NOVA SCHOOL OF BUSINESS & ECONOMICS

Portfolio Theory

Case Study 2

Group #005

Student number	Name
31877	Afonso Oliveira
32135	David Issá
32243	Edgar Pon
32170	Miguel Frade
32078	Nuno Vilaça

Students involved

Afonso Oliveira

Being on the 2nd year student of his Bachelor's Degree on Economics, Afonso is a strong football lover.

David Issá

Being on the 2nd year student of his Bachelor's Degree on Economics, David is a pro surfer who never misses a good wave.

Edgar Pon

Being on the 2nd year student of his Bachelor's Degree on Management, Edgar is passionate about the stock market.

Miguel Frade

Being on the 2nd year student of his Bachelor's Degree on Economics, Miguel loves to meet and interact with new people.

Nuno Vilaça

Being on the 2nd year student of his Bachelor's Degree on Management, Nuno is obsessed with growth opportunities.

Introduction

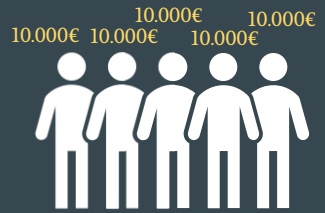
Relevant Steps

1. Individual stock selection and creation of a group's portfolio
2. Historical data collection from *Bloomberg*, regarding each of the securities
3. Group's portfolio performance analysis, overviewing specific different points

Data Frequency

- Daily
  - Investment period: 25/09/2018 – 29/10/2018
  - Previous 12 months: 25/09/2017 – 24/09/2018
- Monthly: 30/09/2013 – 31/08/2018

Money invested



Total investment = 50.000 €

Investment description

Stocks	Investors	Amount
US Generic Govt 12 Month Yield		€6 000,00
Amazon.com Inc.		€8 000,00
Apple Inc.		€8 000,00
Bank of New York Mellon Corporation		€500,00
Berkshire Hathaway Inc. Class B		€2 500,00
BlackRock Inc.		€2 000,00
Boeing Company		€3 500,00
Caterpillar Inc.		€1 000,00
Delta Air Lines Inc.		€200,00
Electronic Arts Inc.		€3 000,00

Stocks	Investors	Amount
Facebook Inc. Class A		€2 500,00
Goldman Sachs Group Inc.		€2 000,00
McDonald's Corporation		€2 000,00
MetLife Inc.		€500,00
Netflix Inc.		€3 000,00
Occidental Petroleum Corporation		€1 000,00
Twitter Inc.		€1 000,00
Walmart Inc.		€1 000,00
Walt Disney Company		€2 000,00
WestRock Co.		€300,00

Executive Summary

In September 2018, each member of our group had the opportunity to invest 10 000€ on securities from the S&P500. With different market outlooks, we picked a total of 19 assets, from 7 different industries, and a risk-free asset, forming a diversified portfolio.

After extracting all the historical data from bloomberg, we started by doing a lot of computations with the objective of understanding better our portfolio and to compare it with the market and the tangency one. From that, we understood that our portfolio followed the path of the recent behavior of the market as it presented losses (annualized loss of 47,76%). So, it's reasonable that we should have chosen a more diversified portfolio in order to mitigate its specific risk (0,58%) that was very high. Because of this, it's obvious that our portfolio was not the tangency one (the portfolio that maximizes the sharpe ratio). That particular one presented a very low value of specific risk (0,02%) and a higher return.

Finally, we were asked to compute the appropriate discount to use if we decide to do a project in a specific industry, which means that we were asked to calculate the WACC to this particular case. In order to do that we needed to find more important information about this particular industry, namely the D/E ratio of each stock and its risk-free rate. After we get this information in Yahoo Finance, we could achieve a final value of 9,50%.

In the end, however, the main conclusion to which we arrived is that the month in which we chose to invest was not ideal, as the risks we subjected ourselves, despite optimistic outlooks, revealed unexpected losses.

Assumptions

- We assume that the risk free used will be the most recente one (2,63%)
- MRP=6%, as it is the historial market risk premium
- CAPM theory is holded through all of the work

For the WACC:

- Both Beta Leverage and Debt to Equity were obtained through the mean of the corresponding values of the invested securities of the sector
- The Project periode is 10 yars, making iot unreasonable to use the previous risk free rate. Thus, we chose the US Government Bond with 10 year yield.

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A. Descriptive analysis *(daily info)*

B. Securities Betas & Returns

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F. Optimal Portfolio

G. WACC of the project

H. Further analysis

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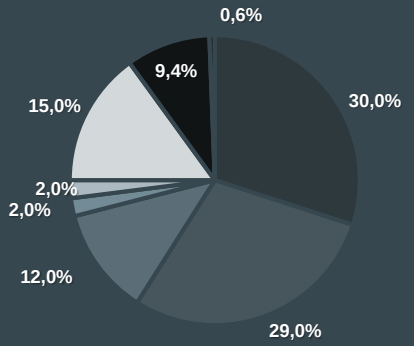
Our portfolio is composed by one **risk-free asset** and **19 securities** from seven different sectors



Weight around 71% of the total portfolio

The three main securities in our portfolio

Stocks	Weight
US Generic Govt 12 Month Yield	12 %
Apple Inc.	16 %
Amazon.com Inc.	16 %
...	…

Descriptive Analysis

The methodology

Annualised Monthly Return (AMR)

$$AMR = (1 + HPR)^{\frac{260}{24}} - 1$$

$$\textbf{Return} = \frac{P_{final} - P_{initial}}{P_{initial}}$$

$$\textbf{HPR} = (1 + r_1) \times \cdots \times (1 + r_T) - 1$$

$$\textbf{Daily return} = r = \frac{P_{final\ daily} - P_{initial\ daily}}{P_{initial\ daily}}$$

Annualised Volatility = std deviation

$$\textbf{Std Dev} = \sqrt{var} \times \sqrt{nr\ of\ days\ traded}$$

$$\textbf{var} = transpose\ weight \times cov\ matrix \times weights$$

260

given that the Stock Market is only open on working days

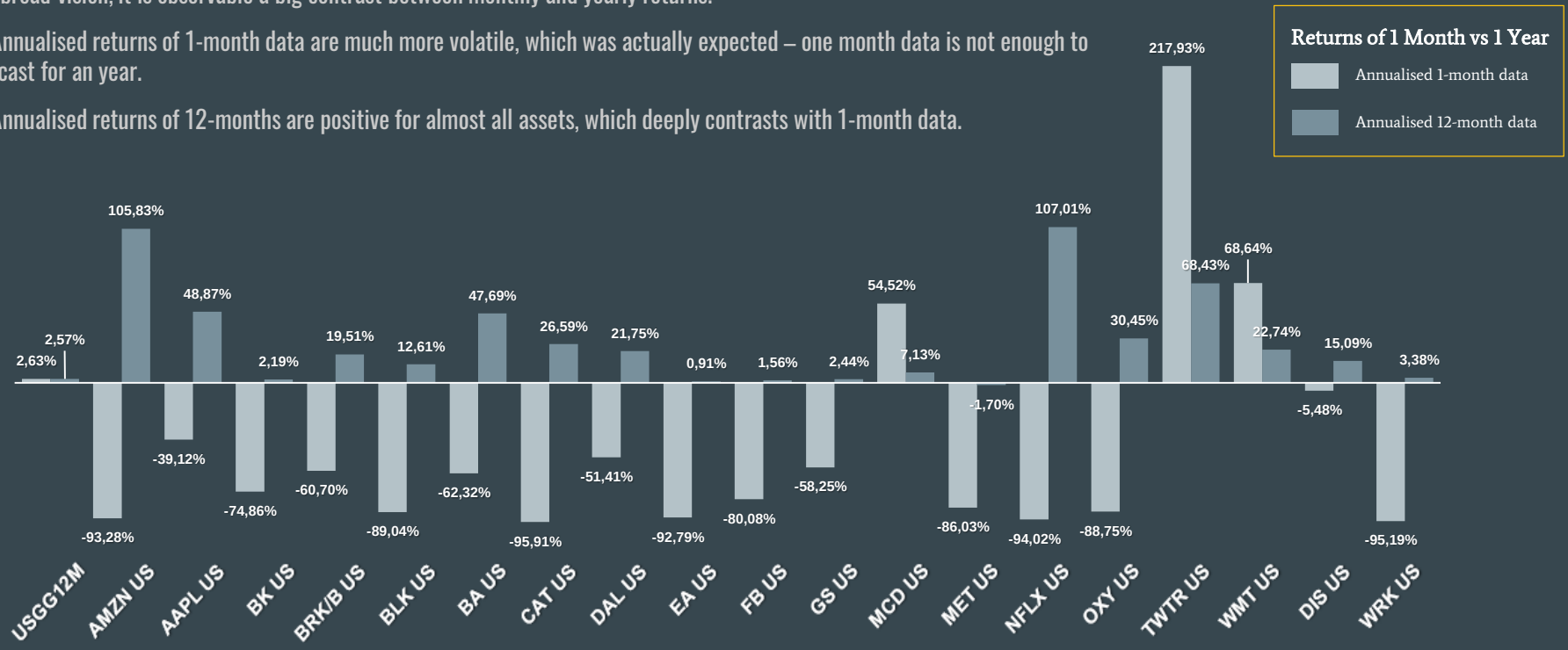
Annualized returns presented some opposite values along the stocks

In a broad vision, it is observable a big contrast between monthly and yearly returns.

Graph 01

► Annualised returns of 1-month data are much more volatile, which was actually expected – one month data is not enough to forecast for an year.

► Annualised returns of 12-months are positive for almost all assets, which deeply contrasts with 1-month data.



The majority of the annualized returns were negative

One month

Stocks	Annualised Return monthly	
US Generic Govt 12 Month Yield	2,63 %	*
Amazon.com Inc.	-93,28 %	
Apple Inc.	-39,12 %	
Bank of New York Mellon Corporation	-74,86 %	
Berkshire Hathaway Inc. Class B	-60,70 %	
BlackRock Inc.	-89,04 %	
Boeing Company	-62,32 %	
Caterpillar Inc.	-95,91 %	
Delta Air Lines Inc.	-51,41 %	
Electronic Arts Inc.	-92,79 %	
Facebook Inc. Class A	-80,08 %	
Goldman Sachs Group Inc.	-58,25 %	
McDonald's Corporation	54,52 %	*
MetLife Inc.	-86,03 %	
Netflix Inc.	-94,02 %	
Occidental Petroleum Corporation	-88,75 %	
Twitter Inc.	217,93 %	*
Walmart Inc.	68,64 %	*
Walt Disney Company	-5,48 %	
WestRock Co.	-95,19 %	

Assuming that the stocks performed the same way **as the month**, we would obtain **extremely negative returns** for our portfolio. This results due to the general poor performance of the market, which magnifies the same performance along the year.

* During the investment period, only 4 of the 20 securities had a positive return. Obviously, it is unusual to have *McDonald's* (54,52%) and *Walmart* (68,64%) having this performance along the year, as they have been public for a long time.

On the other hand, the other 16 securities that fell sharply demonstrated an amplified pattern. Most of them would have a **decline** around **90%** during the year, which means that their value would have decreased a lot.

In contrast, the majority of the annualized returns were positive in the previous year

Previous 12 months

Stocks	Annualised Return yearly
US Generic Govt 12 Month Yield	2,57 %
Amazon.com Inc.	105,83 %
Apple Inc.	48,87 %
Bank of New York Mellon Corporation	2,19 %
Berkshire Hathaway Inc. Class B	19,51 %
BlackRock Inc.	12,61 %
Boeing Company	47,69 %
Caterpillar Inc.	26,59 %
Delta Air Lines Inc.	21,75 %
Electronic Arts Inc.	0,91 %
Facebook Inc. Class A	1,56 %
Goldman Sachs Group Inc.	2,44 %
McDonald's Corporation	7,13 %
MetLife Inc.	-1,70 %
Netflix Inc.	107,01 %
Occidental Petroleum Corporation	30,45 %
Twitter Inc.	68,43 %
Walmart Inc.	22,74 %
Walt Disney Company	15,09 %
WestRock Co.	3,38 %

With **yearly data**, it makes sense to observe **positive returns**, since the market demonstrated a bullish trend before the investment period, even if there was a sharp decline in the beginning of the year.

Most notable yearly returns come from *Amazon*, *Netflix* and *Twitter* – stocks that have been performing the better in recent times.

It is important to note that *McDonald's* and *Walmart* - the stocks that had a positive annualized return in the monthly data - **did not verify** such a high return in the previous 12 months period.

Regarding the Portfolio as a whole, it presents contrasts values for both periods

One month

Investment Period

Annualised Realised Return	Annualised Volatility
- 47,76 %	27,32 %

Most of the stocks were heavily affected by some macroeconomic events, such as

- record-breaking treasury yields,
- trade war tensions,
- interest rates,
- Brexit.

If we had held our portfolio during the year, we would have a **loss of 47,76%** of its total value.

Also, since the one month period had so bad performance, the returns of the stocks were more dispersed, leading to an **annualized volatility of 27,32%**.

Previous 12 months

Previous 12 months

Annualised Realised Return	Annualised Volatility
40,49 %	14,40 %

The one year period is more stable and balanced, which also followed a bullish trend along the year.

The annualized return applying the same weights would lead to a 40,49% return .

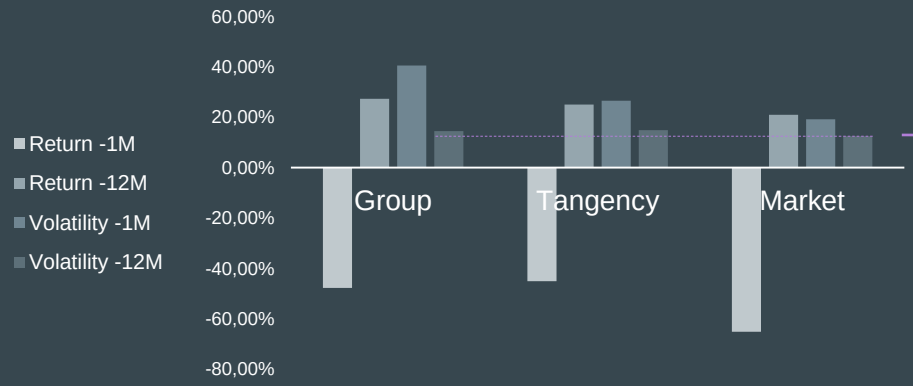
The annualized volatility of one year is lower than the one month data as the duration of the observation **smoothens the fluctuations** along the year, even if there was a sharp decline in the beginning of the year (Jan-Feb).

The annualized return and volatility of each composition had a similar pattern between them

	Group	Tangency	Market
Annualized Return – 1 M	-47,76%	-45,14%	-65,25%
Annualized Volatility – 1M	27,32%	24,97%	20,86%
Annualized Return – 12 M	40,49%	26,44%	19,19%
Annualized Volatility – 12M	14,40%	14,88%	12,41%

The highest loss, followed by our group's portfolio and the Tangency Portfolio.

► In a hypothetical scenario - that we hold the portfolio for the next whole year - the tangency portfolio would have outperformed the market proxy. The same happens with the 12 month period before the investment.



The annualized volatility for the proxy is lower than the other two because the S&P is much broader portfolio, making it have theoretically **almost zero specific risk**.

► The tangency portfolio has a higher volatility in both the periods analysed, since it is only composed by 19 of the 500 securities.

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The Securities Betas varied between 0,51 and 0,71, excluding the risk free asset

30/09/2013 – 31/08/2018

Stocks	Betas
US Generic Govt 12 Month Yield	0,00
Amazon.com Inc.	1,58
Apple Inc.	1,36
Bank of New York Mellon Corporation	1,05
Berkshire Hathaway Inc. Class B	0,90
BlackRock Inc.	1,54
Boeing Company	1,41
Caterpillar Inc.	1,39
Delta Air Lines Inc.	1,00
Electronic Arts Inc.	0,59
Facebook Inc. Class A	0,41
Goldman Sachs Group Inc.	1,27
McDonald's Corporation	0,67
MetLife Inc.	1,23
Netflix Inc.	0,89
Occidental Petroleum Corporation	0,58
Twitter Inc.	0,72
Walmart Inc.	**0,51**
Walt Disney Company	1,30
WestRock Co.	**1,75**

With the objective of analysing whether there was a better way to allocate our money, we calculated the betas for each of the securities by its own formula:

$$\beta_i = \frac{Cov(r_i, r_M)}{Var(r_M)}$$

These betas represent the systematic (market) risk of those stocks, giving us the responsiveness of the stocks to changes in the market portfolio.

The one with the **lowest value** - it is a company that goes from grocery and entertainment to sporting goods and crafts. Consequently, as it provides a lot of different necessary goods, the company is less affected by the market. Everyone needs to buy things from this company and, so, no matter the period we are going through, the company has a lot of customers.

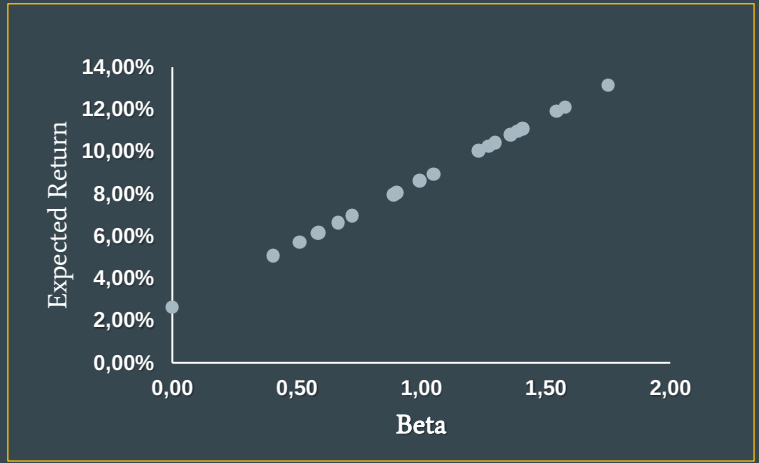
The one that presents the **highest beta** - this might be explained by some factors as the recent problem with trade boards (with China in particular), some concerns about mergers, asset disposition and weather conditions (given that this company depends a lot on this).

The expected returns varied between 3,63% and 13,13%

30/09/2013 – 31/08/2018

Stocks	Expected Return
US Generic Govt 12 Month Yield	2,63 %
Amazon.com Inc.	12,10 %
Apple Inc.	10,79 %
Bank of New York Mellon Corporation	8,92 %
Berkshire Hathaway Inc. Class B	8,05 %
BlackRock Inc.	11,90 %
Boeing Company	11,07 %
Caterpillar Inc.	10,96 %
Delta Air Lines Inc.	8,60 %
Electronic Arts Inc.	6,16 %
Facebook Inc. Class A	5,06 %
Goldman Sachs Group Inc.	10,26 %
McDonald's Corporation	6,63 %
MetLife Inc.	10,02 %
Netflix Inc.	7,97 %
Occidental Petroleum Corporation	6,14 %
Twitter Inc.	6,97 %
Walmart Inc.	5,71 %
Walt Disney Company	10,42 %
WestRock Co.	13,13 %

Graph 02 – Expected Return & Beta relationship



▶ **The higher beta is, the more people expect from that stock.**

Therefore, the expected return of WestRock will be the highest one and, consequently, Walmart confirms the lowest expected return due to its low beta.

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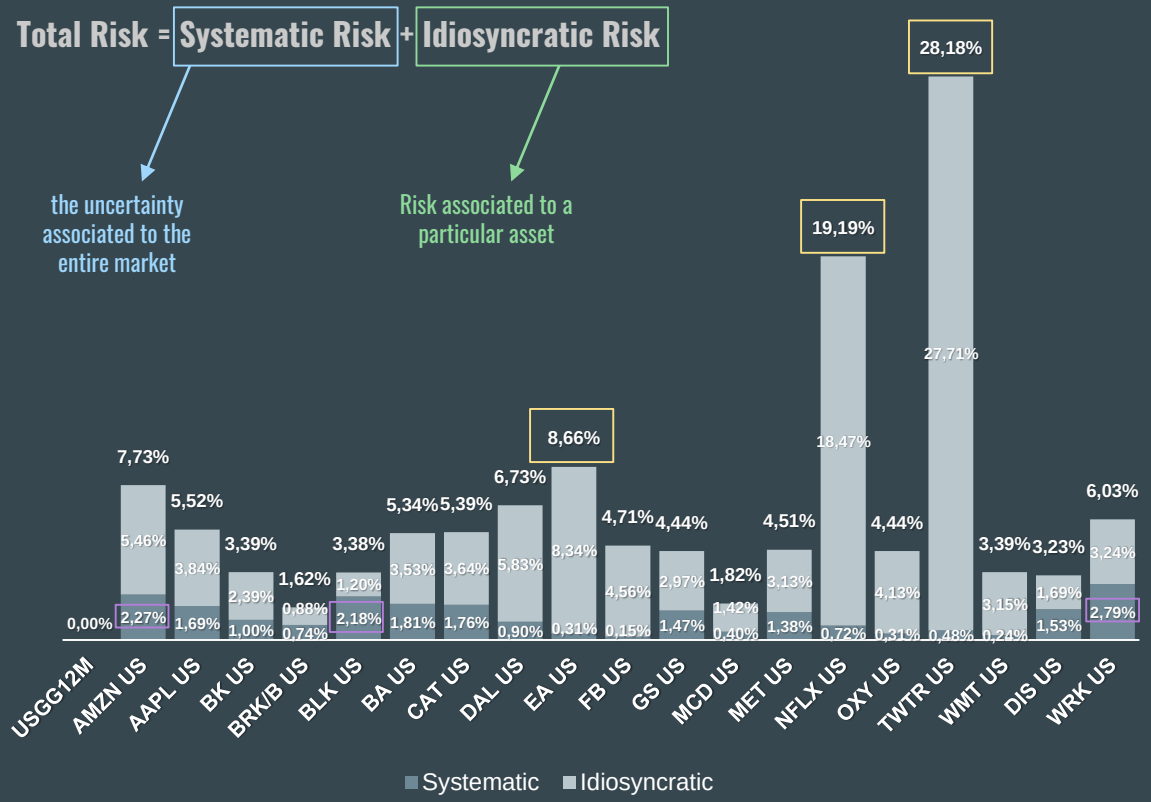
Specific risk presents a high percentage of total risk



Graph 03 - Total Risk breakdown

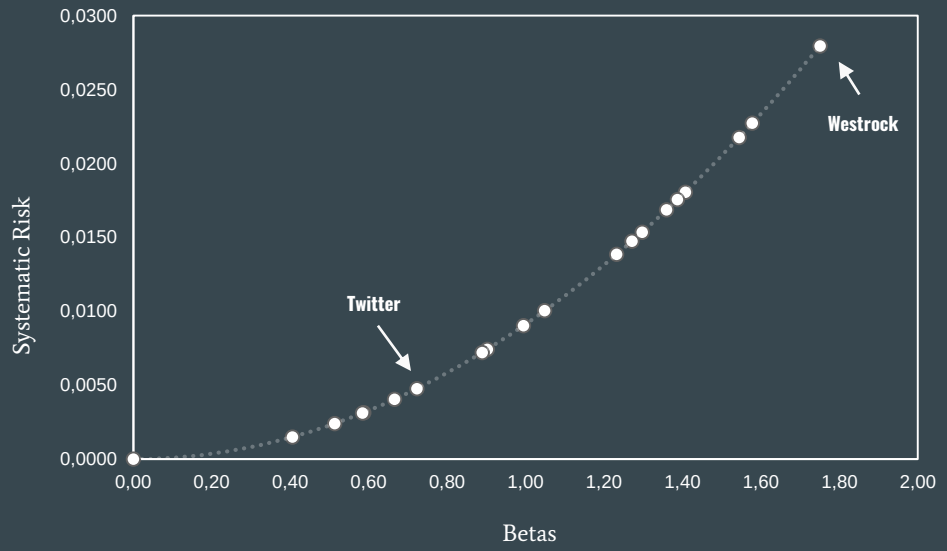
Assumption: CAPM Holds

We can verify that the stocks with the highest values of total risk are *Twitter* (28,18%), *Netflix* (19,19%) and *Electronic Arts* (8,86%). This can be essentially justified by the **idiosyncratic risk**, that compared to the rest of the securities, is very high. This happens also due to the company's stocks speculations.

We have that the stocks most affected by the **market fluctuations** (with higher systematic risk) are *Amazon*, *WestRock* and *BlackRock*. Thus, those are risks that cannot be mitigated nor predicted, as it will make those securities more **volatile** and **uncertain**.

Betas and systematic risk presents an exponential relationship

Graph 04 – Betas and Systematic Risk relationship



The data shows that the betas and the systematic risk have a **positive correlation**.

An interesting fact is that even if an asset has a higher beta, this does not mean that they have the highest total risk. This can be shown with Twitter, which has the highest total risk and Westrock, that has the highest value for beta. Thus, it is possible to justify this with the fact that the total risk of some assets is mainly composed by specific risk.

Therefore, **a higher beta does not imply a higher total risk.**

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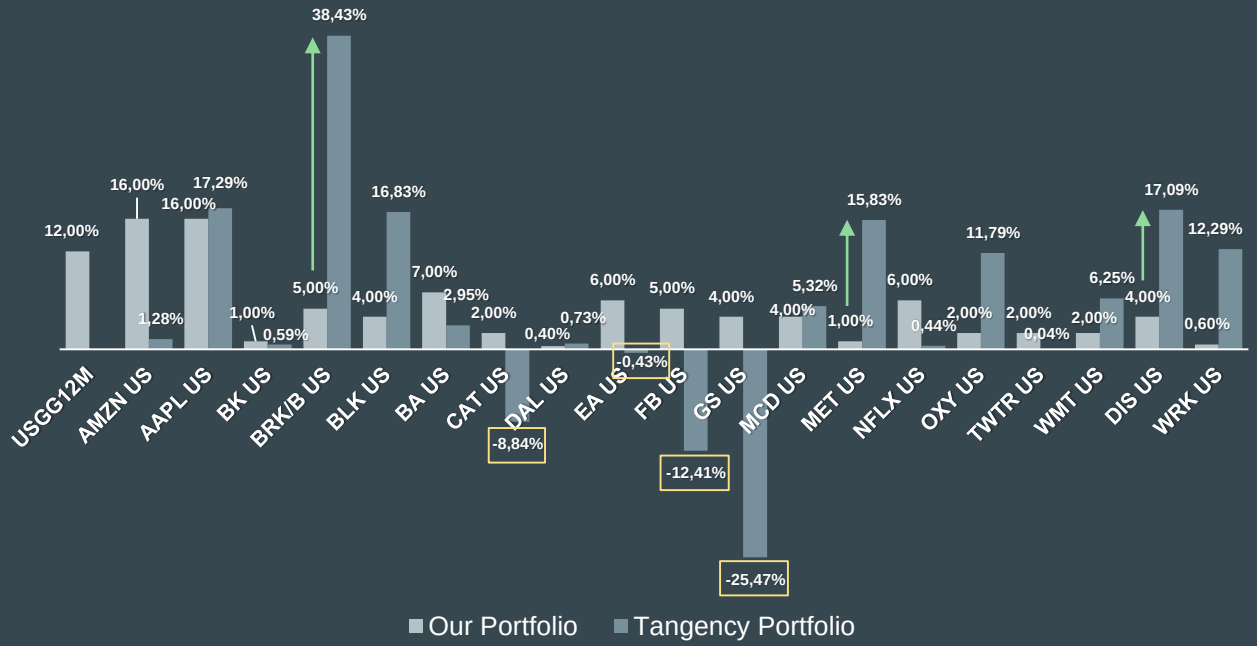
G. WACC of the project

H. Further analysis

The weights of the tangency portfolio differ a lot from the initial weights

Sharpe Ratio: additional return for a 1% increase in risk



Graph 04 - Sharpe Ratio maximisation

$$Sharpe\ ratio = \frac{E(r_f) - r_f}{\sigma_p}$$

After applying the formula above, we realized that the value obtained was **not** maximized. Thus, it was needed to compute the weights that **optimize** the sharpe ratio.

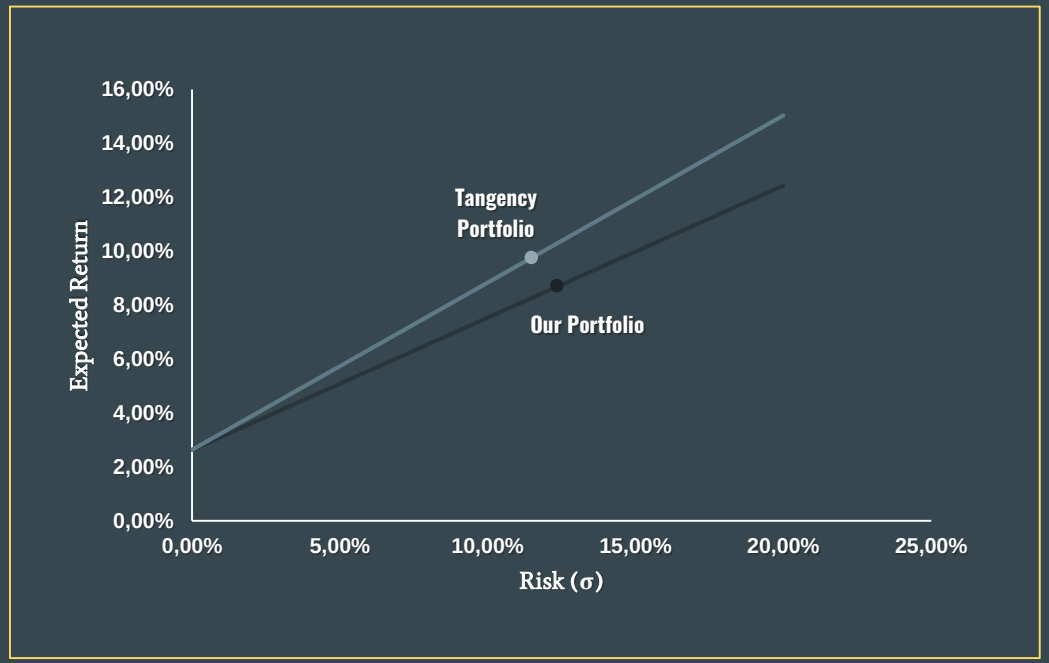
After the computations, the weights of the tangency became different from the group's portfolio.

▶ **We have a short position in 4 stocks**: *Caterpillar*, *EA*, *Facebook* and *Goldman Sachs*. This position is used to hedge as it **decreases the volatility of the portfolio**.

Also, *Bershire*, *Metlife* and *Walt Disney* were the stocks whose weights had the highest increase in weights.

There is a better way of allocating our group's portfolio, according to the CML

Graph 06 - CML comparison



After maximizing the sharpe ratio, we achieved a **value of 0,62**, which is 13 hundredths higher than the initial value of 0,49. This means that the CML that contains the **Tangency Portfolio** (maximized one), is steeper than the CML holding the Group's Portfolio.

Group's Portfolio		Tangency Portfolio	
Expected Return	Risk	Expected Return	Risk
8,72 %	12,34 %	9,77 % ↑	↓ 11,47 %

As we can observe, we will end up with a Tangency Portfolio that compared with the Group's Portfolio has a **higher expected return and a lower risk**.

▶ Thus, we can state that our Group's Portfolio is not efficient, as it is possible to invest in another portfolio with the **same level of risk**, but with a **higher return**, located in the **CML** with the **maximized sharp ratio**.

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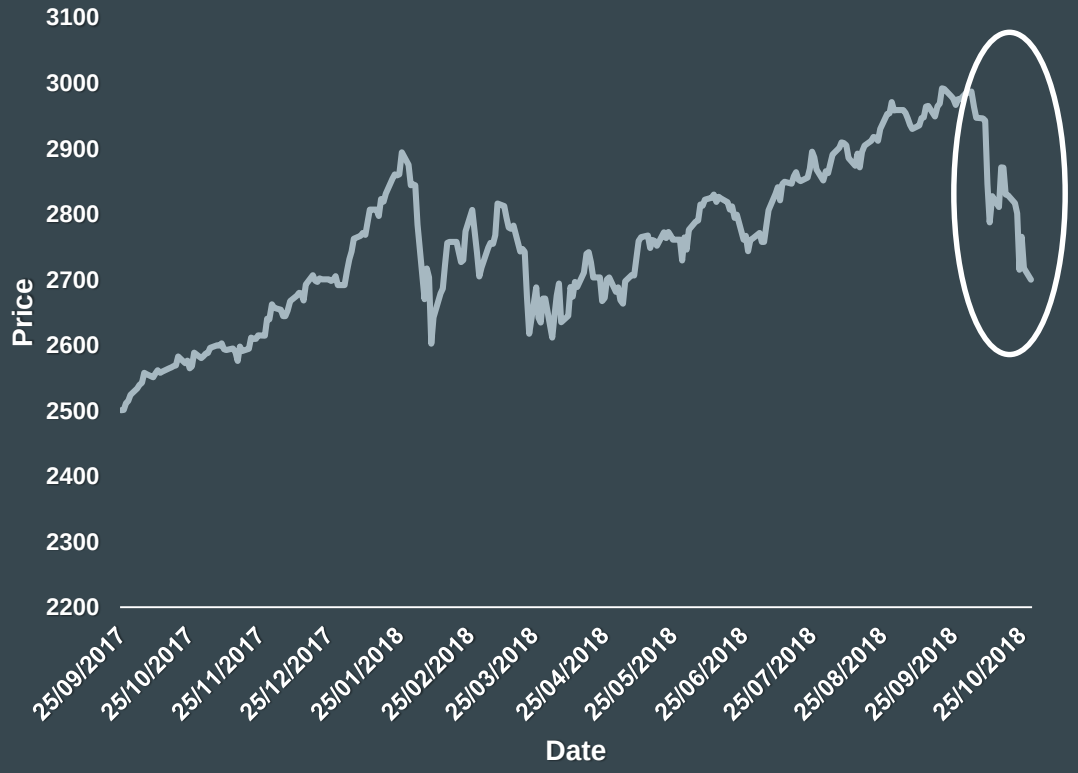
Although S&P presents disadvantages, it is the best proxy to use in this case



Assumption: CAPM Holds

We chose the S&P500 to be our market portfolio proxy was because:

- Composed by the 500 largest market-cap companies in the US, reflecting the performance in the market;
- All of our available securities belongs to this index, except for the Government Bond.

During the investment period, the S&P 500 had a negative return of 9,3%, which by annualizing it it would become a loss of 65,25%. As we can see in the graph index, the month of October had a sharp decline and since it coincides with the period, there will be an amplification of the effects.

► If we use market proxy to compare with our portfolio, **the annualized realized return of the proxy was worse** than our portfolio, which means that even though both suffered heavy losses, **our portfolio still managed to overperform the proxy.**

Market Portfolio Proxy analysis

In order to compute the CML that includes the market portfolio, it was used proxy of this portfolio: the **S&P 500**. We then obtained a **sharpe ratio corresponding to 0,63**.

Graph 07 - CML comparison

► As we can observe, the CML for the market portfolio is a little bit **steeper than the CML for the tangency portfolio**.

This happens given that the market portfolio is composed by 500 stocks (due to the proxy chosen), while our group's portfolio has a total of 19 stocks invested by us.

Sharpe ratios of the CML's containing the Tangency and the Market Portfolios are very similar

	Market	Group	Tangency
Expected Return	8,63%	8,72% <	9,77%
Variance	0,912%	1,522%	1,32%
Std. Dev (Volatility)	9,55%	12,34%	11,47%
Total Risk	0,91%	1,52% >	1,32 %
Systematic Risk	0,91%	0,94 %	1,29 %
Idiosyncratic Risk	0 %	0,58 % >	0,02 %

The **Tangency Portfolio** has a **higher expected return** than the group's portfolio.

Total risk associated with the **group's portfolio is higher** than the tangency portfolio.

The **Tangency Portfolio** has a **low specific risk** that results from the different allocations in the assets, which reduces the risks.

The lowest expected return the lowest volatility
► This is explained with the mitigation of the diversification effect.

Maximizes the Sharpe Ratio

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The optimal portfolio presents less expected return, and thus less risk, compared to the tangency portfolio

Weights	
Tangency Portfolio	Risk-Free Asset
90,49 % ↓	9,51 % ↑

	Value
Expected Return Tangency Portfolio	9,77 %
Risk free asset	2,63 %
Risk Aversion Coefficient	6 ↑
Variance Tangency Portfolio	1,32 %
Expected Return Optimal Portfolio	9,09%
Variance Optimal Portfolio	1,08%

The **optimal portfolio** is obtained through a combination of the Tangency Portfolio with the risk-free asset, since it represents the **most efficient alternative, with the highest sharpe ratio**.
For this, it is needed to maximize the level of utility given by a function that depends:

- positively on expected return
- negatively on risk

which is constrained by the CML with the maximized sharpe ratio.

The **utility function** also depends on the risk aversion coefficient, that thus will affect the weight invested on both tangency portfolio and risk-free asset. Therefore, it is possible to state that as the **coefficient increases**:

- the weight invested on the risky portfolio **decreases**,
- the weight on the risk free asset increases.

► This makes sense because with a **higher coefficient of risk aversion, the investor will prefer less risk, thus investing less on the tangency (riskier) portfolio**, and more in the risk-free asset.

Surveys are the most popular way of measuring risk aversion.

Surveys: one way of estimating this coefficient can be using an enquiry, containing questions and challenges to see how the investor responds. The survey analysis consists in the three basic key aspects, namely:

Experimental Analysis: You present the investor with the options and evaluate what kind of choices they make. For example you could see what they choose between playing a certain amount in the lottery vs receiving a certain fixed amount.

Self Assessment: How the investor evaluates his willingness to take certain risks.

Frequency Distributions: A measurable scale is formed, and a frequency distribution created to visualize how frequently the investor undertakes a certain amount of risk.

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WACC of the project

The methodology

▶ In order to analyse the WACC of a possible project, we need to **choose a specific industry**. In this case, we chose the **information technology** as it had the highest weight in our portfolio.
▶ The risk-free rate and the debt to equity ratio of each asset were found using *yahoo Finance*.

1

$$WACC = \frac{E}{E+D} r_e^{project} + \frac{D}{E+D} r_d (1-t)$$

2

$$r_e^{project} = r_u + (r_u - r_d)\frac{D}{E}(1-t)$$

3

$$r_u = r_f + \beta_U^{industry} \times MRP$$

4

$$\beta_L^{industry} = \beta_u^{industry} + (\beta_u^{industry} - \beta_d)\frac{D}{E}(1-t)$$

5

$$r_d = r_f + \beta_d \times MRP$$

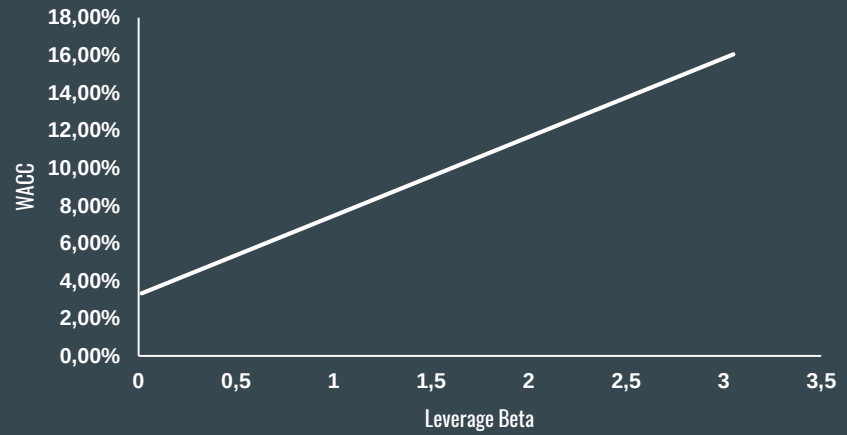
1. First, we need the formula of WACC;
2. We want to calculate the cost of equity by the MM model using the cost of debt and the debt to equity ratio of the project;
3. For that, we need the unlevered cost of capital that is obtained by the CAPM equation using the beta unlevered of the industry;
4. To obtain the beta unlevered, we will use the MM model with the beta levered of the industry (being the average of the securities beta that we thought were representative) and the debt to equity of the industry;
5. The only value that is missing is the cost of debt obtained by CAPM equation. And then, we have everything to get the final value of WACC;

We can relate the WACC with some interesting measures

As the leverage beta increases, we can assure that the cost of equity will also increase.

► This will then positively affect the WACC, as it depends directly on the cost of equity.

Concluding as it is possible to observe graphically, as the **beta increases**, **WACC will also increase** (beta and WACC behave in the same way).



Graph 08 - Leverage Beta and WACC relation

$$\beta_L \uparrow \Rightarrow r_e \uparrow \Rightarrow WACC \uparrow$$

After all of the previous calculations, we ended up with a value of WACC equal to 9,50%

WACC may be used as a proxy of the discount rate of a project

WACC > Rate 2nd Best Option
Reject Project

Example:
Possibility of investing in a new project from a diferente industry, covering a set of assets that would make the WACC below 9,50%

WACC > Rate 2nd Best Option
Reject Project

A company can use its WACC as a hurdle rate (min acceptable rate).

If an investment opportunity has a lower IRR than its WACC, it should buy back its own shares or payout a dividend instead of investing in the project.

Content

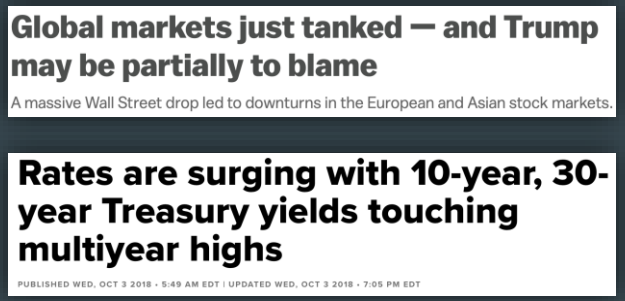
This month was extremely affected by Macroeconomic events

Portfolio Return

Portfolio	S&P
-10,27 %	9,51 %

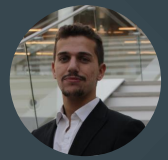
If our investment period had the duration of exactly one month, our portfolio would have underperformed the market proxy. During the month, we would have a loss of approximately 10,27% (5135€) of the total value., in contrast with the S&P index that lost 9,30%.

This fact demonstrates that **our choices were not the best ones**.
However, given the fact that there was a lot influences that turned the market unstable.



► The month of October was influenced mainly by the **increasing tensions in the trade war** which led to a **damage in the consumers sector**. This was followed by record breaking bond yields that shifted the money from stocks to bonds.
► After this happened, the Fed rose the interest rate, which again impacted the stock market. **These few news were extremely determinant to our portfolio performance**.

Before & After

					
Stocks chosen	• Amazon.com Inc. • Apple Inc. • Bank of New York Mellon • Caterpillar Inc. • MetLife Inc. • Occidental Petroleum Corp	• Amazon.com Inc. • Apple Inc. • Facebook Inc. Class A • Goldman Sachs Group Inc. • McDonald's Corporation • Netflix Inc. • Twitter Inc.	• Berkshire Hathaway Inc. Class • BlackRock Inc. • Boeing Company • Netflix Inc.	• US Generic Govt 12M Yield • Amazon.com Inc. • Apple Inc. • Electronic Arts Inc.	• US Generic Govt 12M Yield • Delta Air Lines Inc. • Facebook Inc. Class A • McDonald's Corporation • Walmart Inc. • Walt Disney Company • WestRock Co.
Reasoning	My portfolio decision took into account the moment of the companies in that particular moment (for example, I invested in apple because it was launching a new group of iPhones) and the diversification of risk because I tried to invest in very different sectors. Now that I know a lot more about finance, and as I hate risk, I would invest more in the risk-free asset because I prefer to gain less than gain a lot but risking a lot.”	“My portfolio choice was essentially based on brand recognition, as I trusted on their reputation to forecast its performance. Now that I have more knowledge about Finance, I would rather invest in stocks whose historical performance was not that volatile, namely *Amazon*, *Facebook*, and *Twitter*.”	“My portfolio choice was based on safety. Both Berkshire and Blackrock to the Financials so I thought the firms would have a better performance. Given what happened around this month, I would only be sure that Netflix wouldn’t be the one that I would invest due to its high speculation, specific risk and the way our portfolio was composed. The other three assets I would still hold for a longer period.”	I bet my money on a few stocks which I believed were doing well and which in my opinion could provide a decent return with a relatively low risk. I quickly saw that investing based on “common knowledge” proved foolish after realizing that some of these had high systematic risks. I realised that I can always invest in risky assets, as long as I always have a true safe bet.”	“I was careful when choosing my assets. While I tried to invest in known companies in the market, I also made sure I had a diversified project, in order to minimize my risk. However, I would change some assets, namely *WestRock* and *Walt Disney*, due to its high systematic risk (2,79% and 1,53%, respectively).”