,508.24
19/09/17	\$51.41	\$969.86	\$59.49	\$147.01	\$375.10	\$2,506.65
18/09/17	\$52.08	\$974.19	\$59.39	\$143.84	\$385.00	\$2,503.87
15/09/17	\$51.76	\$986.79	\$59.62	\$143.22	\$379.81	\$2,500.23
14/09/17	\$51.69	\$992.21	\$59.81	\$144.10	\$377.64	\$2,495.62
13/09/17	\$52.00	\$999.60	\$60.74	\$145.47	\$366.23	\$2,498.37
12/09/17	\$52.25	\$982.58	\$61.20	\$145.92	\$362.75	\$2,496.48
11/09/17	\$52.45	\$977.96	\$60.77	\$145.90	\$363.69	\$2,488.11
08/09/17	\$52.02	\$965.90	\$59.78	\$144.43	\$343.40	\$2,461.43
07/09/17	\$51.49	\$979.47	\$58.27	\$145.75	\$350.61	\$2,465.10
06/09/17	\$51.19	\$967.80	\$59.47	\$143.38	\$344.53	\$2,465.54
05/09/17	\$51.03	\$965.27	\$59.65	\$142.50	\$349.59	\$2,457.85
01/09/17	\$51.18	\$978.25	\$60.70	\$143.42	\$355.40	\$2,476.55
31/08/17	\$50.94	\$980.60	\$60.48	\$138.99	\$355.90	\$2,471.65
30/08/17	\$50.11	\$967.59	\$60.20	\$136.10	\$353.18	\$2,457.59
29/08/17	\$50.15	\$954.06	\$60.21	\$135.25	\$347.36	\$2,446.30
28/08/17	\$50.26	\$946.02	\$60.66	\$133.90	\$345.66	\$2,444.24
25/08/17	\$49.35	\$945.26	\$60.78	\$134.65	\$348.05	\$2,443.05
24/08/17	\$49.38	\$952.45	\$60.23	\$134.10	\$352.93	\$2,438.97
23/08/17	\$49.64	\$958.00	\$60.77	\$134.75	\$352.77	\$2,444.04
22/08/17	\$49.71	\$966.90	\$61.22	\$136.15	\$341.35	\$2,452.51
21/08/17	\$48.88	\$953.29	\$61.29	\$135.64	\$337.86	\$2,428.37
18/08/17	\$48.74	\$958.47	\$61.34	\$134.90	\$347.46	\$2,425.55
17/08/17	\$49.29	\$960.57	\$61.67	\$134.62	\$351.92	\$2,430.01
16/08/17	\$49.81	\$978.18	\$62.97	\$136.45	\$362.91	\$2,468.11
15/08/17	\$48.82	\$982.74	\$63.03	\$136.39	\$362.33	\$2,464.61
14/08/17	\$49.08	\$983.30	\$62.88	\$128.18	\$363.80	\$2,465.84
11/08/17	\$48.54	\$967.99	\$62.65	\$125.63	\$357.87	\$2,441.32
10/08/17	\$48.06	\$956.92	\$63.00	\$126.02	\$355.40	\$2,438.21
09/08/17	\$48.77	\$982.01	\$64.01	\$129.85	\$363.53	\$2,474.02
08/08/17	\$48.88	\$989.84	\$64.57	\$130.07	\$365.22	\$2,474.92
07/08/17	\$49.30	\$992.27	\$64.98	\$130.23	\$355.17	\$2,480.91
04/08/17	\$49.26	\$987.58	\$65.08	\$127.51	\$356.91	\$2,476.83
03/08/17	\$49.16	\$986.92	\$66.06	\$126.34	\$347.09	\$2,472.16
02/08/17	\$49.23	\$995.89	\$65.90	\$125.95	\$325.89	\$2,477.57
01/08/17	\$49.15	\$996.19	\$65.48	\$128.00	\$319.57	\$2,476.35
31/07/17	\$49.18	\$987.78	\$65.45	\$129.34	\$323.47	\$2,470.30
28/07/17	\$49.61	\$1,020.04	\$65.27	\$128.60	\$335.07	\$2,472.10
27/07/17	\$50.11	\$1,046.00	\$65.17	\$128.02	\$334.46	\$2,475.42
26/07/17	\$50.40	\$1,052.80	\$65.19	\$132.00	\$343.85	\$2,477.83



25/07/17	\$50.83	\$1,039.87	\$65.29	\$138.98	\$339.60	\$2,477.13
24/07/17	\$50.80	\$1,038.95	\$64.53	\$138.53	\$342.52	\$2,469.91
21/07/17	\$50.84	\$1,025.67	\$64.20	\$134.14	\$328.40	\$2,472.54
20/07/17	\$50.85	\$1,028.70	\$64.23	\$132.00	\$329.92	\$2,473.45
19/07/17	\$49.43	\$1,026.87	\$64.19	\$133.17	\$325.26	\$2,473.83
18/07/17	\$48.74	\$1,024.45	\$63.87	\$133.55	\$328.24	\$2,460.61
17/07/17	\$48.76	\$1,010.04	\$64.05	\$129.85	\$319.57	\$2,459.14
14/07/17	\$48.91	\$1,001.81	\$64.11	\$130.42	\$327.78	\$2,459.27
13/07/17	\$48.08	\$1,000.63	\$64.13	\$134.98	\$323.41	\$2,447.83
12/07/17	\$48.43	\$1,006.51	\$63.19	\$135.27	\$329.52	\$2,443.25
11/07/17	\$48.15	\$994.13	\$62.91	\$134.29	\$327.22	\$2,425.53
10/07/17	\$48.23	\$996.47	\$63.07	\$134.95	\$316.05	\$2,427.43
07/07/17	\$48.44	\$978.76	\$63.35	\$132.46	\$313.22	\$2,425.18
06/07/17	\$47.94	\$965.14	\$63.08	\$130.91	\$308.83	\$2,409.75
05/07/17	\$49.00	\$971.40	\$62.78	\$132.42	\$327.09	\$2,432.54
03/07/17	\$48.71	\$953.66	\$63.29	\$131.01	\$352.62	\$2,429.01
30/06/17	\$48.61	\$968.00	\$62.52	\$134.12	\$361.61	\$2,423.41
29/06/17	\$48.73	\$975.93	\$63.50	\$132.76	\$360.75	\$2,419.70
28/06/17	\$48.48	\$990.33	\$63.84	\$135.94	\$371.24	\$2,440.69
27/06/17	\$48.67	\$976.78	\$63.41	\$135.63	\$362.37	\$2,419.38
26/06/17	\$48.91	\$993.98	\$63.18	\$137.15	\$377.49	\$2,439.07
23/06/17	\$49.08	\$1,003.74	\$63.02	\$138.32	\$383.45	\$2,438.30
22/06/17	\$49.27	\$1,001.30	\$63.05	\$137.05	\$382.61	\$2,434.50
21/06/17	\$48.57	\$1,002.23	\$63.22	\$137.46	\$376.40	\$2,435.61
20/06/17	\$48.77	\$992.59	\$63.39	\$137.13	\$372.24	\$2,437.03
19/06/17	\$48.89	\$995.17	\$63.95	\$138.42	\$369.80	\$2,453.46
16/06/17	\$48.21	\$987.71	\$63.79	\$134.46	\$371.40	\$2,433.15
15/06/17	\$48.12	\$964.17	\$63.81	\$134.04	\$375.34	\$2,432.46
14/06/17	\$47.64	\$976.47	\$64.25	\$133.49	\$380.66	\$2,437.92
13/06/17	\$47.46	\$980.79	\$64.23	\$134.16	\$375.95	\$2,440.35
12/06/17	\$47.17	\$964.91	\$63.82	\$130.25	\$359.01	\$2,429.39
09/06/17	\$47.29	\$978.31	\$64.18	\$129.59	\$357.32	\$2,431.77
08/06/17	\$46.72	\$1,010.27	\$63.66	\$134.73	\$370.00	\$2,433.79
07/06/17	\$46.56	\$1,010.07	\$63.16	\$132.31	\$359.65	\$2,433.14
06/06/17	\$46.36	\$1,003.00	\$63.31	\$132.60	\$352.85	\$2,429.33
05/06/17	\$46.62	\$1,011.34	\$63.83	\$133.28	\$347.32	\$2,436.10
02/06/17	\$46.50	\$1,006.73	\$64.24	\$134.68	\$339.85	\$2,439.07
01/06/17	\$46.10	\$995.95	\$63.90	\$133.59	\$340.37	\$2,430.06
31/05/17	\$45.66	\$994.62	\$63.63	\$128.70	\$341.01	\$2,411.80
30/05/17	\$45.00	\$996.70	\$64.10	\$126.58	\$335.10	\$2,412.91
26/05/17	\$44.71	\$995.78	\$63.55	\$125.73	\$325.14	\$2,415.82
25/05/17	\$43.95	\$993.38	\$63.12	\$124.44	\$316.83	\$2,415.07
24/05/17	\$43.53	\$980.35	\$62.60	\$124.00	\$310.22	\$2,404.39
23/05/17	\$43.68	\$971.54	\$62.17	\$124.15	\$303.86	\$2,398.42
22/05/17	\$43.73	\$970.67	\$61.38	\$125.16	\$310.35	\$2,394.02
19/05/17	\$43.16	\$959.84	\$61.20	\$121.73	\$310.83	\$2,381.73
18/05/17	\$42.98	\$958.49	\$61.39	\$122.42	\$313.06	\$2,365.72
17/05/17	\$43.08	\$944.76	\$61.56	\$122.62	\$306.11	\$2,357.03



16/05/17	\$43.69	\$966.07	\$62.08	\$127.91	\$317.01	\$2,400.67
15/05/17	\$44.04	\$957.97	\$61.82	\$125.69	\$315.88	\$2,402.32
12/05/17	\$43.96	\$961.35	\$60.99	\$125.29	\$324.81	\$2,390.90
11/05/17	\$43.86	\$947.62	\$61.79	\$122.23	\$323.10	\$2,394.44
10/05/17	\$44.50	\$948.95	\$61.37	\$123.27	\$325.22	\$2,399.63
09/05/17	\$44.67	\$952.82	\$61.82	\$123.46	\$321.26	\$2,396.92
08/05/17	\$44.68	\$949.04	\$61.92	\$120.20	\$307.19	\$2,399.38
05/05/17	\$44.64	\$934.15	\$62.71	\$122.14	\$308.35	\$2,399.29
04/05/17	\$44.59	\$937.53	\$62.67	\$124.32	\$295.46	\$2,389.52
03/05/17	\$43.72	\$941.03	\$61.54	\$125.85	\$311.02	\$2,388.13
02/05/17	\$43.60	\$946.94	\$61.53	\$125.30	\$318.89	\$2,391.17
01/05/17	\$43.48	\$948.23	\$61.61	\$125.92	\$322.83	\$2,388.33
28/04/17	\$43.64	\$924.99	\$60.91	\$123.01	\$314.07	\$2,384.20
27/04/17	\$43.65	\$918.38	\$61.15	\$124.50	\$308.63	\$2,388.77
26/04/17	\$43.80	\$909.29	\$60.16	\$125.19	\$310.17	\$2,387.45
25/04/17	\$43.76	\$907.62	\$60.07	\$118.22	\$313.79	\$2,388.61
24/04/17	\$44.13	\$907.41	\$59.69	\$115.57	\$308.03	\$2,374.15
21/04/17	\$43.53	\$898.53	\$59.13	\$115.90	\$305.60	\$2,348.69
20/04/17	\$43.98	\$902.06	\$59.67	\$116.15	\$302.51	\$2,355.84
19/04/17	\$43.59	\$899.20	\$58.98	\$114.94	\$305.52	\$2,338.17
18/04/17	\$43.43	\$903.78	\$59.50	\$115.89	\$300.25	\$2,342.19
17/04/17	\$43.31	\$901.99	\$59.93	\$114.64	\$301.44	\$2,349.01
13/04/17	\$42.67	\$884.67	\$59.55	\$113.47	\$304.00	\$2,328.95
12/04/17	\$43.48	\$896.23	\$60.17	\$115.39	\$296.84	\$2,344.93
11/04/17	\$43.58	\$902.36	\$60.79	\$116.23	\$308.71	\$2,353.78
10/04/17	\$43.59	\$907.04	\$61.48	\$116.18	\$312.39	\$2,357.16
07/04/17	\$43.83	\$894.88	\$61.34	\$116.83	\$302.54	\$2,355.54
06/04/17	\$43.67	\$898.28	\$61.84	\$117.85	\$298.70	\$2,357.49
05/04/17	\$43.80	\$909.28	\$61.62	\$116.68	\$295.00	\$2,352.95
04/04/17	\$44.18	\$906.83	\$62.18	\$116.74	\$303.70	\$2,360.16
03/04/17	\$44.47	\$891.51	\$61.79	\$116.34	\$298.52	\$2,358.84
31/03/17	\$44.41	\$886.54	\$62.43	\$114.61	\$278.30	\$2,362.72
30/03/17	\$44.55	\$876.34	\$62.57	\$114.30	\$277.92	\$2,368.06
29/03/17	\$44.67	\$874.32	\$61.77	\$115.49	\$277.38	\$2,361.13
28/03/17	\$44.70	\$856.00	\$61.86	\$115.18	\$277.45	\$2,358.57
27/03/17	\$44.70	\$846.82	\$60.93	\$114.65	\$270.22	\$2,341.59
24/03/17	\$44.73	\$845.61	\$60.88	\$111.92	\$263.16	\$2,343.98
23/03/17	\$44.77	\$847.38	\$61.34	\$112.32	\$254.78	\$2,345.96
22/03/17	\$44.81	\$848.06	\$61.24	\$113.35	\$255.01	\$2,348.45
21/03/17	\$44.80	\$843.20	\$61.76	\$111.75	\$250.68	\$2,344.02
20/03/17	\$44.98	\$856.97	\$62.37	\$111.64	\$261.92	\$2,373.47
17/03/17	\$45.19	\$852.31	\$62.42	\$110.19	\$261.50	\$2,378.25
16/03/17	\$44.98	\$853.42	\$62.91	\$106.17	\$262.05	\$2,381.38
15/03/17	\$45.32	\$852.97	\$63.23	\$104.75	\$255.73	\$2,385.26
14/03/17	\$44.80	\$852.53	\$62.88	\$104.70	\$258.00	\$2,365.45
13/03/17	\$45.53	\$854.59	\$63.18	\$104.30	\$246.17	\$2,373.47
10/03/17	\$45.72	\$852.46	\$63.08	\$99.55	\$243.69	\$2,372.60
09/03/17	\$45.63	\$853.00	\$63.21	\$98.99	\$244.90	\$2,364.87



08/03/17	\$45.36	\$850.50	\$63.44	\$99.23	\$246.87	\$2,362.98
07/03/17	\$45.00	\$846.02	\$63.45	\$99.46	\$248.59	\$2,368.39
06/03/17	\$45.13	\$846.61	\$63.78	\$100.37	\$251.21	\$2,375.31
03/03/17	\$45.25	\$849.88	\$64.22	\$101.04	\$251.57	\$2,383.12
02/03/17	\$45.69	\$848.91	\$63.90	\$100.15	\$250.48	\$2,381.92
01/03/17	\$45.59	\$853.08	\$64.63	\$102.71	\$250.02	\$2,395.96
28/02/17	\$45.08	\$845.04	\$63.92	\$96.15	\$249.99	\$2,363.64
27/02/17	\$45.46	\$848.64	\$64.00	\$95.51	\$246.23	\$2,369.75
24/02/17	\$45.68	\$845.24	\$63.63	\$94.01	\$257.00	\$2,367.34
23/02/17	\$45.40	\$852.19	\$64.02	\$93.84	\$255.99	\$2,363.81
22/02/17	\$45.01	\$855.61	\$63.83	\$94.75	\$273.51	\$2,362.82
21/02/17	\$45.01	\$856.44	\$63.41	\$95.97	\$277.39	\$2,365.38
17/02/17	\$44.69	\$845.07	\$62.50	\$95.91	\$272.23	\$2,351.16
16/02/17	\$44.20	\$844.14	\$62.27	\$96.72	\$268.95	\$2,347.22
15/02/17	\$44.00	\$842.70	\$60.85	\$99.79	\$279.76	\$2,349.25
14/02/17	\$43.65	\$836.39	\$66.89	\$97.68	\$280.98	\$2,337.58
13/02/17	\$43.22	\$836.53	\$66.14	\$98.97	\$280.60	\$2,328.25
10/02/17	\$42.74	\$827.46	\$65.61	\$98.90	\$269.23	\$2,316.10
09/02/17	\$42.54	\$821.36	\$65.32	\$98.88	\$269.20	\$2,307.87
08/02/17	\$42.40	\$819.71	\$64.91	\$97.18	\$262.08	\$2,294.67
07/02/17	\$42.89	\$812.50	\$64.88	\$97.01	\$257.48	\$2,293.08
06/02/17	\$42.43	\$807.64	\$64.90	\$97.02	\$257.77	\$2,292.56
03/02/17	\$42.78	\$810.20	\$64.94	\$96.92	\$251.33	\$2,297.42
02/02/17	\$42.75	\$839.95	\$64.12	\$97.38	\$251.55	\$2,280.85
01/02/17	\$42.33	\$832.35	\$64.27	\$97.86	\$249.24	\$2,279.55
31/01/17	\$41.77	\$823.48	\$64.26	\$101.43	\$251.93	\$2,278.87
30/01/17	\$41.01	\$830.38	\$64.89	\$102.55	\$250.63	\$2,280.90
27/01/17	\$41.00	\$835.77	\$65.21	\$103.08	\$252.95	\$2,294.69
26/01/17	\$40.96	\$839.15	\$66.02	\$95.50	\$252.51	\$2,296.68
25/01/17	\$40.31	\$836.52	\$65.72	\$96.42	\$254.47	\$2,298.37
24/01/17	\$40.31	\$822.44	\$65.50	\$94.03	\$254.61	\$2,280.07
23/01/17	\$40.34	\$817.88	\$65.49	\$92.64	\$248.92	\$2,265.20
20/01/17	\$40.46	\$808.33	\$66.54	\$90.82	\$244.73	\$2,271.31
19/01/17	\$40.40	\$809.04	\$66.29	\$90.93	\$243.76	\$2,263.69
18/01/17	\$40.76	\$807.48	\$66.24	\$91.98	\$238.36	\$2,271.89
17/01/17	\$40.90	\$809.72	\$66.06	\$92.34	\$235.58	\$2,267.89
13/01/17	\$40.93	\$817.14	\$66.35	\$90.53	\$237.75	\$2,274.64
12/01/17	\$40.72	\$813.64	\$66.25	\$91.94	\$229.59	\$2,270.44
11/01/17	\$41.08	\$799.02	\$66.95	\$92.93	\$229.73	\$2,275.32
10/01/17	\$41.29	\$795.90	\$67.20	\$94.83	\$229.87	\$2,268.90
09/01/17	\$40.74	\$796.92	\$66.38	\$92.75	\$231.28	\$2,268.90
06/01/17	\$40.78	\$795.99	\$66.81	\$92.43	\$229.01	\$2,276.98
05/01/17	\$39.70	\$780.45	\$65.60	\$91.44	\$226.75	\$2,269.00
04/01/17	\$39.36	\$757.18	\$65.97	\$90.28	\$226.99	\$2,270.75
03/01/17	\$39.05	\$753.67	\$65.12	\$87.46	\$216.99	\$2,257.83
30/12/16	\$38.41	\$749.87	\$65.31	\$86.51	\$213.69	\$2,238.83
29/12/16	\$38.31	\$765.15	\$65.50	\$87.17	\$214.68	\$2,249.26
28/12/16	\$38.22	\$772.13	\$65.88	\$87.08	\$219.74	\$2,249.92



27/12/16	\$38.60	\$771.40	\$66.70	\$88.24	\$219.53	\$2,268.88
23/12/16	\$38.42	\$760.59	\$66.41	\$88.34	\$213.34	\$2,263.79
22/12/16	\$38.29	\$766.34	\$66.23	\$88.25	\$208.45	\$2,260.96
21/12/16	\$38.24	\$770.60	\$66.66	\$89.27	\$207.70	\$2,265.18
20/12/16	\$38.19	\$771.22	\$66.60	\$88.31	\$208.79	\$2,270.76
19/12/16	\$38.34	\$766.00	\$66.54	\$90.12	\$202.73	\$2,262.53
16/12/16	\$38.10	\$757.77	\$66.30	\$91.90	\$202.49	\$2,258.07
15/12/16	\$38.93	\$761.00	\$66.19	\$90.88	\$197.58	\$2,262.03
14/12/16	\$38.82	\$768.82	\$66.01	\$92.16	\$198.69	\$2,253.28
13/12/16	\$39.44	\$774.34	\$66.31	\$93.50	\$198.15	\$2,271.72
12/12/16	\$39.20	\$760.12	\$65.62	\$91.50	\$192.43	\$2,256.96
09/12/16	\$39.20	\$768.66	\$65.83	\$91.88	\$192.18	\$2,259.53
08/12/16	\$38.68	\$767.33	\$65.82	\$90.72	\$192.29	\$2,246.19
07/12/16	\$38.48	\$770.42	\$64.92	\$101.99	\$193.15	\$2,241.35
06/12/16	\$38.42	\$764.72	\$64.20	\$102.18	\$185.85	\$2,212.23
05/12/16	\$38.43	\$759.36	\$64.22	\$98.37	\$186.80	\$2,204.71
02/12/16	\$37.90	\$740.34	\$63.75	\$98.64	\$181.47	\$2,191.95
01/12/16	\$37.60	\$743.65	\$64.11	\$99.27	\$181.88	\$2,191.08
30/11/16	\$38.07	\$750.57	\$63.33	\$101.99	\$189.40	\$2,198.81
29/11/16	\$38.73	\$762.52	\$63.28	\$99.79	\$189.57	\$2,204.66
28/11/16	\$38.74	\$766.77	\$63.31	\$102.00	\$196.12	\$2,201.72
25/11/16	\$39.16	\$780.37	\$64.44	\$101.55	\$196.65	\$2,213.35
23/11/16	\$38.98	\$780.12	\$64.33	\$101.32	\$193.14	\$2,204.72
22/11/16	\$38.10	\$785.33	\$64.00	\$98.10	\$191.17	\$2,202.94
21/11/16	\$39.76	\$780.00	\$63.92	\$97.38	\$184.52	\$2,198.18
18/11/16	\$39.84	\$760.16	\$63.91	\$92.35	\$185.02	\$2,181.90
17/11/16	\$40.39	\$756.40	\$64.23	\$90.44	\$188.66	\$2,187.12
16/11/16	\$39.95	\$746.49	\$64.10	\$86.57	\$183.93	\$2,176.94
15/11/16	\$39.81	\$743.24	\$64.60	\$86.87	\$183.77	\$2,180.39
14/11/16	\$39.20	\$719.07	\$64.45	\$84.51	\$181.45	\$2,164.20
11/11/16	\$40.14	\$739.01	\$63.32	\$84.98	\$188.56	\$2,164.45
10/11/16	\$40.61	\$742.38	\$63.21	\$85.30	\$185.35	\$2,167.48
09/11/16	\$40.07	\$771.88	\$60.93	\$87.84	\$190.06	\$2,163.26
08/11/16	\$39.83	\$787.75	\$59.50	\$86.67	\$194.94	\$2,139.56
07/11/16	\$39.86	\$784.93	\$59.28	\$87.86	\$193.21	\$2,131.52
04/11/16	\$39.09	\$755.05	\$57.38	\$88.04	\$190.56	\$2,085.18
03/11/16	\$38.38	\$767.03	\$58.15	\$87.53	\$187.42	\$2,088.66
02/11/16	\$38.70	\$765.56	\$60.55	\$96.52	\$188.02	\$2,097.94
01/11/16	\$39.05	\$785.41	\$60.68	\$98.23	\$190.79	\$2,111.72
31/10/16	\$39.24	\$789.82	\$61.70	\$94.55	\$197.73	\$2,126.15
28/10/16	\$39.54	\$776.32	\$61.28	\$94.18	\$199.97	\$2,126.41
27/10/16	\$40.29	\$818.36	\$61.42	\$94.18	\$204.01	\$2,133.04
26/10/16	\$39.96	\$822.59	\$61.11	\$95.75	\$202.24	\$2,139.43
25/10/16	\$40.19	\$835.18	\$60.55	\$95.57	\$202.34	\$2,143.16
24/10/16	\$40.41	\$838.09	\$60.32	\$96.80	\$202.76	\$2,151.33
21/10/16	\$40.50	\$818.99	\$60.00	\$95.27	\$200.09	\$2,141.16
20/10/16	\$40.74	\$810.32	\$60.07	\$96.00	\$199.10	\$2,141.34
19/10/16	\$40.01	\$817.69	\$60.71	\$95.52	\$203.56	\$2,144.29



18/10/16	\$41.17	\$817.65	\$60.49	\$92.98	\$199.10	\$2,139.60
17/10/16	\$40.59	\$812.95	\$60.29	\$93.10	\$193.96	\$2,126.50
14/10/16	\$40.79	\$822.96	\$59.86	\$93.37	\$196.51	\$2,132.98
13/10/16	\$40.98	\$829.28	\$59.59	\$94.95	\$200.24	\$2,132.55
12/10/16	\$40.98	\$834.09	\$60.44	\$96.43	\$201.51	\$2,139.18
11/10/16	\$41.16	\$831.00	\$59.86	\$97.70	\$200.10	\$2,136.73
10/10/16	\$43.50	\$841.71	\$60.44	\$98.67	\$200.95	\$2,163.66
07/10/16	\$42.97	\$839.43	\$60.06	\$97.01	\$196.61	\$2,153.74
06/10/16	\$42.97	\$841.66	\$59.95	\$97.74	\$201.00	\$2,160.77
05/10/16	\$42.74	\$844.36	\$59.90	\$97.94	\$208.46	\$2,159.73
04/10/16	\$42.10	\$834.03	\$59.08	\$96.38	\$211.41	\$2,150.49
03/10/16	\$42.55	\$836.74	\$58.92	\$99.28	\$213.70	\$2,161.20
30/09/16	\$42.29	\$837.31	\$59.34	\$97.42	\$204.03	\$2,168.27
29/09/16	\$41.44	\$829.05	\$58.40	\$100.59	\$200.70	\$2,151.13
28/09/16	\$42.29	\$828.72	\$59.50	\$101.66	\$206.27	\$2,171.37
27/09/16	\$42.33	\$816.11	\$58.51	\$100.74	\$205.81	\$2,159.93
26/09/16	\$41.68	\$799.16	\$58.25	\$100.81	\$208.99	\$2,146.10
23/09/16	\$42.19	\$805.75	\$58.73	\$102.14	\$207.45	\$2,164.69
22/09/16	\$42.22	\$804.70	\$58.99	\$102.29	\$206.43	\$2,177.18
21/09/16	\$41.92	\$789.74	\$58.09	\$103.00	\$205.22	\$2,163.12
20/09/16	\$41.58	\$780.22	\$57.84	\$103.49	\$204.64	\$2,139.76
19/09/16	\$41.68	\$775.10	\$57.84	\$103.96	\$206.34	\$2,139.12
16/09/16	\$41.87	\$778.52	\$57.90	\$108.57	\$205.40	\$2,139.16
15/09/16	\$41.12	\$769.69	\$58.59	\$108.68	\$200.42	\$2,147.26
14/09/16	\$40.81	\$761.09	\$58.08	\$107.25	\$196.41	\$2,125.77
13/09/16	\$40.64	\$761.01	\$58.23	\$103.71	\$196.05	\$2,127.02
12/09/16	\$41.42	\$771.49	\$58.99	\$104.01	\$198.30	\$2,159.04
09/09/16	\$41.01	\$760.14	\$58.67	\$98.41	\$194.47	\$2,127.81
08/09/16	\$41.85	\$784.06	\$59.04	\$95.78	\$197.36	\$2,181.30
07/09/16	\$41.90	\$784.48	\$59.37	\$94.35	\$201.71	\$2,186.16
06/09/16	\$42.16	\$788.87	\$59.45	\$92.79	\$202.83	\$2,186.48
02/09/16	\$42.09	\$772.44	\$59.86	\$92.38	\$197.78	\$2,179.98
01/09/16	\$42.30	\$770.62	\$59.41	\$93.17	\$200.77	\$2,170.86
31/08/16	\$42.02	\$769.16	\$59.83	\$89.32	\$212.01	\$2,170.95
30/08/16	\$42.83	\$767.58	\$59.64	\$90.15	\$211.34	\$2,176.12
29/08/16	\$43.25	\$771.29	\$59.43	\$90.72	\$215.20	\$2,180.38
26/08/16	\$42.98	\$769.00	\$59.02	\$89.85	\$219.99	\$2,169.04
25/08/16	\$42.84	\$759.22	\$58.94	\$90.51	\$220.96	\$2,172.47
24/08/16	\$43.17	\$757.25	\$58.91	\$90.81	\$222.62	\$2,175.44
23/08/16	\$43.90	\$762.45	\$59.02	\$96.39	\$224.84	\$2,186.90
22/08/16	\$44.17	\$759.48	\$58.99	\$97.10	\$222.93	\$2,182.64
19/08/16	\$44.24	\$757.31	\$58.86	\$97.38	\$225.00	\$2,183.87
18/08/16	\$44.36	\$764.46	\$58.98	\$99.68	\$223.51	\$2,187.02
17/08/16	\$44.68	\$764.63	\$59.03	\$101.33	\$223.24	\$2,182.22
16/08/16	\$44.92	\$764.04	\$59.31	\$101.42	\$223.61	\$2,178.15
15/08/16	\$45.15	\$768.49	\$59.22	\$103.74	\$225.59	\$2,190.15
12/08/16	\$45.04	\$772.56	\$58.85	\$99.75	\$225.61	\$2,184.05
11/08/16	\$45.05	\$771.24	\$59.18	\$102.66	\$224.91	\$2,185.79



10/08/16	\$44.81	\$768.56	\$59.00	\$99.59	\$225.65	\$2,175.49
09/08/16	\$45.08	\$768.31	\$59.27	\$100.19	\$229.08	\$2,181.74
08/08/16	\$45.02	\$766.56	\$59.39	\$100.05	\$226.16	\$2,180.89
05/08/16	\$45.26	\$765.98	\$59.10	\$97.51	\$230.03	\$2,182.87
04/08/16	\$44.81	\$760.77	\$57.61	\$98.25	\$230.61	\$2,164.25
03/08/16	\$44.95	\$754.64	\$58.10	\$97.66	\$225.79	\$2,163.79
02/08/16	\$45.07	\$760.58	\$54.14	\$96.92	\$227.20	\$2,157.03
01/08/16	\$45.29	\$767.74	\$54.21	\$97.93	\$230.01	\$2,170.84
29/07/16	\$44.75	\$758.81	\$54.44	\$97.95	\$234.79	\$2,173.60
28/07/16	\$44.45	\$752.61	\$54.79	\$104.66	\$230.61	\$2,170.06
27/07/16	\$43.67	\$736.67	\$54.62	\$102.24	\$228.49	\$2,166.58
26/07/16	\$43.60	\$735.59	\$54.69	\$103.47	\$229.51	\$2,169.18
25/07/16	\$43.41	\$739.61	\$54.66	\$97.41	\$230.01	\$2,168.48
22/07/16	\$43.17	\$744.86	\$54.62	\$95.77	\$222.27	\$2,175.03
21/07/16	\$43.04	\$744.43	\$54.29	\$93.89	\$220.50	\$2,165.17
20/07/16	\$42.65	\$745.72	\$54.57	\$94.18	\$228.36	\$2,173.02
19/07/16	\$41.80	\$739.95	\$54.46	\$95.17	\$225.26	\$2,163.78
18/07/16	\$42.09	\$736.07	\$54.56	\$96.66	\$226.25	\$2,166.89
15/07/16	\$42.10	\$735.44	\$54.44	\$92.22	\$220.40	\$2,161.74
14/07/16	\$42.28	\$741.20	\$54.40	\$92.02	\$221.53	\$2,163.75
13/07/16	\$41.97	\$742.63	\$53.81	\$94.88	\$222.53	\$2,152.43
12/07/16	\$42.47	\$748.21	\$53.86	\$96.50	\$224.65	\$2,152.14
11/07/16	\$42.12	\$753.78	\$53.29	\$94.10	\$224.78	\$2,137.16
08/07/16	\$41.89	\$745.81	\$53.01	\$89.75	\$216.78	\$2,129.90
07/07/16	\$41.36	\$736.57	\$51.82	\$88.96	\$215.94	\$2,097.90
06/07/16	\$40.83	\$737.61	\$51.26	\$89.93	\$214.44	\$2,099.73
05/07/16	\$39.44	\$728.10	\$51.21	\$89.10	\$213.98	\$2,088.55
01/07/16	\$39.54	\$725.68	\$52.87	\$91.79	\$216.50	\$2,102.95
30/06/16	\$39.31	\$715.62	\$52.89	\$90.64	\$212.28	\$2,098.86
29/06/16	\$38.57	\$715.60	\$51.46	\$91.28	\$210.19	\$2,070.77
28/06/16	\$37.56	\$707.95	\$49.82	\$88.28	\$201.79	\$2,036.09
27/06/16	\$36.95	\$691.36	\$48.79	\$87.69	\$198.55	\$2,000.54
24/06/16	\$37.91	\$698.96	\$50.72	\$92.29	\$193.15	\$2,037.41
23/06/16	\$39.63	\$722.08	\$54.71	\$101.70	\$196.40	\$2,113.32
22/06/16	\$38.74	\$710.60	\$53.68	\$100.72	\$196.66	\$2,085.45
21/06/16	\$37.73	\$715.82	\$53.79	\$101.81	\$219.61	\$2,088.90
20/06/16	\$37.75	\$714.01	\$53.73	\$100.29	\$219.70	\$2,083.25
17/06/16	\$37.39	\$706.39	\$53.42	\$103.19	\$215.47	\$2,071.22
16/06/16	\$37.50	\$717.51	\$53.63	\$101.20	\$217.93	\$2,077.99
15/06/16	\$37.43	\$714.26	\$53.57	\$101.60	\$217.70	\$2,071.50
14/06/16	\$37.66	\$719.30	\$53.99	\$101.54	\$214.96	\$2,075.32
13/06/16	\$37.86	\$715.24	\$54.40	\$100.15	\$217.87	\$2,079.06
10/06/16	\$38.40	\$717.91	\$54.99	\$100.45	\$218.79	\$2,096.07
09/06/16	\$38.87	\$727.65	\$56.10	\$100.79	\$229.36	\$2,115.48
08/06/16	\$38.91	\$726.64	\$56.92	\$101.32	\$235.52	\$2,119.12
07/06/16	\$38.93	\$723.74	\$57.06	\$101.11	\$232.34	\$2,112.13
06/06/16	\$39.17	\$726.73	\$57.29	\$98.69	\$220.68	\$2,109.41
03/06/16	\$39.18	\$725.54	\$57.26	\$98.50	\$218.99	\$2,099.13



02/06/16	\$39.53	\$728.24	\$57.84	\$99.41	\$218.96	\$2,105.26
01/06/16	\$39.50	\$719.44	\$57.74	\$96.73	\$219.56	\$2,099.33
31/05/16	\$39.63	\$722.79	\$57.88	\$96.18	\$223.23	\$2,096.95
27/05/16	\$39.30	\$712.24	\$58.32	\$95.96	\$223.04	\$2,099.06
26/05/16	\$38.89	\$714.91	\$57.75	\$94.62	\$225.12	\$2,090.10
25/05/16	\$38.68	\$708.35	\$58.05	\$96.65	\$219.58	\$2,090.54
24/05/16	\$37.98	\$704.20	\$57.70	\$93.22	\$217.91	\$2,076.06
23/05/16	\$37.37	\$696.75	\$56.90	\$91.48	\$216.22	\$2,048.04
20/05/16	\$37.60	\$702.80	\$56.97	\$88.96	\$220.28	\$2,052.32
19/05/16	\$37.24	\$698.52	\$56.36	\$88.45	\$215.21	\$2,040.04
18/05/16	\$37.75	\$697.45	\$56.71	\$88.45	\$211.17	\$2,047.63
17/05/16	\$37.71	\$695.27	\$55.40	\$91.23	\$204.66	\$2,047.21
16/05/16	\$38.25	\$710.66	\$55.28	\$90.88	\$208.29	\$2,066.66
13/05/16	\$37.60	\$709.92	\$55.66	\$89.95	\$207.61	\$2,046.61
12/05/16	\$38.00	\$717.93	\$56.29	\$93.42	\$207.28	\$2,064.11
11/05/16	\$38.01	\$713.23	\$55.96	\$92.96	\$208.96	\$2,064.46
10/05/16	\$38.10	\$703.07	\$56.35	\$94.03	\$208.69	\$2,084.39
09/05/16	\$37.98	\$679.75	\$55.25	\$89.62	\$208.92	\$2,058.69
06/05/16	\$37.97	\$673.95	\$55.04	\$91.21	\$214.93	\$2,057.14
05/05/16	\$38.50	\$659.09	\$54.81	\$89.62	\$211.53	\$2,050.63
04/05/16	\$38.10	\$670.90	\$54.85	\$91.23	\$222.56	\$2,051.12
03/05/16	\$38.55	\$671.32	\$55.94	\$94.45	\$232.32	\$2,063.37
02/05/16	\$38.85	\$683.85	\$56.59	\$94.28	\$241.80	\$2,081.43
29/04/16	\$38.90	\$659.59	\$55.82	\$88.30	\$240.76	\$2,065.30
28/04/16	\$40.42	\$602.00	\$55.83	\$89.22	\$247.71	\$2,075.81
27/04/16	\$43.83	\$606.57	\$56.63	\$89.17	\$251.47	\$2,095.15
26/04/16	\$43.88	\$616.88	\$56.55	\$89.66	\$253.74	\$2,091.70
25/04/16	\$44.01	\$626.20	\$55.95	\$90.94	\$251.82	\$2,087.79
22/04/16	\$44.08	\$620.50	\$56.19	\$96.00	\$253.75	\$2,091.58
21/04/16	\$43.88	\$631.00	\$55.52	\$95.79	\$248.29	\$2,091.48
20/04/16	\$43.97	\$632.99	\$56.12	\$99.39	\$249.97	\$2,102.40
19/04/16	\$43.85	\$627.90	\$55.72	\$99.99	\$247.37	\$2,100.80
18/04/16	\$43.95	\$635.35	\$55.28	\$96.48	\$253.88	\$2,094.34
15/04/16	\$43.41	\$625.89	\$54.95	\$97.67	\$254.51	\$2,080.73

Daily returns of the five selected stocks and the S&P 500.



The following table (**Table 2**) includes the daily returns of the stocks coming from Table 1.

TABLE 2

Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
2.08%	-0.99%	0.35%	-0.34%	-4.29%	0.06%
-0.89%	-0.88%	0.63%	-0.20%	-2.01%	-0.31%
0.93%	0.34%	1.05%	-0.90%	-0.32%	0.06%
-1.29%	-0.45%	0.17%	2.18%	-2.61%	0.11%
0.62%	-1.29%	-0.39%	0.43%	1.36%	0.15%
0.14%	-0.55%	-0.32%	-0.61%	0.57%	0.18%
-0.60%	-0.74%	-1.54%	-0.95%	3.07%	-0.11%
-0.48%	1.72%	-0.75%	-0.31%	0.95%	0.08%
-0.38%	0.47%	0.71%	0.01%	-0.26%	0.34%
0.82%	1.24%	1.64%	1.01%	5.74%	1.08%
1.02%	-1.40%	2.56%	-0.91%	-2.08%	-0.15%
0.58%	1.20%	-2.04%	1.64%	1.75%	-0.02%
0.31%	0.26%	-0.30%	0.62%	-1.46%	0.31%
-0.29%	-1.34%	-1.74%	-0.64%	-1.65%	-0.76%
0.47%	-0.24%	0.36%	3.14%	-0.14%	0.20%
1.64%	1.34%	0.46%	2.10%	0.77%	0.57%
-0.08%	1.41%	-0.02%	0.63%	1.66%	0.46%
-0.22%	0.85%	-0.74%	1.00%	0.49%	0.08%
1.83%	0.08%	-0.20%	-0.56%	-0.69%	0.05%
-0.06%	-0.76%	0.91%	0.41%	-1.39%	0.17%
-0.53%	-0.58%	-0.89%	-0.48%	0.05%	-0.21%
-0.14%	-0.92%	-0.74%	-1.03%	3.29%	-0.35%
1.68%	1.42%	-0.11%	0.38%	1.03%	0.99%
0.29%	-0.54%	-0.08%	0.55%	-2.80%	0.12%
-1.12%	-0.22%	-0.54%	0.21%	-1.28%	-0.18%
-1.05%	-1.82%	-2.09%	-1.35%	-3.08%	-1.56%
2.01%	-0.47%	-0.10%	0.04%	0.16%	0.14%
-0.53%	-0.06%	0.24%	6.21%	-0.40%	-0.05%
1.11%	1.57%	0.37%	2.01%	1.64%	1.00%
0.99%	1.15%	-0.56%	-0.31%	0.69%	0.13%
-1.47%	-2.59%	-1.59%	-2.99%	-2.26%	-1.46%
-0.23%	-0.79%	-0.87%	-0.17%	-0.46%	-0.04%
-0.86%	-0.25%	-0.63%	-0.12%	2.79%	-0.24%
0.08%	0.47%	-0.15%	2.11%	-0.49%	0.16%
0.20%	0.07%	-1.49%	0.92%	2.79%	0.19%
-0.14%	-0.90%	0.24%	0.31%	6.30%	-0.22%
0.16%	-0.03%	0.64%	-1.61%	1.96%	0.05%
-0.06%	0.85%	0.05%	-1.04%	-1.21%	0.24%
-0.87%	-3.21%	0.28%	0.57%	-3.52%	-0.07%
-1.00%	-2.51%	0.15%	0.45%	0.18%	-0.13%
-0.58%	-0.65%	-0.03%	-3.06%	-2.77%	-0.10%
-0.85%	1.24%	-0.15%	-5.15%	1.24%	0.03%
0.06%	0.09%	1.17%	0.32%	-0.86%	0.29%



-0.08%	1.29%	0.51%	3.22%	4.21%	-0.11%
-0.02%	-0.29%	-0.05%	1.61%	-0.46%	-0.04%
2.83%	0.18%	0.06%	-0.88%	1.42%	-0.02%
1.41%	0.24%	0.50%	-0.28%	-0.91%	0.54%
-0.04%	1.42%	-0.28%	2.81%	2.68%	0.06%
-0.31%	0.82%	-0.09%	-0.44%	-2.54%	-0.01%
1.71%	0.12%	-0.03%	-3.44%	1.34%	0.47%
-0.73%	-0.59%	1.48%	-0.21%	-1.87%	0.19%
0.58%	1.24%	0.44%	0.73%	0.70%	0.73%
-0.17%	-0.24%	-0.25%	-0.49%	3.47%	-0.08%
-0.43%	1.79%	-0.44%	1.86%	0.90%	0.09%
1.04%	1.40%	0.43%	1.18%	1.41%	0.64%
-2.19%	-0.65%	0.48%	-1.15%	-5.74%	-0.94%
0.59%	1.84%	-0.81%	1.07%	-7.52%	0.15%
0.21%	-1.49%	1.22%	-2.35%	-2.52%	0.23%
-0.25%	-0.82%	-1.56%	1.02%	0.24%	0.15%
0.51%	-1.46%	-0.53%	-2.37%	-2.87%	-0.86%
-0.39%	1.38%	0.68%	0.23%	2.42%	0.88%
-0.49%	-1.75%	0.36%	-1.11%	-4.09%	-0.81%
-0.35%	-0.98%	0.25%	-0.85%	-1.57%	0.03%
-0.39%	0.24%	-0.05%	0.92%	0.22%	0.16%
1.43%	-0.09%	-0.27%	-0.30%	1.64%	-0.05%
-0.41%	0.97%	-0.27%	0.24%	1.11%	-0.06%
-0.25%	-0.26%	-0.88%	-0.94%	0.66%	-0.67%
1.40%	0.75%	0.25%	2.90%	-0.43%	0.83%
0.19%	2.41%	-0.03%	0.31%	-1.06%	0.03%
1.00%	-1.27%	-0.69%	0.41%	-1.41%	-0.22%
0.38%	-0.44%	0.03%	-0.50%	1.25%	-0.10%
0.61%	1.63%	0.64%	2.96%	4.61%	0.45%
-0.25%	-1.38%	-0.56%	0.51%	0.47%	-0.10%
1.21%	-3.21%	0.81%	-3.89%	-3.49%	-0.08%
0.34%	0.02%	0.79%	1.81%	2.84%	0.03%
0.43%	0.70%	-0.24%	-0.22%	1.91%	0.16%
-0.56%	-0.83%	-0.82%	-0.51%	1.58%	-0.28%
0.26%	0.46%	-0.64%	-1.04%	2.17%	-0.12%
0.86%	1.08%	0.53%	0.81%	-0.15%	0.37%
0.96%	0.13%	0.42%	3.73%	-0.19%	0.75%
1.46%	-0.21%	-0.74%	1.66%	1.75%	-0.05%
0.65%	0.09%	0.86%	0.67%	3.02%	-0.12%
1.71%	0.24%	0.68%	1.03%	2.59%	0.03%
0.96%	1.32%	0.83%	0.35%	2.11%	0.44%
-0.34%	0.90%	0.69%	-0.12%	2.07%	0.25%
-0.11%	0.09%	1.28%	-0.81%	-2.11%	0.18%
1.31%	1.12%	0.29%	2.78%	-0.15%	0.51%
0.42%	0.14%	-0.31%	-0.57%	-0.71%	0.67%
-0.23%	1.44%	-0.28%	-0.16%	2.25%	0.37%
-1.41%	-2.23%	-0.84%	-4.22%	-3.50%	-1.83%
-0.80%	0.84%	0.42%	1.75%	0.36%	-0.07%



0.18%	-0.35%	1.35%	0.32%	-2.79%	0.48%
0.23%	1.44%	-1.30%	2.47%	0.53%	-0.15%
-1.45%	-0.14%	0.68%	-0.85%	-0.65%	-0.22%
-0.38%	-0.41%	-0.73%	-0.15%	1.23%	0.11%
-0.02%	0.40%	-0.16%	2.68%	4.48%	-0.10%
0.09%	1.58%	-1.27%	-1.60%	-0.38%	0.00%
0.11%	-0.36%	0.06%	-1.77%	4.27%	0.41%
1.97%	-0.37%	1.82%	-1.22%	-5.13%	0.06%
0.27%	-0.63%	0.02%	0.44%	-2.50%	-0.13%
0.28%	-0.14%	-0.13%	-0.49%	-1.23%	0.12%
-0.37%	2.48%	1.14%	2.34%	2.75%	0.17%
-0.02%	0.72%	-0.39%	-1.20%	1.75%	-0.19%
-0.34%	0.99%	1.63%	-0.55%	-0.50%	0.06%
0.09%	0.18%	0.15%	5.73%	-1.16%	-0.05%
-0.84%	0.02%	0.63%	2.27%	1.85%	0.61%
1.37%	0.98%	0.94%	-0.29%	0.79%	1.08%
-1.03%	-0.39%	-0.91%	-0.22%	1.02%	-0.30%
0.89%	0.32%	1.16%	1.05%	-0.99%	0.75%
0.37%	-0.51%	-0.88%	-0.82%	1.74%	-0.17%
0.28%	0.20%	-0.72%	1.08%	-0.40%	-0.29%
1.49%	1.94%	0.64%	1.03%	-0.85%	0.86%
-1.88%	-1.30%	-1.04%	-1.68%	2.38%	-0.68%
-0.23%	-0.68%	-1.03%	-0.73%	-3.92%	-0.38%
-0.02%	-0.52%	-1.13%	0.04%	-1.19%	-0.14%
-0.55%	1.35%	0.23%	-0.56%	3.20%	0.07%
0.37%	-0.38%	-0.81%	-0.87%	1.28%	-0.08%
-0.30%	-1.22%	0.36%	1.00%	1.25%	0.19%
-0.86%	0.27%	-0.90%	-0.05%	-2.91%	-0.31%
-0.65%	1.70%	0.63%	0.34%	1.72%	0.06%
0.14%	0.56%	-1.03%	1.50%	7.01%	-0.16%
-0.31%	1.16%	-0.22%	0.27%	0.14%	-0.23%
-0.27%	0.23%	1.29%	-1.04%	0.19%	0.29%
-0.07%	2.12%	-0.15%	0.27%	-0.03%	0.11%
0.00%	1.08%	1.51%	0.46%	2.64%	0.72%
-0.07%	0.14%	0.08%	2.41%	2.65%	-0.10%
-0.09%	-0.21%	-0.75%	-0.36%	3.24%	-0.08%
-0.09%	-0.08%	0.16%	-0.91%	-0.09%	-0.11%
0.02%	0.57%	-0.85%	1.42%	1.71%	0.19%
-0.40%	-1.62%	-0.98%	0.10%	-4.39%	-1.25%
-0.47%	0.55%	-0.08%	1.31%	0.16%	-0.20%
0.47%	-0.13%	-0.78%	3.72%	-0.21%	-0.13%
-0.75%	0.05%	-0.51%	1.35%	2.44%	-0.16%
1.15%	0.05%	0.56%	0.05%	-0.88%	0.83%
-1.62%	-0.24%	-0.48%	0.38%	4.69%	-0.34%
-0.42%	0.25%	0.16%	4.66%	1.01%	0.04%
0.20%	-0.06%	-0.21%	0.56%	-0.50%	0.33%
0.59%	0.29%	-0.36%	-0.24%	-0.80%	0.08%
0.80%	0.53%	-0.02%	-0.23%	-0.69%	-0.23%



-0.29%	-0.07%	-0.52%	-0.91%	-1.05%	-0.29%
-0.27%	-0.39%	-0.69%	-0.67%	-0.14%	-0.33%
-0.97%	0.11%	0.50%	0.88%	0.43%	0.05%
0.22%	-0.49%	-1.14%	-2.52%	0.18%	-0.59%
1.12%	0.95%	1.10%	6.60%	0.01%	1.36%
-0.84%	-0.43%	-0.13%	0.67%	1.52%	-0.26%
-0.48%	0.40%	0.58%	1.58%	-4.28%	0.10%
0.61%	-0.82%	-0.61%	0.18%	0.39%	0.15%
0.86%	-0.40%	0.30%	-0.97%	-6.62%	0.04%
0.00%	-0.10%	0.66%	-1.28%	-1.41%	-0.11%
0.71%	1.34%	1.45%	0.06%	1.88%	0.60%
1.10%	0.11%	0.37%	-0.84%	1.21%	0.17%
0.45%	0.17%	2.31%	-3.12%	-3.94%	-0.09%
0.80%	0.75%	-9.46%	2.14%	-0.44%	0.50%
0.99%	-0.02%	1.13%	-1.31%	0.14%	0.40%
1.12%	1.09%	0.80%	0.07%	4.14%	0.52%
0.47%	0.74%	0.44%	0.02%	0.01%	0.36%
0.33%	0.20%	0.63%	1.73%	2.68%	0.57%
-1.15%	0.88%	0.05%	0.18%	1.77%	0.07%
1.08%	0.60%	-0.03%	-0.01%	-0.11%	0.02%
-0.82%	-0.32%	-0.06%	0.10%	2.53%	-0.21%
0.07%	-3.61%	1.27%	-0.47%	-0.09%	0.72%
0.99%	0.91%	-0.23%	-0.49%	0.92%	0.06%
1.33%	1.07%	0.02%	-3.58%	-1.07%	0.03%
1.84%	-0.83%	-0.98%	-1.10%	0.52%	-0.09%
0.02%	-0.65%	-0.49%	-0.52%	-0.92%	-0.60%
0.10%	-0.40%	-1.23%	7.64%	0.17%	-0.09%
1.60%	0.31%	0.46%	-0.96%	-0.77%	-0.07%
0.00%	1.70%	0.34%	2.51%	-0.06%	0.80%
-0.07%	0.56%	0.02%	1.49%	2.26%	0.65%
-0.30%	1.17%	-1.59%	1.98%	1.70%	-0.27%
0.15%	-0.09%	0.38%	-0.12%	0.40%	0.34%
-0.89%	0.19%	0.08%	-1.15%	2.24%	-0.36%
-0.34%	-0.28%	0.27%	-0.39%	1.17%	0.18%
-0.07%	-0.91%	-0.44%	1.98%	-0.92%	-0.30%
0.51%	0.43%	0.15%	-1.55%	3.49%	0.18%
-0.88%	1.81%	-1.05%	-1.07%	-0.06%	-0.21%
-0.51%	0.39%	-0.37%	-2.02%	-0.06%	0.28%
1.34%	-0.13%	1.23%	2.22%	-0.61%	0.00%
-0.10%	0.12%	-0.65%	0.35%	0.99%	-0.36%
2.68%	1.97%	1.83%	1.08%	0.99%	0.35%
0.86%	3.03%	-0.56%	1.28%	-0.11%	-0.08%
0.79%	0.46%	1.30%	3.17%	4.51%	0.57%
1.65%	0.51%	-0.29%	1.09%	1.53%	0.85%
0.26%	-2.02%	-0.29%	-0.76%	-0.46%	-0.46%
0.24%	-0.91%	-0.58%	0.10%	-2.33%	-0.03%
-0.99%	0.09%	-1.24%	-1.32%	0.10%	-0.84%
0.47%	1.41%	0.44%	-0.11%	2.86%	0.22%



0.34%	-0.75%	0.27%	0.10%	2.32%	0.13%
0.13%	-0.55%	-0.65%	-1.15%	0.36%	-0.19%
0.13%	-0.08%	0.09%	1.08%	-0.52%	-0.25%
-0.39%	0.68%	0.09%	-2.03%	2.95%	0.36%
0.63%	1.08%	0.36%	-1.96%	0.12%	0.20%
-2.16%	-0.43%	0.17%	1.12%	2.45%	-0.18%
0.28%	-1.02%	0.27%	-1.40%	-0.56%	0.39%
-1.58%	-0.72%	-0.45%	-1.44%	0.27%	-0.82%
0.61%	1.85%	1.05%	2.16%	2.93%	0.65%
0.00%	-1.12%	-0.32%	-0.41%	0.13%	-0.11%
1.34%	0.17%	0.02%	1.27%	-0.06%	0.59%
0.52%	-0.40%	1.38%	-11.71%	-0.45%	0.22%
0.16%	0.74%	1.12%	-0.19%	3.85%	1.31%
-0.03%	0.70%	-0.03%	3.80%	-0.51%	0.34%
1.39%	2.54%	0.73%	-0.27%	2.89%	0.58%
0.79%	-0.45%	-0.56%	-0.64%	-0.23%	0.04%
-1.24%	-0.93%	1.22%	-2.70%	-4.05%	-0.35%
-1.72%	-1.58%	0.08%	2.18%	-0.09%	-0.27%
-0.03%	-0.56%	-0.05%	-2.19%	-3.40%	0.13%
-1.08%	-1.76%	-1.77%	0.44%	-0.27%	-0.53%
0.46%	0.03%	0.17%	0.23%	1.80%	0.39%
2.28%	-0.67%	0.51%	3.23%	1.03%	0.08%
-4.26%	0.68%	0.13%	0.74%	3.54%	0.22%
-0.20%	2.58%	0.02%	5.30%	-0.27%	0.74%
-1.37%	0.50%	-0.50%	2.09%	-1.95%	-0.24%
1.10%	1.32%	0.20%	4.37%	2.54%	0.47%
0.35%	0.44%	-0.78%	-0.35%	0.09%	-0.16%
1.54%	3.31%	0.23%	2.75%	1.27%	0.75%
-2.37%	-2.74%	1.77%	-0.55%	-3.84%	-0.01%
-1.16%	-0.45%	0.17%	-0.38%	1.72%	-0.14%
1.34%	-3.90%	3.67%	-2.93%	-2.51%	0.19%
0.60%	-2.04%	2.37%	1.34%	-2.54%	1.10%
-0.08%	0.36%	0.37%	-1.36%	0.89%	0.38%
1.95%	3.88%	3.26%	-0.20%	1.38%	2.20%
1.83%	-1.57%	-1.33%	0.58%	1.66%	-0.17%
-0.83%	0.19%	-4.04%	-9.78%	-0.32%	-0.44%
-0.90%	-2.56%	-0.21%	-1.76%	-1.46%	-0.65%
-0.49%	-0.56%	-1.67%	3.82%	-3.57%	-0.68%
-0.76%	1.72%	0.68%	0.39%	-1.13%	-0.01%
-1.88%	-5.27%	-0.23%	0.00%	-2.00%	-0.31%
0.82%	-0.52%	0.51%	-1.65%	0.87%	-0.30%
-0.57%	-1.52%	0.92%	0.19%	-0.05%	-0.17%
-0.55%	-0.35%	0.38%	-1.28%	-0.21%	-0.38%
-0.22%	2.31%	0.53%	1.59%	1.33%	0.47%
-0.59%	1.06%	-0.12%	-0.76%	0.50%	-0.01%
1.81%	-0.91%	-1.06%	0.50%	-2.22%	-0.14%
-2.86%	0.00%	0.36%	2.70%	2.22%	0.22%
1.42%	0.58%	0.33%	-0.13%	2.62%	0.61%



-0.49%	-1.22%	0.72%	-0.29%	-1.31%	-0.30%
-0.46%	-0.77%	0.45%	-1.68%	-1.88%	0.02%
0.00%	-0.58%	-1.42%	-1.55%	-0.63%	-0.31%
-0.44%	0.37%	0.96%	-1.31%	0.70%	0.11%
-5.53%	-1.28%	-0.96%	-0.99%	-0.42%	-1.25%
1.23%	0.27%	0.63%	1.70%	2.18%	0.46%
0.00%	-0.27%	0.18%	-0.75%	-2.21%	-0.33%
0.54%	-0.32%	0.08%	-0.20%	-3.64%	0.05%
1.51%	1.23%	1.38%	1.61%	-1.41%	0.43%
-1.06%	-0.32%	0.27%	-2.96%	-1.08%	-0.50%
0.61%	-0.07%	-0.71%	1.89%	4.63%	-0.33%
2.03%	0.99%	1.60%	-3.20%	1.65%	0.79%
-2.03%	0.04%	-1.87%	-1.06%	-2.74%	-0.94%
-0.09%	1.53%	1.68%	0.91%	0.22%	0.53%
1.55%	2.10%	0.45%	-0.07%	-1.53%	0.64%
-1.22%	-0.82%	-0.82%	-1.31%	0.74%	-0.86%
-0.07%	0.13%	-0.44%	-0.15%	0.49%	-0.58%
0.71%	1.88%	1.54%	-0.69%	0.59%	0.65%
0.81%	1.21%	0.43%	-0.47%	0.28%	1.09%
-0.24%	0.66%	0.00%	-0.45%	-0.83%	0.03%
-0.45%	-0.44%	-0.10%	-4.34%	0.46%	0.00%
1.81%	1.14%	-1.18%	-0.10%	2.45%	-0.38%
0.76%	1.12%	0.87%	1.32%	2.02%	1.01%
0.42%	0.01%	-0.26%	3.36%	0.18%	-0.06%
-1.90%	-1.37%	-1.30%	-0.29%	-1.14%	-1.49%
0.99%	1.48%	0.54%	5.53%	1.95%	1.46%
-2.03%	-3.10%	-0.63%	2.71%	-1.48%	-2.48%
-0.12%	-0.05%	-0.56%	1.50%	-2.18%	-0.22%
-0.62%	-0.56%	-0.13%	1.67%	-0.55%	-0.01%
0.17%	2.10%	-0.69%	0.44%	2.52%	0.30%
-0.50%	0.24%	0.75%	-0.85%	-1.50%	0.42%
0.66%	0.19%	-0.70%	4.22%	-5.45%	0.00%
-1.91%	0.21%	0.32%	-0.92%	0.32%	-0.24%
-0.98%	-0.48%	0.35%	-0.63%	-1.81%	-0.20%
0.63%	0.30%	0.69%	0.96%	-2.20%	0.52%
0.33%	1.28%	0.14%	-0.73%	-0.44%	-0.16%
-0.77%	0.26%	0.05%	-0.33%	-0.75%	-0.14%
-1.68%	-0.68%	-0.19%	-5.96%	-0.99%	-0.53%
-0.61%	0.39%	0.05%	-0.73%	0.85%	0.19%
-0.16%	0.29%	0.22%	-0.29%	-0.92%	-0.06%
-0.27%	-0.94%	-0.20%	-2.33%	0.66%	-0.14%
-0.72%	-0.02%	-0.08%	-1.64%	0.12%	0.22%
-0.54%	0.08%	-0.47%	-0.09%	-0.17%	0.19%
-0.51%	-0.58%	0.15%	-2.26%	-0.88%	-0.55%
0.24%	-0.53%	0.63%	3.92%	-0.01%	0.28%
-0.02%	0.17%	-0.56%	-2.88%	0.31%	-0.08%
0.53%	0.35%	0.30%	3.04%	-0.33%	0.47%
-0.60%	0.03%	-0.46%	-0.60%	-1.51%	-0.29%



0.13%	0.23%	-0.20%	0.14%	1.28%	0.04%
-0.53%	0.08%	0.49%	2.57%	-1.70%	-0.09%
1.00%	0.68%	2.55%	-0.76%	-0.25%	0.86%
-0.31%	0.81%	-0.85%	0.60%	2.11%	0.02%
-0.27%	-0.78%	7.06%	0.76%	-0.62%	0.31%
-0.49%	-0.94%	-0.13%	-1.04%	-1.23%	-0.64%
1.20%	1.17%	-0.42%	-0.02%	-2.06%	-0.13%
0.67%	0.82%	-0.64%	-6.63%	1.80%	0.16%
1.77%	2.14%	0.31%	2.34%	0.92%	0.16%
0.16%	0.15%	-0.13%	-1.20%	-0.45%	-0.12%
0.44%	-0.55%	0.05%	6.04%	-0.22%	0.03%
0.55%	-0.71%	0.07%	1.70%	3.42%	-0.30%
0.30%	0.06%	0.61%	1.98%	0.80%	0.45%
0.91%	-0.17%	-0.51%	-0.31%	-3.50%	-0.36%
2.01%	0.78%	0.20%	-1.05%	1.37%	0.43%
-0.69%	0.53%	-0.18%	-1.55%	-0.44%	-0.14%
-0.02%	0.09%	0.22%	4.70%	2.62%	0.24%
-0.43%	-0.78%	0.07%	0.22%	-0.51%	-0.09%
0.74%	-0.19%	1.09%	-3.06%	-0.45%	0.52%
-1.18%	-0.75%	-0.09%	-1.69%	-0.95%	0.01%
0.83%	-0.74%	1.06%	2.52%	-0.06%	0.70%
0.55%	1.06%	0.53%	4.73%	3.62%	0.34%
1.27%	1.25%	2.27%	0.88%	0.39%	1.51%
1.29%	-0.14%	1.09%	-1.08%	0.70%	-0.09%
3.46%	1.30%	0.10%	0.93%	0.21%	0.53%
-0.25%	0.33%	-3.19%	-2.97%	-1.17%	-0.69%
0.58%	1.40%	-0.04%	1.26%	1.97%	0.19%
1.90%	0.00%	2.74%	-0.70%	0.99%	1.35%
2.65%	1.07%	3.24%	3.34%	4.08%	1.69%
1.64%	2.37%	2.09%	0.67%	1.62%	1.76%
-2.56%	-1.09%	-3.88%	-5.11%	2.76%	-1.83%
-4.44%	-3.25%	-7.57%	-9.71%	-1.67%	-3.66%
2.27%	1.60%	1.90%	0.97%	-0.13%	1.33%
2.64%	-0.73%	-0.20%	-1.08%	-11.04%	-0.17%
-0.05%	0.25%	0.11%	1.50%	-0.04%	0.27%
0.96%	1.07%	0.58%	-2.85%	1.94%	0.58%
-0.29%	-1.56%	-0.39%	1.95%	-1.14%	-0.33%
0.19%	0.45%	0.11%	-0.39%	0.11%	0.31%
-0.61%	-0.70%	-0.78%	0.06%	1.27%	-0.18%
-0.53%	0.57%	-0.76%	1.38%	-1.34%	-0.18%
-1.42%	-0.37%	-1.08%	-0.30%	-0.42%	-0.81%
-1.22%	-1.35%	-2.00%	-0.34%	-4.72%	-0.92%
-0.10%	0.14%	-1.45%	-0.52%	-2.65%	-0.17%
-0.05%	0.40%	-0.25%	0.21%	1.36%	0.33%
-0.61%	-0.41%	-0.40%	2.42%	5.15%	0.13%
-0.03%	0.16%	0.05%	0.19%	0.77%	0.49%
-0.89%	-0.37%	-1.01%	-0.92%	0.01%	-0.29%
0.08%	1.22%	0.17%	2.73%	-0.27%	0.28%



-0.33%	-0.46%	-0.24%	0.57%	-1.66%	0.11%
0.84%	1.47%	-0.76%	0.23%	0.09%	-0.10%
1.05%	-0.37%	0.98%	1.41%	-0.93%	0.43%
0.54%	0.92%	-0.52%	-2.12%	2.49%	-0.02%
1.83%	0.59%	0.60%	3.61%	0.76%	0.70%
1.62%	1.06%	1.40%	1.88%	0.78%	1.36%
-0.61%	-0.86%	-0.12%	2.79%	-1.86%	-0.21%
0.96%	0.61%	1.08%	0.57%	2.33%	0.60%
-1.36%	0.15%	-0.62%	0.00%	1.90%	-0.37%
0.11%	0.31%	2.34%	-3.09%	3.13%	0.02%
-1.42%	-2.19%	0.22%	0.38%	-1.76%	-0.95%
1.71%	0.10%	-0.69%	1.03%	0.33%	0.97%
-1.06%	-1.12%	-1.13%	-3.79%	0.16%	-0.85%
-0.03%	0.66%	0.59%	0.49%	-0.81%	-0.02%
-0.24%	1.43%	-0.69%	-1.14%	0.13%	-0.96%
0.32%	3.37%	1.97%	4.80%	-0.11%	1.24%
0.03%	0.86%	0.38%	-1.76%	-2.84%	0.08%
-1.39%	2.23%	0.42%	1.76%	1.59%	0.32%
1.04%	-1.78%	-0.07%	-1.78%	-5.08%	-0.02%
-1.17%	-0.06%	-1.97%	-3.47%	-4.29%	-0.60%
-0.78%	-1.85%	-1.16%	0.18%	-4.00%	-0.87%
-0.13%	3.61%	1.37%	6.55%	0.43%	0.78%
-3.83%	9.14%	-0.02%	-1.04%	-2.85%	-0.51%
-8.10%	-0.76%	-1.42%	0.06%	-1.51%	-0.93%
-0.11%	-1.69%	0.14%	-0.55%	-0.90%	0.16%
-0.30%	-1.50%	1.07%	-1.42%	0.76%	0.19%
-0.16%	0.91%	-0.43%	-5.41%	-0.76%	-0.18%
0.45%	-1.68%	1.20%	0.22%	2.18%	0.00%
-0.20%	-0.31%	-1.07%	-3.69%	-0.67%	-0.52%
0.27%	0.81%	0.72%	-0.60%	1.05%	0.08%
-0.23%	-1.18%	0.79%	3.57%	-2.60%	0.31%
1.24%	1.50%	0.60%	-1.23%	-0.25%	0.65%

Outputs of Volatility, Returns, Betas and Expected Returns



The source of this data (**Table 3**) is the Portfolio Optimization Software by Prof. Mazin A. M. Al Janabi, Ph.D. which calculations are detailed in the Methodology section of this project.

TABLE 3

Daily Volatility					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
1.169%	1.278%	1.211%	2.215%	2.191%	0.575%
Annual Volatility					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
18.554%	20.288%	19.225%	35.161%	34.779%	9.131%
Calculation of Maximum Return					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
3.46%	9.14%	7.06%	7.64%	7.01%	2.20%
Calculation of Minimum Return					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
-8.10%	-5.27%	-9.46%	-11.71%	-11.04%	-3.66%
Calculation of Average Daily Return					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
0.05%	0.12%	0.03%	0.11%	0.09%	0.05%
Calculation of Average Annual Return					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
19.14%	42.50%	10.02%	39.67%	32.35%	18.55%
Calculation of Beta					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
1.17	1.06	1.20	1.38	1.06	1.00
Calculation of Expected Returns with CAPM					
Abbott	Amazon	AIG	Wynn	Tesla	S&P 500
11.50%	10.52%	11.74%	13.32%	10.54%	10.00%

Rm	10.0%
Rf	1.2%

Dividend Discount Model



In this section, we will show the results of the calculation of the expected price of the five stocks in our portfolio. For Wynn, Abbott and AIG, we have performed Dividend Discount Models calculations, mainly DDM Constant growth rate and DDM perpetual growth rate and for Amazon and Tesla we have performed P/E Ratio and P/S ratio expected price analyses because both stocks have not paid dividends yet, and Tesla is currently reporting losses in their Income Statement.

Methodology

The formulas that we used for the calculation are the following:

For DDM Constant growth rate

$$P_0 = \frac{D_0(1+g)}{k-g} \left[1 - \left(\frac{1+g}{1+k} \right)^T \right] \quad \text{if } k \neq g$$

For DDM perpetual growth rate

$$P_0 = \frac{D_0 \times (1+g)}{k-g} = \frac{D_1}{k-g} \quad (\text{Important : } g < k)$$

For P/E ratio share price analysis

Expected stock price = historical P/E ratio × projected EPS

For P/S ratio share price analysis

Expected stock price = historical P/S ratio × projected SPS

Wynn Resorts, Limited

EPS: 0.75

Payout ratio: 74.91%

P/E ratio: 54.39

ROE: 192.85%

Expected G next 5 years: 8%

Expected G: -14.86%

Discount rate: 13.32%

Wynn Resorts share price analysis:

Current share price:	\$	145.34
Last paid dividend estim.	\$	0.56
DDM Perpetual Growth:	\$	11.41
P/E Ratio price estimation:	\$	60.53

The share price appears overvalued according to DDM calculations and P/E price analysis.

Abbott Laboratories

EPS: 0.65

Payout ratio: 164.06%

P/E Ratio: 77.70

ROE: 4.05%

Expected G next 5 years: 11.85%

Expected G: -9.79%

Discount rate: 11.50%

Abbott share price analysis:

Current share price:	\$	55.48
Last paid dividend estim.	\$	1.07
DDM Constant Growth (5Y):	\$	5.38
P/E Ratio price estimation:	\$	56.49

The share price appears overvalued according to DDM calculations and undervalued according to P/E price analysis.

American International Group (AIG)



EPS: 1
Payout ratio: 1066.67%
P/E ratio: -235.82
ROE: 0.34%
Expected G next 5 years: 149.54%
Expected G: 7.93%
Discount rate: 11.74%

AIG share price analysis:

Current share price:	\$	64.85
Last paid dividend estim.	\$	10.67
DDM Constant Growth (5Y):	\$	1,053.63
DDM Perpetual Growth:	\$	302.17

The share price appears under valued according to DDM calculations.

Amazon
Historical P/E: 247.31
Current EPS: 1.54
Estimated G: 45.52%

Amazon share price analysis:

Current share price:	\$	972.43
Last paid dividend estim.	NA	
DDM:	NA	
P/E Ratio price estimation:	\$	554.22

The share price appears overvalued according to P/E ratio share price estimations.

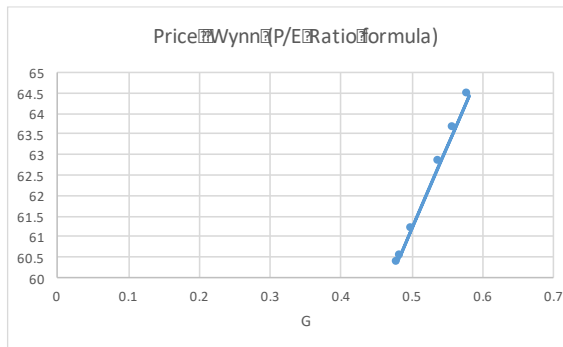
Tesla
Historical P/Sales: 5.41
Current SPS: 63.77
Estimated G: 69%

Tesla share price analysis:

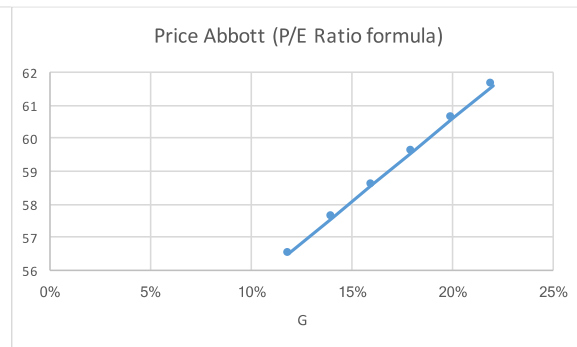
Current share price:	\$	326.17
Last paid dividend estim.	NA	
DDM:	NA	
P/S Ratio price estimation:	\$	583.04

The share price appears undervalued according to P/S share price estimations.

If we change by 50 basis points the G or the K inputs of the DDM we would get different results in the expected share prices, so we have developed an analysis which is summarized in **Graph 1 and 2** for modifications in G to stocks in which we estimated the price using the principles of P/E ratio (Abbott and Wynn as we get similar behavior in Amazon and Tesla) and in **Graph 3 and 4** we see AIG behavior when we change G or K respectively.

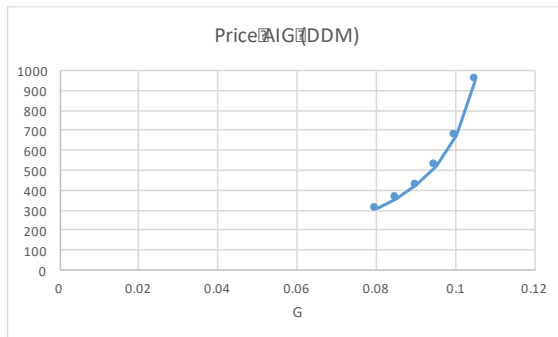


Graph 1

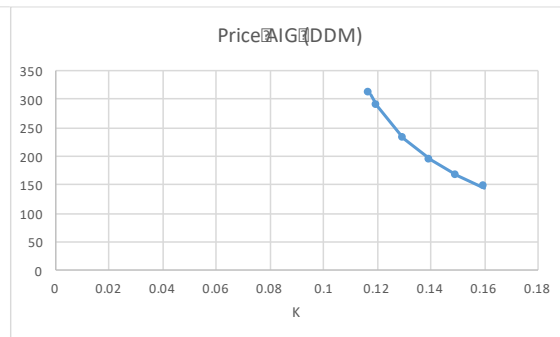


Graph 2

We see a linear change in price when we analyze through P/E expected stock price calculations.



Graph 3



Graph 4

Then we see that for DDM the change in price is not linear, it is a curve that shows that as soon as we increase G, the price of the stock increases more and more but when we increase K, the CAPM expected return, the stock price goes down... although not at the same speed. This is because in the DDM we use CAPM as the discount rate.

Conclusions of Dividend Discount model



The DDM showed us that there is no simple logic in the financial market, for example Tesla, a company that has not paid dividends yet, and it is reporting losses every quarter, has a high price, high beta, high return and its price has grown so much in the last years. Maybe none of our calculations make sense when we compare the calculated stock price with the current stock price, but this confirms what theory mentions, financial markets are not rational. We did approach to Abbott stock price, so we can assume that it is correctly priced although we encounter some minimal differences.

We can conclude that it is not easy to value stocks as there can be other explanations for the change in prices other than dividends and P/E or P/S ratio. However, as we did analyze in the sensitivity DDM chart, any small change in the expected growth or CAMP expected return, will tend to move the price of the stocks but not proportionally,